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UNIVERSITY OF SAN DIEGO
Philip Y. Hahn School of Nursing
DOCTOR OF NURSING SCIENCE

FACTORS RELATED TO SELF-CARE AGENCY AND
SELF-CARE PRACTICES OF OBESE ADOLESCENTS

by

Kathy Shadle James, MSN, RN

A dissertation presented to the
FACULTY OF THE PHILIP Y. HAHN SCHOOL OF NURSING
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requirements for the degree
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Abstract

Factors Related to Self-Care Agency and Self-Care Practices of Obese Adolescents

Identification of factors that influence obese adolescents' health behaviors is necessary if obese adolescents are to benefit from therapeutic interventions. The purpose of this descriptive-correlational study was to identify the relationships between selected basic conditioning factors (BCFs)--perceived health status (PHS), perceived self-efficacy (PSE), family satisfaction (FS), and life events (LE)--and the self-care agency (SCA) and self-care practices (SCP) among obese adolescents. The relative predictive strength of each BCF in relation to the outcome variables was also explored. Orem's self-care theory provided the conceptual framework for this study.

The convenience sample of 100 obese adolescents included campers from two southern California weight loss camps and noncampers who were recruited through health professionals. Data were collected using six self-report questionnaires: a Cantril Ladder, PSE scale, FS scale, LE scale, Denyes SCA instrument, and the Personal Lifestyle Questionnaire. Descriptive statistics were used to describe the sample and the study variables. Pearson product-moment correlations, t-tests, analysis of variance, and multiple regression were used to analyze the data. Point-biserial correlations, t-tests, and chi-square analyses were used for supplemental data analysis.

Moderately weak but statistically significant positive relationships were found between PHS, PSE, FS, and SCA, and between PHS, PSE, FS, SCA, and SCP. A weak inverse relationship was found between LE and SCA. BCFs were found to explain 32% of the variance in SCA while BCFs and SCA explained 34% of the variance in SCP. PHS and PSE were the strongest predictors of SCA, while PHS and SCA were the strongest predictors of SCP. There were no differences between young, middle, and older adolescents in relation to any of the study variables; however, mildly obese adolescents were found to engage in significantly more SCPs than severely obese adolescents.

Conclusions drawn from the findings indicate that obese adolescents with higher PSE tend to be more effective self-care agents, those with higher PHS, PSE, and SCA tend to engage in more SCP, and that these characteristics need to be fostered in an integrated way. Recommendations were made for further research.

Dedication

Without the support and encouragement of many individuals, I would not have completed this once-in-a-lifetime project. I dedicate this work to my husband and friends who maintained their relationships with me during my periods of self-isolation. Specifically, I dedicate this work to:

Ron James, my husband and best friend, who was patient with me, believed in me, and encouraged me to reach my career goals.

My girlfriends, Cynthia Rizzi, Gloria Dik, Beth Mascherine, Joanne Hyatt, and Laura Birns, who were always there to change my train of thought when I needed it and would take me out to lunch or out for a run.

My sisters, Karen Shadle, Patricia Zimmerman, and Jacque Shadle, who believe I will always be a professional student. A special dedication goes to my parents, Richard and Shirley Shadle who have given me a positive attitude, and the desire to be the best I can be!

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CHAPTER 1

INTRODUCTION

The prevalence of adolescent obesity is a contemporary health concern of great magnitude. Nursing research concerning the phenomenon of adolescent obesity is relatively scarce, however. The attitudes of school nurses, pediatricians, and parents concerning the obese adolescent have been documented (Price, Desmond, Ruppert & Stelzer, 1987, 1989; Uzark, Becker, Dielman, Rocchini & Katch, 1988). However, few reports have described obese adolescents' perceptions of factors such as their perceived health status, perceived self-efficacy, family satisfaction, life events, and the relationship of these factors to self-care agency and self-care practices.

Adolescence is a time of increased independence, of intensified formation of the individual's self-image, and of development of health-related attitudes and behavior patterns that set the stage for adult lifestyles (Duffy, 1988; Mullen, 1983). The adolescent's evolving health attitudes and behaviors play an important role in sustaining or increasing health and well-being (Coates, Peterson, & Perry, 1982).

According to Combs and Snygg (1971), behavior is

not determined by objective reality or by a reality as seen by others. Rather, an individual's perceptions provide the meaning and context within which his or her behavior is enacted. Treating obese adolescents without a clear understanding of their individual cognitions and perceptions may, thus, prevent health professionals from positively influencing their health behaviors. Descriptive and explanatory information concerning obese adolescents' perceptions and health behaviors is needed prior to developing intervention guidelines to promote healthy habits among adolescents.

Nursing research conducted in adult populations has indicated that health status and self-esteem (Duffy, 1988), valuing of health (Brown, Muhlenkamp, Fox, & Osborn, 1983), self-efficacy (Strecher, DeVillis, Becker, & Rosenstock, 1986), and education and social support (Yarcheski & Mahon, 1989) positively influence health practices. However, there is insufficient research to support the same declarations in regard to obese adolescent populations. This gap in knowledge may be the result of long-held treatment models which analyzed obesity into component elements within the individual (e.g., eating habits, personality traits) and looked for factors that influenced the individual components (e.g., food cues, social pressures). Theories dominating the obesity literature (e.g., behavioral, set-point, restrained eating, and

externality theories) have been narrowly focused. Obesity research and treatment are likely to be further advanced by adopting other theoretical approaches (Ganley, 1986).

Recent adolescent obesity research has explored many topics, including: genetic, dietary and environmental influences, psychosocial and physical effects associated with obesity, and treatment. For example, Price (1990) found genetic contributors to be greater in the onset of childhood obesity than in adolescent obesity. Mossberg's (1989) 40 year-long study of overweight children showed indications that earlier onset of obesity was associated with more family history of obesity than later onset. Researchers Rolland-Cahera, Bellisle, Deheeger, Pequignot, and Sempe (1990) found support for prediction of the risk of centralized obesity in adulthood based on central body fat accumulation during childhood. Bellisle, Deheeger, Pequignot, and Sempe's (1988) study of dietary patterns suggested that fat synthesis occurred more often in children eating little or no breakfast since they consumed larger amounts at dinner. Price et al. (1989) also found excess caloric consumption, poor eating behaviors, and sedentary lifestyles to be contributors to adolescent obesity.

Martin, Housley and McCoy (1988) reported that self-esteem suffered as weight increased among adolescent girls. Gynecomastia, common in obese adolescent boys, was found to be a possible trigger of disordered eating

(Fisher and Fornari, 1990). Other researchers have explored the use of different diet and behavioral treatments on basal metabolic rate (Katch, Becque, & Marks, 1988; Nichols, 1989) and the adequacy of nutrient intake in adolescents undergoing a weight management program (Valoski & Epstein, 1990). None of the adolescent obesity research reviewed, included the variables selected for this study.

Statement of the Problem

Research is needed to identify perceptions and other factors which influence the health behaviors of obese adolescents. Pediatric obesity has increased dramatically in the last fifteen years (Gortmaker, Dietz, Sobol, & Wehler, 1987). A 1987 report from a National Institute of Health workshop on adolescent obesity indicated that obesity increased 39 percent between 1966 and 1980 and affects 22 percent of 12 to 17-year-olds. This increased incidence of obesity was found to occur among adolescents of all ages, both sexes, and among both black and white adolescents.

Obesity in adolescence has both psychological and physical consequences. Psychosocially, adolescents are normally busy establishing a stable identity, accepting their sexuality, winning acceptance of peers and society, establishing independence from family, taking on a value system, and considering career choices (Lohner, 1987).

Obese adolescents may become blocked developmentally when caught in a vicious cycle of overeating, inactivity, social isolation, depression, and low self-esteem. The potential for damage to a developing body image and self-image is great. Additionally, obesity often delays adolescents' separation and emancipation from their families.

From a health perspective, obesity in adolescence has been associated with greater risk of persistence into adulthood than obesity in younger children. According to Castiglia (1989), as many as 70 percent of obese adolescents will become obese adults. Although there is a low mortality rate associated with obesity in adolescence, there is an increased risk for hypertension, diabetes, respiratory problems, and orthopedic problems (Castiglia, 1989). In addition, physical growth and development are affected since obese adolescents enter puberty earlier and have a shorter period of long bone growth. This results in an adult stature less than the individual's genetic potential (Dietz, 1981; Mellin, 1987; Stewart & Brook, 1983).

Adolescent obesity is distinct from obesity in other life stages in that the psychosocial and biological changes accompanying puberty profoundly influence obesity care. To date, treatment for adolescent obesity has been demonstrated to have limited effectiveness as evidenced by excessive drop-out rates and high recidivism. Although the influence

of genetics and family patterns has long been appreciated, the influence of psychological and cognitive variables in regard to the onset and maintenance of adolescent obesity needs to be investigated (Harkaway, 1987; Wadden & Stunkard, 1985). There is a need to explore multiple variables associated with adolescent obesity, as well as their relationship to health promoting habits. Likewise, if obese adolescents are to benefit from preventive and therapeutic measures, their perceptions of themselves and the internal and external factors that may influence their body weight cannot be discounted.

Purpose of the Study

The purpose of this descriptive study was to investigate the relationships between selected basic conditioning factors (perceived health status, perceived self-efficacy, family satisfaction, and life events) and the self-care agency and self-care practices of obese adolescents. This study was designed to expand the available knowledge base regarding obese adolescents' perceptions of their health status, self-efficacy, family satisfaction, and life events. It was also a goal of this research to generate knowledge concerning the self-care agency status of obese adolescents and their self-care practices. In addition, relationships between the selected basic conditioning factors and the self-care agency and self-care practices of obese adolescents

were explored to provide relevant knowledge concerning interrelationships between key variables that have not yet been investigated.

Significance of the Study

The findings of studies such as this can strengthen nursings' knowledge base in regard to understanding the basic conditioning factors that influence health behaviors of obese adolescents. A clearer understanding of how obese adolescents' perceive their health status, self-efficacy, family satisfaction, and life events, and of the relationships between these variables and self-care agency and self-care practices, can also be used to guide health professionals in setting more realistic goals and in designing and recommending appropriate interventions which will enhance obese adolescents' existing strengths and remediate their self-care limitations. In addition, this study was undertaken to provide a base of knowledge for the generation of additional descriptive studies and for the formation of hypotheses to be tested in future health promotion research focused on obese adolescent populations.

Conceptual Framework

The conceptual framework for this study was based on Orem's (1985) theoretical nursing framework. The general concept of self-care views human beings as persons who have attained some degree of self-possession. Persons who take action to provide their own self-care have specialized

capabilities for action. Self-care agency is conceptualized as the complex, acquired ability to meet one's continuing requirements for care. Self-care practices are the actions persons perform in the interest of maintaining life, health, and well-being. For purposes of clarification, self-care practices are sometimes referred to as health promoting habits in this study.

There are a number of concrete events and conditions internal and external to persons which affect their abilities and limitations for self-care. These factors, named basic conditioning factors (BCFs), point to the kinds of data that should be gathered in nursing assessments to determine an individual's capability for self-care (Orem, 1985). Orem identified the following as some of the BCFs: age, sex, developmental state, conditions of living, family system factors, sociocultural orientation, patterns of living, health state, and health care system factors.

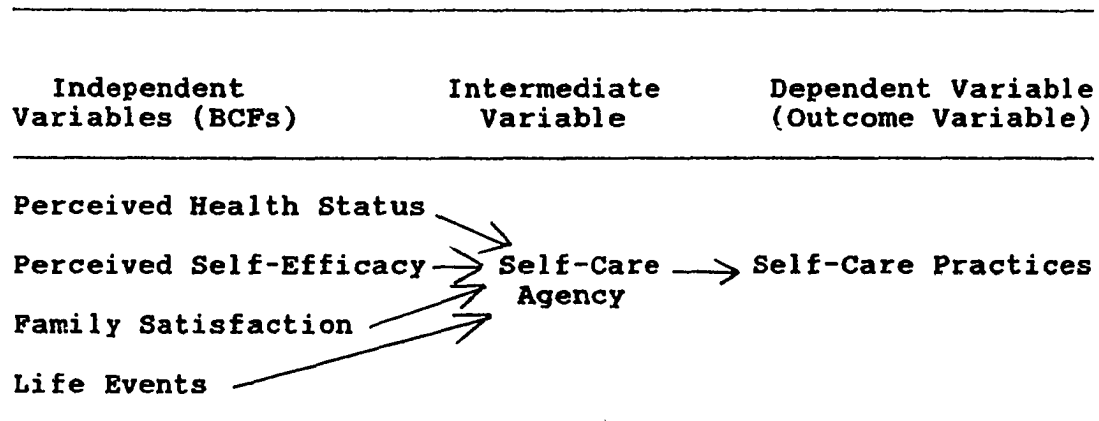
This study did not investigate all of the BCFs described by Orem (1985). Data were collected regarding age, sex, cultural orientation, family size, parental level of education, parental marital status, and who influences the adolescent's health habits, in order to describe the sample. The BCFs that were identified as study variables became the independent variables (perceived health status, perceived self-efficacy, family satisfaction, and life events) and were explored further. A schematic

model of the selected BCFs, and the intermediate variable (self-care agency) and dependent variable (self-care practices) selected for investigation in this study, are presented in Table 1. The arrows indicate the paths of influence theorized by the investigator to exist between the BCFs and self-care agency and self-care practices. In the design of this study, self-care agency was considered to be both an intermediate and dependent variable that: 1) is influenced by BCFs; and 2) influences the outcome variable self-care practices. As an intermediate variable, self-care agency was combined with the BCFs to examine their total influence on the outcome variable self-care practices.

The first BCF variable, perceived health status, was specifically identified as a BCF by Orem (1985). The three remaining BCF variables studied are each related to one of the categories listed by Orem and reflect Orem's description of relevant content for understanding self-care abilities and, hence, self-care practices. These three BCF variables are: (a) perceived self-efficacy--providing data about the adolescent's beliefs in regards to behavior performance (related to developmental state); (b) family satisfaction (a family system factor); and (c) life events--providing information about changes within one's family that impact the adolescent (a family system factor). Obese adolescents were selected to be the population group

Table 1

**Schematic Model for Explaining Self-Care Practices
of Obese Adolescents**



to which Orem's framework was applied in describing selected BCFs and their relationship to self-care agency and self-care practices.

Orem's self-care theoretical nursing framework was first used in health promotion research concerning adolescents by Denyes (1988). Denyes tested the relationships between BCFs and self-care agency and self-care practices with several populations of adolescents. Her results provided initial support for using Orem's concepts in a model for adolescent health promotion.

Thus, BCFs and self-care agency were selected for investigation in this study as potential explanatory factors for self-care practices of obese adolescents. It was recognized that any relationships found to exist between the variables investigated would not provide any causal explanations due to the descriptive nature of the study design. The findings, however, were viewed as being potentially useful for theory building and for the generation of hypotheses for future studies.

Research Questions

1. What are the relationships between perceived health status, perceived self-efficacy, family satisfaction, life events, and the self-care agency of obese adolescents?
2. What are the relationships between the perceived health status, perceived self-efficacy, family satisfaction,

life events, and self-care agency of obese adolescents and their self-care practices?

3. To what extent do the variables perceived health status, perceived self-efficacy, family satisfaction, and life events predict self-care agency in obese adolescents?

4. To what extent do the variables perceived health status, perceived self-efficacy, family satisfaction, life events, and self-care agency predict self-care practices in obese adolescents?

Definition of Terms

Perceived health status: the individual's assessment of his or her level of well-being as measured by scores on a Cantril Ladder (Kilpatrick & Cantril, 1960).

Perceived self-efficacy: the extent of an individual's belief in his or her capability to successfully perform the behavior required to produce a desired outcome as measured by scores on the General Self-Efficacy Subscale (GSES) (Sherer et al., 1982).

Family satisfaction: level of contentment with family cohesion and adaptability as measured by scores on the Family Satisfaction Scale (FSS) (Olson & Wilson, 1982).

Life events: degree of normative and nonnormative changes adolescents and/or family members have experienced during and prior to the past year as measured by scores on the Adolescent-Family Inventory of Life Events and Changes (A-FILE) (McCubbin, Patterson, Bauman, & Harris, 1981).

Self-care agency: amount of power or capability to engage in estimative and productive operations essential to self-care (Orem, 1980, p. 86) as measured by scores on Denyes Self-Care Agency Instrument (DSCAI) (1980).

Self-care practices: number of positive health behaviors included in an individual's lifestyle that are directed to self or to the environment in order to regulate his/her functioning in the interests of life, integrated functioning and well-being (Muhlenkamp & Brown, 1983; Orem, 1985). Self-care practices were measured by scores on the Personal Lifestyle Questionnaire (PLQ) (Muhlenkamp & Brown, 1983) that focuses on six types of health-related practices: exercise, nutrition, relaxation, safety, substance use, and prevention.

Obese adolescents: boys and girls between the ages of 12 and 18 whose triceps-skinfold measurement is equal to or above the 85th percentile and/or who are 20 percent above the mean recommended weight for height, age, and sex (Johnston, 1985). These criteria were accepted as the clinical determination of obesity based on a national probability sample measured in a U.S. Health Examination Survey of adolescents (Hamill, Johnston, & Grams, 1970; Hamill, Johnston, & Lemeshow, 1973). In this study, subjects were categorized by age as being in early adolescence (ages 12 through 14), middle adolescence (ages 15 through 16), or late adolescence (ages 17 through

18) and according to degree of obesity (mild = 20-30 percent relative weight, moderate = 30-40 percent relative weight, and severe = above 40 percent relative weight). Relative weight percentage was calculated as the actual body weight divided by the weight predicted from the height, sex-and age-specific standards.

Assumptions

The assumptions on which this study was based include:

1. Self-care activities are essential for good health.
2. Each adolescent is a self-care agent who makes a personal and continuous contribution to his or her own health.
3. Perceptions are valid indicators of reality and influence both motivation and behavior.
4. Human beings have the potential to develop their intellectual and practical skills and the motivation essential for self-care.
5. The variables perceived health status, perceived self-efficacy, family satisfaction, and life events have not been previously studied within a framework designed to explain the self-care agency and self-care practices of obese adolescents.

CHAPTER II

REVIEW OF THE LITERATURE

The literature was critically reviewed for its pertinence to this study. This chapter consists of two sections: a review of theoretical literature and a review of empirical literature concerning the study variables. The first section presents a sequential review of theory underlying each of the study variables: perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency and self-care practices. Although health conception was not itself a study variable, theory related to the development of a concept of health is also summarized to provide support for the second assumption of the study which indicates that adolescents are capable of influencing their health status. The second section presents a review of research studies and findings related to each of the study variables to support their inclusion in the research design.

Theoretical Literature Review

Health conception. Orem (1971) defined health in terms of a general state of wholeness and suggested that a healthy person is structurally and functionally whole or sound. Within her theoretical perspective, individuals

evaluate their own states of integrity or wholeness. These evaluative judgements imply that individuals have ideas about what health means, at least to them, as well as ideas about the evidence needed to judge that a person is healthy or unhealthy.

Health conceptions vary with developmental level. According to Natapoff (1978), first grade children define health as a specific set of health practices. Being healthy enables them to play with friends, to go outside, and to be with the family. Fourth grade children are less concerned with specific health practices and are more concerned with total body states, such as being in good shape and feeling good. Seventh graders also define health as feeling good and being able to participate in desired activities while not being sick. These early adolescents' descriptions demonstrate evidence of abstract thinking and include concepts related to mental health. They perceive health as involving the body, the mind, and, in some cases, the environment. Evidence that early adolescents show this capability to define their health provides support for the assumption that adolescents are self-care agents who contribute to their own health. Theory and empirical research related to developing a health concept support the premise that adolescents are capable of determining their health status.

Perceived health status. Perceived health status

is the individual's assessment of his/her level of health or well-being based on perceptions, goals, values and assumptions (Kilpatrick & Cantril, 1960). According to Orem (1985), one's health status affects self-care agency and thus determines the scope of self-care activities a person can perform. Although research (Harris & Guten, 1979; Barnett, 1989) has not always supported the existence of a relationship between perceived health status and self-care behaviors, Pedhazur (1982) recommended continued study of perceived health status if theory or previous research strongly support the relationship. Since this relationship has not been examined in obese adolescents, the variable perceived health status was included as an independent variable in the research design for this study.

Perceived self-efficacy. Perceived self-efficacy is a belief concerning one's ability to successfully perform the behavior required for a desired outcome. The concept has increasingly been recognized as a predictor of health behavior change and maintenance (Strecher, DeVellis, Becker, & Rosenstock, 1986). Self-efficacy is a key concept in Bandura's (1977) social learning theory, which holds that behavior is determined by expectancies and incentives. According to this theory, a person has "efficacy expectations" about his or her ability to engage in or execute a behavior, as well as "outcome expectations" consisting of beliefs about whether a

given behavior will lead to given outcomes.

According to Bandura's self-efficacy theory, self-efficacy expectations are the most powerful determinants of behavioral change; they determine the initial decision to perform a behavior, the effort expended, and persistence in adversity. Bandura argued that perceived self-efficacy influences all aspects of human behavior, including: acquisition of new behaviors (e.g., a sexually active young adult learning how to use a particular contraceptive device), inhibition of existing behaviors (e.g., decreasing overeating), and disinhibition of behaviors (e.g., resuming sexual activity after a myocardial infarction). This theory suggests it would be important for health professionals to evaluate obese adolescents' expectations, knowledge and skills, and expected outcomes associated with losing weight.

Self-efficacy is developed and maintained based on a combination of four major sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological state. Performance accomplishments refer to learning through personal experience where one masters a difficult or previously feared task and, thereby, enjoys an increase in self-efficacy. Vicarious experience is obtained through observation of successful or unsuccessful performance of others and may account for a major part of learning

throughout life. Verbal persuasion is frequently used in health education and is considered a useful adjunct to more powerful influences. Finally, one's physiological state provides information that can influence efficacy expectations. For example, people who experience extremely sweaty palms, a racing heartbeat, and trembling knees prior to giving a talk find that their self-efficacy plummets (Allen, 1988; Rosenstock, Strecher, & Becker, 1988).

The literature suggests that positive changes in the self-efficacy of obese adolescents may be achieved by teaching them how to master difficult tasks through a combination of personal experience, observing others performing the task, and/or verbal persuasion from a peer or group leader. Perhaps obese adolescents' self-efficacy can also be improved when interventions enhance their self-efficacy information.

A growing body of literature supports the importance of self-efficacy in helping to account for initiation and maintenance of behavior change. Empirical research by Bandura and his colleagues (Bandura, 1977; Bandura, Adams, & Beyer, 1977; Strecher, DeVellis, Becker, & Rosenstock, 1986) demonstrated support for self-efficacy theory after strong associations were found between self-efficacy and progress in health behavior change. Bandura et al. (1977) encouraged researchers to continue to include self-efficacy as an explanatory variable to provide a more powerful

approach towards understanding and influencing health-related behavior.

Pender (1987) and Weitzel (1989) also postulated that people with positive perceptions of their health promotion skills (i.e., those with a strong perceived self-efficacy) would be more likely to participate in activities that enhance health, and their completed research provided support for their views. Orem (1985) did not specifically mention self-efficacy in her theoretical writings but suggested that the performance of self-care activities is dependent on the person's judgement of whether he or she can perform the required self-care measures. Therefore, self-efficacy was judged to be a relevant variable to include in the theoretical model and research design for this study.

Family satisfaction. Family satisfaction is the adolescent's measured level of contentment with family cohesion and family adaptability. This construct was based on the conceptual work of Olson and Wilson (1982) who recognized that family researchers had failed to concern themselves with family satisfaction.

The family satisfaction construct was derived from the Circumplex Model (Olson, Sprenkle, Russell, 1979) which has been used extensively, by professionals who work in marriage and family counseling, to assess how the family system is perceived by family member(s).

This Model has three central dimensions: cohesion, adaptability, and communication. Communication is viewed as a facilitating dimension since the possession or lack of communication skills facilitates or hinders movement of families on both the cohesion and adaptability dimensions.

Cohesion and adaptability are the components that comprise family satisfaction within Olson et al.'s (1979) theoretical framework. Cohesion is viewed as ranging from low to high, with low cohesion reflecting a separated or disengaged family and a high level of cohesion representing enmeshment. The optimal degree of cohesion is considered to be at the midpoint of the continuum representing a moderate degree of engagement. Adaptability is also viewed as ranging from low to high with low adaptability reflective of rigidity and high adaptability reflective of "chaoticness" (Kog & Vandereycken, 1989). The optimal degree of adaptability is considered to be at the midpoint of the continuum representing a moderate degree of adaptability.

The central hypothesis derived from the model is that "balanced" families will generally function more adequately than "extreme" families. This hypothesis is built on the assumption that families who perceive themselves to be at an extreme on either the cohesion or adaptability dimensions tend to have more difficulties functioning across the life cycle compared to families

who are able to achieve a balance between the two extremes. Too much or too little cohesion or adaptability is viewed as dysfunctional to the family system and this has been supported in the empirical literature (Bruch, 1961; Kog & Vandereycken, 1987; Olson, 1989; Satter, 1986). Olson and Wilson (1982) have contended, however, that it is less important where the family is located on the family satisfaction dimensions than how they feel about their levels of family cohesion and adaptability. These authors hypothesize that, if normative expectations of a couple or family support behaviors on one or both extremes of the two dimensions, they will function well as long as all family members accept these expectations. This hypothesis takes into account different normative expectations and cultural backgrounds where being extreme on these dimensions is both appropriate and necessary.

Olson (1989) described a family with a low level of cohesion as being disengaged, that is, as lacking emotional bonding between family members. In contrast, a highly cohesive family is described as enmeshed, that is, as demonstrating excessive emotional bonding whereby family members behave, think and feel similarly. Enmeshed families often close themselves off to outside influences and become overinvolved with their own family members (Hertzler, 1981). Excessive family togetherness discourages the development of individuation and autonomy.

A family with a low level of adaptability is described as rigid and overprotective (Olson, 1989). The family structure and organization prevent family members from adapting appropriately to changing needs. When change is called for, this type of family responds with excessive cooperation but without really communicating in their decision-making process; that is, by avoiding rational discussion about the problem and hiding or disguising their individual emotional reactions. Obese adolescents from rigid families often have not learned to interpret their own experiences or to define their own goals and grow up to be passive, dependent, insecure, unable to express aggression, and with feelings of having no control over their own lives (Ganley, 1986; Satter, 1986). Conversely, the "chaotic" family--which represents an extreme level of adaptability--doesn't protect enough, fails to set limits or provide guidelines, and may not nurture its members effectively.

Information about the adolescent's level of family satisfaction related to his or her family system's cohesion and adaptability is particularly relevant to the development of self-care agency and the self-care practices of obese adolescents. Researchers including Dietz (1983); Ganley (1986); Minuchin, Baker, Rosman, Liebman, Milman, and Todd (1975); and Satter (1986) have reported four family characteristics associated with weight-related problems

and eating disorders. The four characteristics of family types that have been found to encourage somatic symptoms, such as overeating, in family members include:

- (a) enmeshment--poorly differentiated, weak, and often intrusive boundaries among the family member subsystems;
- (b) overprotectiveness--among all family members;
- (c) rigidity--high resistance to change and growth; and
- (d) lack of conflict resolution--leading to unresolved problems which continually activate avoidance patterns.

These family type characteristics are represented by the family satisfaction construct. Although the literature (Dietz, 1983; Ganley, 1986; Minuchin et al., 1975; Satter, 1986) indicates that obese adolescents' families often reflect one or more of these four characteristics, obese adolescents' satisfaction with or lack of satisfaction with their families in relation to their level of cohesion and adaptability is not described.

During ten years of work with obese adolescents, this investigator has observed that extremes of both adaptability and cohesion are easily recognized in their family systems. Although their levels of family satisfaction were not measured, these observations have suggested that obese adolescents often experience family adaptability and cohesion problems that may impact on their level of family satisfaction and interfere with positive behavior change related to weight control.

According to Hertzler (1981) and Schilson and Valkenburg (1984), inconsistency in the family situation may precipitate and lessen the ability of some overweight adolescents to make changes in their lifestyles. The importance of a supportive, interactive family, utilizing parenting techniques that develop responsibility and a positive self-image, were recommended by these authors to increase the probability of positive weight loss/maintenance.

Family satisfaction is not specifically identified by Orem (1985) but she does include the family system as a component of the BCFs. According to Orem, assessment of the family system would allow the nurse to account more fully for positive or negative influences on the adolescent's level of self-care agency and self-care practices. Because family characteristics were viewed by the investigator as influencing the adolescent's values, beliefs, and sense of self, family satisfaction was identified as a potential contributing factor influencing self-care agency and self-care practices of obese adolescents. The theoretical and descriptive literature, particularly family theory, supported the inclusion of family satisfaction as an independent variable in the theoretical model and research design for this study.

Life events. Life events are family life changes experienced by any member of the family since, from a family systems perspective, what happens to one member

affects the others to some degree (McCubbin et al., 1981). Life events or changes are viewed as stressors which require changes in the individual's and the family's ongoing life pattern. All critical life events (both positive and negative) are viewed as requiring adaptation and change on the part of the individual experiencing them (Miller, 1981). McCubbin et al. (1981) refer to dealing with several stressors at one time as a "family pile-up".

The complex role changes which adolescence brings for both the family and its adolescent member(s) make life events an important variable to consider in research concerning influences on adolescent health behavior. There has been a proliferation of research based on the hypothesis that stress arising from the accumulation of life events plays a role in the etiology of various disorders (Miller, 1981). Positive relationships have been found between the magnitude of life changes and various criterion correlates such as heart disease, fractures, childhood leukemia, poor teacher performance, and low college grade point average (Holmes & Rahe, 1967).

According to Mellin, Slinkard, and Irwin (1987), obesity may be a reaction to traumatic life events or due to increased stress. Mellin et al. (1987) divided adolescent obesity into two categories: progressive and reactive. Progressive obesity refers to a lifestyle type of overweight associated with long-term diet and exercise

patterns usually shared by other family members that results in an even, continuous, weight gain from early childhood. In contrast, reactive obesity refers to overweight related to personality disturbances in passive, depressive individuals who may have chronic periods of overeating. The onset of this type of obesity often corresponds with life events or increased stress and predominates in adolescents (Mellin et al., 1987). Common contributors to reactive obesity reported by adolescents and their families include: death of a significant person, divorce or remarriage of a parent, family members or friends moving away, change of schools, changes in getting along with parents, and the addition of new family members (James, 1990). The private practice experience of the investigator has supported Mellin et al.'s theory and empirical findings and indicates that the relationship between life events and the self-care agency and self-care practices of obese adolescents warrants explorative study.

Although Orem (1985) did not specifically include life events that have occurred in the family system as a component of the BCFs in her nursing model, life events could be incorporated under Orem's family system factors category of BCFs. Thus, life events was included as an independent variable in the theoretical model and research design for this study because many adolescents have reported becoming obese in reaction to life events occurring

within their family. The existence of a relationship between adolescents' life events and their self-care agency and self-care practices has not been investigated. Therefore, exploratory empirical research concerning this relationship is warranted.

Self-care agency. The fifth variable in the model, self-care agency, is conceptualized as human capability for engaging in self-care and requires conscious, deliberate action aimed at attaining and maintaining health (Orem, 1971, 1980, 1985). The presence or absence of this capability is related to the stage of development of individuals, including their development of self-direction with respect to goal selection and to their level of cognitive, physical, and psychosocial development.

According to Orem (1985), the development of self-care agency is aided by intellectual curiosity, by instruction and supervision by others, and by experience in performing self-care measures--processes which are similar to Bandura's (1977) description of the means by which an individual's self-efficacy is altered. Individuals who have not thought about their self-care role may need to be helped to look at themselves as self-care agents in order to understand the values to which their habits commit them and to appraise the adequacy of their self-care abilities. In contrast, self-care capacities are sometimes developed but cannot be made operational because of conditions associated with

pathologies, injury or disability; and sometimes these capacities are simply not exercised (Orem, 1985).

In 1979, the view of self-care agency as comprising three types of capabilities (foundational and enabling capabilities and capabilities for self-care operations), appeared in the writings of the Nursing Development Conference Group (NDCG). A hierarchical arrangement of the three types of self-care abilities, along with associated components of Denyes Self-Care Agency Instrument (DSCAI) factors are shown in Table 2.

The first level foundational capabilities consist of basic abilities that come into play when individuals perform any type of deliberate actions, not just self-care activities. The power components represented on the second level of the hierarchy consist of a more specific repertoire of self-care skills. Level 3 represents an integration of the level 1 and 2 capabilities and encompasses the most immediate abilities needed to perform self-care activities (NDCG, 1979).

The conceptual work of the NDCG provided guidelines for future researchers interested in measuring the self-care agency concept. Denyes (1980) later developed an instrument to measure self-care agency based on the work of the NDCG (1973, 1979) and the early work of Orem (1971), in which Orem noted that persons possess strengths and limitations in their self-care abilities based on their developmental level.

Table 2

Self-Care Agency Power Components in Relation to DSCAI Factors

Level 3 Capabilities for Self-Care Operations	A. Estimative operations (investigate self and environment)	
	B. Transitional operations (make judgements about what one can, should, and will do to meet self-care needs)	
	C. Productive operations (perform the actual activities)	
<hr/>		
Level 2 Enabling Capabilities for Self-Care	NDCG Power components	DSCAI factors
	1. Maintaining attention and requisite vigilance	Factor 6: Attention to health
	2. Controlled use of the available physical energy	Factor 4: Physical energy levels
	3. Control of the position of the body	
	4. Reasoning within a self-care frame of reference	Factor 1: Ego strength and health decision-making capability
	5. Motivation or goal orientation toward self-care	Factor 6: Attention to health
	6. Decision-making about self-care	Factor 1: Ego strength and health decision-making capability
	7. Acquiring, retaining, and operationalizing technical knowledge about self-care	
	8. Repertoire of skills for self-care	Factor 3: Health and decision-making experience
	9. Ordering discrete self-care actions	Factor 1: Ego strength and decision-making capability
	10. Integrating self-care operations with other aspects of living	Factor 2: Health value Factor 5: Feelings
<hr/>		
Level 1 Foundational capabilities	1. Memory 2. Sensation	3. Perception 4. Orientation
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Note. Adapted from "Self-care agency: Conceptualizations and operationalizations" by H. Gast, M. Denyes, J. Campbell, D. Hartweg, D. Schott-Baer, and M. Isenberg, Advances in Nursing Science, 12 (1), 28-29.

Table 2 also presents a listing of the factors measured in the DSCAI beside the NDCG power components of self-care agency to which they relate. This listing was developed by Gast, Denyes, Campbell, Hartweg, Schott-Baer, and Isenberg (1989), as part of their careful instrument construction designed to reflect the theoretical structure of self-care agency as described by the NDCG (1973, 1979).

When Denyes' subscales are compared to the list of 10 power components of self-care agency, it appears that 8 of the 10 power components are represented by the instrument--all except control of body position and acquired technical knowledge regarding self-care agency. Although important, the omission of these two self-care agency power components from the DSCAI was not considered problematical for this study. Obese adolescents do not usually have significant limitations in control of body position; and it was assumed that adolescents' technical knowledge regarding self-care agency is developing and is not as extensive as adults' knowledge would be.

In nursing, empirical application of Orem's theory to adolescent populations has only recently been attempted. Orem (1985) viewed adolescents as wanting to learn to be responsible for their self-care but needing guidance and support from responsible adults. Researchers such as Eichelberger, Kaufman, Rundahl, and Scwhartz (1980) and Denyes (1980) applied Orem's theory in their research,

adding developmental perspectives to understand how self-care is learned. According to these authors, adolescents learn responsible self-care when allowed to choose from alternatives, to take action, and to evaluate the consequences of their actions.

As self-care needs change through the life span and during various health states, an individual's self-care agency also needs to change, including the learning of new health behaviors. Bruhn and Cordova (1977) described the process of learning wellness behavior and Denyes (1980) described the process of becoming a responsible self-care agent who practices self-care habits. These authors based their theoretical frameworks on the assumption that an individual must develop an awareness of wellness from role models in their immediate environment. Behaviors associated with health promotion are components of the family's lifestyle. Exercise, good nutrition, stress reduction, hygiene, and rest become a part of the family's routine. The following section summarizes these authors' combined descriptions of the evolution of this process which make the influence of the family very apparent.

During infancy, the environmental forces acting upon the infant are almost solely limited to the family. If the infant's wellness needs are only partially met, the infant learns that these needs have low priority in the parent's value system. Imitation of behaviors of family

role models occurs throughout childhood, with positive parenting resulting in children who demonstrate self-reliance, outgoing social behavior, and competence (Baumrind, 1971; Pratt, 1973).

In late childhood, children begin to plan and take initiative. This is believed to be tied to the development of self-esteem. Studies have shown that children with high self-esteem had parents who were more likely to provide carefully defined standards and limits, to seek the children's views and to respect their opinions (Bruhn & Cordova, 1978). During this stage of development, the child also becomes a member of larger groups and begins to make judgements about right and wrong. Responsibility for maintaining moral standards is fostered by the presence of parental warmth and love. Late childhood is believed to be an ideal time for fostering the concept of health as an individual responsibility.

The early adolescent often begins to engage in risk-taking behaviors and learns the health consequences of engaging in such behaviors. Adolescents experience inconsistencies between expectations of the adult society, peers and themselves. For example, the media presents mixed messages such as the following: rather than emphasizing the giving up of a bad habit, such as smoking, cigarettes with lower tar and nicotine are recommended; and, instead of emphasizing a low-fat diet to reduce

cholesterol, companies promote new cholesterol-lowering drugs, thereby eliminating the need to change. In spite of inconsistencies in messages from society and adult role models, however, adolescents begin to formulate a personal philosophy of wellness. Going beyond the inconsistencies observed, they formulate what they consider to be acceptable behavior related to keeping or regaining one's health (Bruhn & Cordova, 1977, 1978).

Denyes identified changes in the adolescent's cognitive, affective/moral and physical growth that contribute to the development of self-care agency. Cognitively, gains are made in the ability to make judgements about what self-care actions are required. Affective/moral development contributes to the ability to experience, recognize, and label feelings which impact on the adolescent's perceptions and willingness to act on their own behalf. In regard to physical development, there is an enhanced ability to seek, obtain, and utilize resources needed to maintain and improve their physical health (Denyes, 1980).

Through formal and informal learning, the adolescent develops wellness behavior, obtaining information, and developing self-care skills along the way. The adolescent's observations of self-care habits practiced by other family members contributes significantly to adolescents' developing concepts of health, to their perceptions of the degree of responsibility they have for their health,

and to the degree of control they perceive themselves to have over their health (Bruhn & Cordova, 1978; Denyes, 1980).

The theoretical literature indicates that many factors are integral to the development of self-care agency and self-care practices and that studies are needed to identify, describe, and predict major contributors to self-care agency. Such findings would be useful in designing interventions to promote self-care practices in obese adolescents. Self-care agency has not been examined in obese adolescent populations; therefore, it was a significant variable to include in the theoretical model and research design for this study.

Self-care practices. Self-care practices are health promoting activities (e.g., exercise, substance avoidance, nutrition, relaxation, and safety), which contribute to overall general health (Muhlenkamp & Brown, 1983). Research supports the proposition that individuals' lifestyle choices and patterns influence their health and longevity. The U.S. Department of Health and Human Services (1980) and the Surgeon General's Report on health promotion and disease prevention, Healthy People (1979), noted that elements of our lifestyles are related to contemporary health problems. The major causes of death are heart disease and cancer, often traceable to personal habits and lifestyles of the individual. Because of the recognition of health promoting behaviors' impact on health and well-being, the

topic of health promoting behaviors has been getting increased attention in regard to adolescents as well as adults.

National concern for the health of adolescents is evident in the "1990 Health Objectives for the Nation" (U.S. Department of Health and Human Services, 1986). One-third of the objectives refer to the health needs of young people, such as lowering cholesterol levels, decreasing adolescent obesity, and providing nutrition education at elementary school levels. The inclusion of adolescent obesity in the nation's health objectives underscores the importance of this study. Such research can enhance understanding of lifestyle factors that influence the self-care practices of the population of concern--obese adolescents--so that changes can be made that will help to achieve national health objectives by improving their health promoting activities and their current health status, including the achievement and maintenance of desirable body weight.

Conclusions. Health promotion efforts in behalf of adolescents are particularly challenging because this developmental period is a time of major physical, cognitive and moral transitions. Being obese adds additional challenges to this period of life change (Perry & Murray, 1982). A basic understanding of the forces that influence the behavior of obese adolescents can facilitate

understanding of both health professionals and families concerning the options and resources required to increase adolescents' self-care agency and self-care practice repertoires.

Orem's (1985) nursing model provides an appropriate framework for understanding the influence of obese adolescents' perceived health status, perceived self-efficacy, life events, and family satisfaction on their self-care agency and self-care practices. Previous studies have not investigated these variables in populations of obese adolescents.

Empirical Literature Review

Literature relevant to the major variables (perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency, and self-care practices) is reviewed in this section. Each subsection describes research concerning the relationships between one of the independent variables and the dependent variables self-care agency and self-care practices. No single study was found in the literature that explored, from a health promotion perspective, the combined relationship between perceived health status, perceived self-efficacy, family satisfaction, life events, and self-care agency of obese adolescents and their self-care practices. Because research concerning these variables was not reported in relation to the obese adolescent population, this review includes studies of

predominantly normal weight, healthy adolescent populations. Studies of adult populations were excluded unless they comprised the only available research exploring particular variables.

Perceived health status. Several studies examined the relationship of perceived health status to self-care practices. Evidence is emerging which suggests there is a relationship between perceived health status and health behaviors. However, none of the studies included obese adolescents as the sample.

Mechanic and Cleary's (1980) research consisted of a longitudinal study over a 16-year time period assessing behavioral characteristics of mother-child pairs associated with positive health. Health status was the outcome variable. Positive health behaviors (the independent variable) was found to be positively associated with both psychological well-being and subjective health status. The findings supported the hypothesis that positive health behavior is part of a complex lifestyle that may reflect the ability to anticipate problems, mobilize to meet them and actively cope. This study is discussed in greater detail in the self-care practices section.

Stewart and Brook (1983) studied general health perceptions as a function of weight. They analyzed cross-sectional data from a general population of 5,817 people aged 14 to 61. Their findings indicated that general

health perceptions showed a slight tendency to vary as a function of weight. Mean General Health Index (GHI) scores were 71 for normal weight people, 70 for moderately overweight people, and 67 for severely overweight people. For the total sample, the mean score was 70 (SD = 15). The Pearson product-moment correlations between GHI scores and weight-for-height indicated a slight inverse relationship between these variables ($r = -.06$, $p < .01$); that is, as weight-for-height increased, general health showed a slight tendency to decrease. Although statistically significant, the low correlation indicated that drawing any conclusions from this finding was unwarranted. Age ranges and corresponding relationships between weight-for-height and health status were not examined in the study (e.g., there was no breakdown of data regarding adolescents only).

Laffrey (1986) obtained similar findings in a descriptive study that compared normal and overweight adults' perceived health status, health conception, and health behavior choices. Laffrey's Health Conception Scale (LHCS) was administered to 33 normal weight and 26 overweight adults. The two groups were not found to differ significantly in perceived health status, health conception, or health behavior choice. The overweight participants did not perceive themselves to be less healthy than the normal weight group.

In a descriptive cross-sectional survey, Barnett (1989)

examined the relationships between adolescents' perceived health status, definition of health, health value, perceived self-efficacy and health promoting behaviors of adolescents. The convenience sample ($N = 175$) consisted of early ($n = 61$), middle ($n = 55$) and late ($n = 59$) male and female adolescent volunteers who were students in a suburban public middle school or high school or a university in a large metropolitan city in the Southwest. Sherer et al.'s (1982) General Self-Efficacy Questionnaire was administered along with Pender's (1987) Health Promoting Lifestyle Profile (HPLP). The HPLP measures behaviors related to health responsibility, exercise, nutrition, interpersonal support, stress management, and self-actualization. A summed score was obtained from both questionnaires.

A significant positive relationship was found between health status and health promoting behaviors ($r = .53$, $p < .01$) and between health conception and health promoting behaviors, ($r = .50$, $p < .01$) in the middle adolescent group. These relationships were not statistically significant in the early and late adolescent groups. The nonsignificant findings for perceived health status and definition of health as predictors of health promoting behaviors in one or more of the adolescent groups represented a lack of support for Barnett's use of Pender's (1987) HPM as a framework for predicting health promoting behaviors of all adolescents.

Pender (1987) theorized that each of these concepts (perceived health status and health conception) directly influenced health promoting behaviors. Barnett's study is significant in that perceived health status and perceived self-efficacy have been studied with an adolescent sample. However, since the subjects were from an upper socioeconomic level, were predominantly Caucasian, and were not identified as an obese adolescent population, only limited generalizations from the findings could be made.

Using a descriptive, cross-sectional, correlational design, Gaut and Kieckhefer (1988) studied the perceived health status and self-care agency of 51 adolescent patients recruited from three outpatient clinics who were chronically ill with asthma, diabetes, and convulsive disorders. Gaut and Kieckhefer (1988) reported finding a significantly positive relationship between health status and health practices among these adolescents ($r = .57$, $p < .001$). In addition, they investigated the relationship between health status and self-care agency dimensions using DSCAI subscales. Findings indicated a statistically significant positive correlation between health status and the following dimensions of self-care agency: ego strength and decision-making capabilities, knowledge and decision-making experiences, and feelings. Although the sample size was small, the results provided insight into the relationships between self-care agency, self-care practices and perceived

health status of chronically ill adolescents.

Although fewer studies of adolescent than adult populations have examined the relationships between perceived health status and self-care practices, positive correlations between these variables are beginning to be found in multiple studies. Identification of obese adolescents' perceived health status and relationships between obese adolescents' perceived health status, self-care agency and self-care practices, however, have not yet been studied.

Perceived self-efficacy. A growing body of literature supports the importance of self-efficacy in helping to account for initiation and maintenance of behavior change, although only a few published studies have specifically addressed its relationship to health practices. Special attention was given in the literature review to research concerning the relationship between self-efficacy and weight control. Studies concerning self-efficacy were divided into three categories according to the research design and methods used: (a) a survey study which examined self-efficacy levels of subjects who vary in relation to a particular health-related behavior (e.g., contraceptive use); a survey study which examined the effect of a behavior change program (e.g., weight loss) on self-efficacy; (b) experiments which deliberately manipulated self-efficacy as a treatment variable; and (c) descriptive studies which examined relationships between perceived self-efficacy and

health promoting behaviors.

Levinson (1986) attempted to extend self-efficacy theory to a new behavioral domain--teenage girls' contraceptive use. The purpose of this retrospective survey was to identify the antecedents that account for differences in teenage girls' behavior in dealing responsibly with sexual activity. The convenience sample ($N = 258$) was obtained over a 10 week period from females 20 years of age or younger attending a family planning clinic. The average respondent's age was 17 years. Questionnaires were used to collect demographic data and information regarding their sexual activity, contraceptive use, and contraceptive self-efficacy (CSE). Significant correlations were reported for two out of four of the CSE factors and contraceptive use: (a) conscious acceptance of sexual activity by planning for it ($r = .15$, $p < .05$), and (b) assumption of responsibility for the direction of sexual activity and contraception ($r = .22$, $p < .001$). Multiple regression analyses were computed for the effects of demographics, sexual experience, and contraceptive and reproductive knowledge on contraceptive use. Together, they accounted for 18 percent of the variance in contraceptive use, with CSE adding another nine percent.

The results indicated that teenage girls with a higher CSE orientation tended to feel more strongly that they should be and are able to be responsible for their sexual

activity and contraceptive protection. Teenage girls with lower CSE orientation reported experiencing more conflict with their sexual feelings and behaviors and perceived themselves to be less effective contraceptors. Follow-up data on actual contraceptive use or rates of pregnancy were not ascertained. If intentions and skills are the first step toward effective use of contraception, this study suggests that strategies to increase self-efficacy can be an effective way to improve contraceptive behavior (Levinson, 1986).

In a prospective survey of factors related to weight loss one and two years following a behavioral treatment program, Jeffrey et al. (1984) assessed self-efficacy at pretreatment, posttreatment, and one year follow-up in a randomly selected sample of middle-aged males ($N = 89$). Jeffrey et al. reported that pretreatment self-efficacy scores were more predictive of weight loss than posttreatment self-efficacy scores. High pretreatment self-efficacy scores were also found to be significantly associated with initial and with long-term weight loss (both at one and two years posttreatment).

In an attempt to increase self-efficacy through a cognitive-behavioral treatment protocol, Gilchrist and Schinke (1983) completed an experimental study with male and female high school students ($N = 107$). Subjects were randomly assigned to either the treatment or control

group. The treatment group was presented with factual material on reproduction and birth control together with skills training and practice. Skills training included participation in role playing situations where discussion of birth control was initiated, knowledge about contraception use was acquired, and refusing unacceptable demands was practiced. As a result of this intervention, students showed marked improvement in self-efficacy ratings concerning their ability to use birth control, exhibited more effective contraceptive problem-solving abilities, and expressed stronger intentions to use contraception prior to their next sexual experience than students not receiving the intervention.

Chambliss and Murray (1979) examined the effect of manipulating self-efficacy in an experimental study with a convenience sample of overweight, female, psychology students (N = 68). On the basis of Rotter's (1966) Locus of Control Scale, subjects were classified as internal (perform behavior on the expectancy that the rewards are contingent upon internal resources, e.g., their own effort) or external (behavior contingent upon external rewards, e.g., luck, chance, fate, or powerful others). The internal and external subjects were randomly assigned to one of three treatment conditions, including: (a) self-efficacy communication, (b) drug efficacy, and (c) a control group.

During the first two weeks of the study, all subjects

received placebo drugs containing lactose to be taken daily. All subjects were also given a standard weight reduction program, including moderate diet, mild exercise, and simple behavioral techniques. At the third meeting subjects in the self-efficacy manipulation group were debriefed about the placebo medication and congratulated on their own efforts. They were given a lecture on recent research pointing to personal effort and self-control as the major factors in weight loss and maintenance to influence them to reattribute their successful weight loss to their own efforts rather than the medication. Subjects in the drug efficacy weight reduction group were not debriefed but were encouraged to continue their medication. They were given a lecture on recent research pointing to the use of drugs for controlling metabolism. The subjects in the control group were given no communications concerning attribution of success. Subjects in all groups were asked to continue their assigned treatment condition for a 2-week follow-up period.

Chambliss and Murray's (1979) findings indicated that internal subjects given a self-efficacy communication achieved the greatest weight loss. A post hoc Duncan analysis showed that the internal/self-efficacy group was significantly different from all other conditions ($p < .05$). No other differences were significant. The finding that self-efficacy manipulation was effective only for those with an internal locus of control suggests that the importance

of self-efficacy may, in large part, depend on perceived influence in controlling outcomes. Chambliss and Murray's results were consistent with those of their earlier study on smoking reduction. They considered the findings a conceptual replication. Maddux and Rogers (1983) also reported that messages to enhance self-efficacy positively influenced self-efficacy scores and behavioral intention of college student smokers. Although of interest to this investigator, the differentiation of internal and external control among obese adolescents was not a part of this study's design.

Barnett's research (1989), that is described in the perceived health status section, also has relevance to the investigator's choice of the self-efficacy variable for inclusion in the design of the present study. Barnett reported perceived self-efficacy to be the best indicator of health promoting behaviors for early adolescents ($r = .29$, $p < .05$), for middle adolescents ($r = .56$, $p < .01$), and for late adolescents ($r = .56$, $p < .01$). These results indicated that the higher the adolescent's perceived self-efficacy, the greater the number of health habits he or she is likely to perform, especially in middle and late adolescence. Barnett also used stepwise multiple regression to identify the strength of health value, perceived self-efficacy, definition of health, and perceived health status as predictor variables in explaining health promoting

behaviors. Of the four predictor variables, perceived self-efficacy was the only one found to be consistently predictive of health promoting behaviors in each age group. Perceived self-efficacy accounted for 8, 30, and 31 percent of the variance respectively for early, middle and late adolescents. Perceived self-efficacy was, thus, a particularly strong predictor of health promoting behaviors for middle and late adolescents. This was the only study found in which adolescents' perceived self-efficacy was studied within a health promotion framework.

Weitzel (1989) reported similar findings in a study designed to test Pender's (1987) health promotion model with adults. The relationship between four psychological variables (importance of health, perceived health locus of control, health status, and self-efficacy) and certain health promoting behaviors were examined using the HPLP (Walker, Sechrist, & Pender, 1987). A volunteer sample of 179 blue-collar workers (nonprofessional) employed at a college campus setting completed self-report instruments. Of the Pearson product-moment correlations performed, the strongest relationships were found to be between self-efficacy and three health promotion indicators: (a) self-actualization ($r = .42$), (b) interpersonal support ($r = .34$), and (c) total health promoting lifestyle profile, ($r = .33$). All of these correlations were statistically significant ($p < .001$). The correlation between health

status and total health promoting lifestyle profile was also reported to be significant ($r = .34$, $p < .001$). Stepwise multiple regression analyses indicated that health status and perceived self-efficacy, singly or in combination, accounted for the most variance across the total HPLP. Together they explained 15 percent of the variance for the total HPLP. The findings of this study suggested that blue-collar workers are interested and involved in health promoting activities. Further validation of these results would support the development of health promotion programs geared to blue collar workers at work sites and other appropriate settings.

In all of the health-related studies reviewed, self-efficacy appeared to be a consistent predictor of short- and long-term success in behavior change (Strecher et al., 1986). There have also been multiple studies suggesting a positive relationship between perceived self-efficacy and health promoting behaviors in both adolescent and adult samples (Barnett, 1989; Gilchrist & Schinke, 1983; Weitzel, 1989). Studies of relations between perceived self-efficacy and self-care agency were not found. Empirical research suggests that perceived self-efficacy is an important variable to include when investigating explanatory factors related to health promoting behaviors. Therefore, additional research is needed to determine how self-efficacy is related to

self-care agency and to determine strategies for enhancing perceived self-efficacy as a means of enhancing self-care agency and promoting positive health behaviors.

One of the strengths of the self-efficacy framework is its direct applicability to the practice of modifying health behaviors. If self-efficacy is found to be low in obese adolescents, professionals will be concerned with identifying particular situations where behavioral rehearsal is needed for the adolescent to feel confident in performing the desired behavior. For example, practice at making appropriate food choices or role playing how to handle special occasions would provide experience for future performance, thereby enhancing the adolescent's self-efficacy. A better understanding of the circumstances in which self-efficacy is important should lead to more effective health promotion strategies related to the adolescent's weight management.

Family satisfaction. Specific studies of the relationship between family satisfaction and self-care agency and self-care practices were not found. Obesity research suggests indirectly that family adaptability and cohesion contribute positively and/or negatively to the obese adolescent's ability to lose weight. Studies which reflect these findings are presented in this section. Research on family characteristics relating adaptability and cohesion with general health outcomes is also reviewed.

Pratt's (1973) descriptive-correlational study examined the relationships between childrearing methods used by parents and their childrens' personal health care practices. A cross-sectional sample of 510 families with children aged 9 to 13 were surveyed. Separate interviews were conducted with a child, father and mother in 237 families and with a child and mother in an additional 237 families. The detailed interview questions concerned health and family behaviors. Pratt's findings suggested that childrearing methods, such as granting autonomy, were found to be associated with competency, self-control, intellectual growth, outgoing social behavior and self-reliance; these types of effects on the child can contribute to the development of self-care ability. This study did not specifically measure family satisfaction, but family attributes of adaptability and cohesion were represented by families described as encouraging decision-making, allowing space and time for friends, and granting autonomy. Conversely, Hertzler (1981) and Ganley (1986) reported that autonomy is not promoted in obese families who are overly protective or cohesive.

Two additional descriptive studies reflected positive health outcomes in families who promoted autonomy and independence, as compared with families who promoted passiveness, dependence, and insecurity. Lewis and Lewis (1982) and Laskey and Eichelberger (1985) reported positive

health outcomes for adolescents when parents transferred self-care decision-making in a progressive and developmentally appropriate manner. In comparison, adolescents with poor health-related decision-making skills had difficulty making decisions in other areas of their lives. Research suggests that internal family dynamics affect the health and health promotion behaviors of families (Duffy, 1988).

Many researchers contend that particular strengths or weaknesses of the family influence health habits and weight change patterns of the obese adolescent. Success in losing weight and maintaining desirable weight has been found to be influenced by aspects of the family system. In Dietz's (1983) study of family characteristics associated with adolescents' weight loss, observations of 71 families of overweight adolescents led to the conclusion that the adolescents' obesity often serves a homeostatic function within families. In families with younger children (7-13 years), parents tended to be controlled by their obese child and had difficulty with limit-setting, including limiting the child's food intake. Prompt weight reduction was reported when parental control was restored. In families with obese adolescents, Dietz reported observing a tendency towards parental overinvolvement. When the adolescent's autonomy was increased, by altering the family's pattern of interaction, weight loss often resulted. According to

Dietz, achievement of weight loss indicates that the family is capable of changing to support the needs of the affected member, whereas failure signals the need for further investigation or interventions within the family.

Kog and Vandereycken (1989) compared family interaction characteristics (cohesion, adaptability, and conflict) among eating disorder patients and normal controls using a behavioral and a self-report questionnaire. Thirty families with a member with an eating disorder (the patient) were matched with 30 normal control families according to social class, family size, age, and sex of the adolescent or young adult. The age of the parents and remaining children were also matched as far as possible. The matched patient/control volunteers ranged from 15 to 24 years of age. The researchers investigated whether the age group of the patient (adolescent or young adult) and the clinical symptomatology [restricting anorexic, ($n = 19$), normal weight and anorexic bulimic ($n = 11$) or asymptomatic normal controls ($n = 30$)] had a significant effect on the family interaction variables of cohesion, adaptability, and conflict. Parent and family members completed a self-report measure, the Leuven Family Questionnaire (Kog, Vertommen & Degroote, 1985), while in the same room at a university psychiatric center.

Individual and family responses related to cohesion, adaptability, and conflict were compared. The age of the

patient proved to be unrelated to family interaction; however, some relationships between symptomatology and family interaction were found to exist. Restrictive anorexics reported more cohesion than both the bulimics and the normal controls ($p < .05$). The bulimics and normal controls did not significantly differ in their perception of cohesion in their family. The bulimic subgroup reported more disorganization (extreme adaptability) in their family interaction than both the anorexics and the controls, but this difference was not statistically significant.

The anorexic-bulimic families were reported to have a higher degree of conflict avoidance, stability and interpersonal boundary problems than the anorexic families. The normal-weight bulimic families were also found to have strong interpersonal boundaries and an absence of discussion of disagreements; however, in contrast to the other eating disorder patients, they perceived their families to be uncohesive, conflictual, and badly organized. The researchers concluded that families with an eating disorder patient interact differently than normal families.

These findings support the theoretical work of Minuchin et al. (1975), Satter (1986), and Bruch (1961) who stressed the importance of the family in the development of eating disorders and weight problems. Kog and Vandereycken (1989) consistently found that eating disorder families reported less discussion of disagreements between parents and

children than normal families. Moreover, the eating disorder patients, themselves, also perceived their families to be cohesive and nonconflictual. This avoidance of tension and disagreements in the family was labeled "conflict avoidance" by Minuchin, Rosman, and Baker (1978). The overall picture of the anorexic family is that of a tightly knit structure, with characteristics of interpersonal boundary problems, excessive stability and conflict avoidance.

Uzark, Becker, Dielman, Rocchini, and Katch (1988) studied the beliefs held by obese adolescents and their parents with the purpose of identifying psychosocial barriers to compliance in a hospital-based weight control intervention. Forty obese adolescents, 10 to 16 years of age, and their parents were surveyed. Significant correlations ($p < .05$) were obtained between six beliefs of these obese adolescents and their weight loss outcome: (a) personal control over weight ($r = .38$), (b) barriers or difficulty of losing weight ($r = .36$), (c) medical problems as a cause of their obesity ($r = .38$), (d) parental attitudes regarding the child's future obesity ($r = .36$), (e) family problems as a cause of their obesity ($r = -.37$), and (f) perceived willingness of family members to diet ($r = -.37$). The only parental belief that was found to be associated with the adolescent's weight loss compliance was a positive parental attitude (the expectation that the

adolescent was not likely to be overweight in the future).

The findings suggested that all adolescents' beliefs, except those concerning family problems and perceived willingness of family members to diet, contributed to their weight loss outcome. Adolescents who attributed their obesity to family problems also reported higher frequencies of family problems which negatively influenced their weight loss. The negative association of perceived willingness of family members to diet and weight loss outcome was contrary to the direction of the study hypothesis. The greater weight loss in adolescents who perceived more barriers/difficulty and less family willingness to diet may reflect the importance of having realistic expectations related to behavioral compliance. In addition, Uzark et al. (1988) proposed that adolescents enrolled in a weight control program who appreciate the difficulty of the personal behavior changes required may have high self-efficacy.

Based on the findings, Uzark et al. concluded that:

- (a) an assessment should be made of the attitudes and beliefs of obese adolescents and their parents, especially with regard to their obesity attributions, personal control perceptions, and views concerning barriers to weight control;
- (b) family members may need education to enhance supportive interactions in the adolescent's social environment;
- (c) an attempt should be made to increase

feelings of control over weight by helping adolescents to focus on behaviors that are alterable; and (d) it may be especially important to include problem-solving skills and stress management techniques in health education programs for obese adolescents.

All studies cited in this section were important to the design of this study because family influences found to underlie successful weight loss were related to components of the family satisfaction construct. For example, cohesion includes family boundaries, coalitions, time, space, friends, decision-making, interests and recreation. Adaptability includes assertiveness, control, discipline, negotiation, roles, and rules (Olson & Wilson, 1982). In addition, the importance of self-efficacy in weight control was again supported. Since family characteristics of adaptability and cohesion are often problematic in families with obese members, through their impact on the adolescent's independence and decision-making, investigation of the relationship between family satisfaction and the obese adolescent's self-care agency and self-care practices is warranted.

Life events. Over the past decade health professionals have begun to scrutinize the role and function of stressful life events as they relate to illness (Miller, 1981). However, the role or function of life events in relation to self-care agency and self-care practices has not been

reported.

Several studies have addressed the significance of life events as contributing factors in the diseases of children. Obesity theories have also suggested that the increased occurrence of life change events may contribute to the onset of obesity. The influence of recent life change events on weight loss was reported in a randomized experimental study by Mellin et al. (1987). The purpose of the study was to validate the effectiveness of the SHAPEDOWN program, an intervention for obese adolescents. Changes in weight were evaluated in a treatment and a control group over a 15 month time period. From the descriptive information provided by the volunteers, Mellin et al. investigated the relationship between number of life events and weight loss outcomes. In the small sample of 33 adolescents between the ages of 14 and 18, 11 reported no recent life events and 22 reported the occurrence of one to three recent life changes. Adolescents who reported absence of recent life changes were found to have a greater weight loss ($p < .05$) than the adolescents reporting one to three recent life changes. The sample size was small, but the findings may be significant to consider when setting realistic weight loss goals. Health professionals might expect less weight loss in adolescents reporting several life events than in adolescents who have not had to make any adaptations to change.

Heisel, Ream, Raitz, Rappaport, and Coddington (1973) studied several groups of children in terms of social-psychological events that had occurred in their external environments one year prior to the onset of illness. Five distinct pediatric patient populations were studied [juvenile rheumatoid arthritis ($n = 34$), hemophilia ($n = 35$), general pediatric patients ($n = 32$), surgical patients ($n = 31$), and psychiatric patients ($n = 88$)]. The Children's Life Events Scale was used to measure frequency of various life events to which they had had to adjust prior to the onset of their disease. The effects of sex, age, race, and social class differences on the frequency of the life events were examined. Age proved to be the demographic variable most significantly related to the frequency of life events. Based on their findings, the researchers constructed a growth curve, with age as the independent variable and life change units as the dependent variables, upon which a life event score for a child could be predicted. By drawing curves for one and two standard deviations above the mean, they could tell at a glance how deviant a given child was from the control population.

The results were compared with findings from an earlier investigation of life events in a population of over 3,500 healthy children. Chi-square analysis was used to determine whether the frequency of reported life events for the five patient groups exceeded one standard deviation from the

healthy population's mean. The results indicated that the frequency of reported life events was significantly different in every instance. A significantly higher proportion of children than expected (2 or 3 times as many) in four of the five patient groups (rheumatoid arthritis, general pediatrics, surgical, and psychiatric patients) had experienced more frequent and/or more severe life events prior to the onset of their illnesses than did their healthy peers. Heisel et al. (1973) reported that 34 percent of the children developed illness within a year of experiencing major psychophysiologic adjustments to the external environment. Major life events had been experienced by twice as many children with disease than would have been expected in a control population of healthy children. The authors interpreted these results as providing evidence that social-psychological factors played a part in the pathogenesis of the illness.

The theoretical and empirical literature support that life events need to be explored in obese adolescent populations. The findings suggested that life events played a part in other illnesses and could play a part in adolescents' obesity.

Self-care agency. Denyes (1988) examined relationships among basic conditioning factors, self-care agency, self-care practices and health in an adolescent sample of junior high and high school students ($N = 369$).

For this descriptive-correlational study, data were collected using Denyes Self-Care Agency Instrument (DSCAI), Health Status Instrument (DHSI), and Self-Care Practice Instrument (DSCPI). The absence of health problems was found to be positively correlated with self-care agency ($r = .12$, $p = .018$). This indicated that adolescents with fewer health problems tended to report higher levels of self-care agency than did those who reported more health problems. However, correlations between the basic conditioning factors of age, gender, educational level, birth order, and self-care agency and self-care practices were nonsignificant. A weak inverse relationship was found between number of siblings ($r = -.13$, $p < .05$) and self-care agency; that is, self-care agency levels showed a slight tendency to be higher in adolescents with fewer siblings. A more strongly positive and statistically significant correlation was found between self-care agency and self-care practice scores ($r = .38$, $p = .000$). This finding was considered to support Orem's proposition that persons who take action to provide self-care have specialized capabilities for action (Orem, 1985).

Denyes also explored the ability of the basic conditioning factors individually and collectively to predict self-care agency using stepwise multiple regression analysis. Most of the variance in self-care agency remained unexplained by the basic conditioning variables studied.

Only three percent of the variance in self-care agency was found to be accounted for by health problems and number of siblings. Zero-order correlations between each of the basic conditioning factors and self-care practices were also computed. Only age and gender were found to be significantly correlated with self-care practices. Younger adolescents reported engaging in higher levels of self-care practices than did older adolescents ($r = -.13$, $p < .01$); male adolescents reported higher levels of self-care practices than female adolescents ($r = -.11$, $p < .04$). All of the correlations were extremely low, however.

Hierarchical multiple regression analysis, which included self-care practices as the dependent variable with self-care agency and basic conditioning factors, in that order, as independent variables, was also done. In this analysis, self-care agency was found to be a significant predictor of self-care practices ($B = .384$, $p < .001$) accounting for 14.7 percent of the variance. The only basic conditioning factor that added significantly to the amount of variance in self-care practices was age ($B = -.129$, $p < .01$). When combined, self-care agency and age accounted for 16 percent of the variance in self-care practices.

A final regression analysis included self-care practices, self-care agency and basic conditioning factors, in that order, as predictor variables with general health

state as the dependent variable. Self-care practices ($B = .496$, $p < .001$) and self-care agency ($B = .203$, $p < .001$) were each found to be significant predictors of general health state, with self-care practices being the stronger predictor. The variance with self-care practices alone was 35 percent; the addition of self-care agency accounted for 39 percent. The combination of self-care practices, self-care agency, and absence of health problems accounted for 41 percent of the variance in the health outcome (Denyes, 1988).

Gaut and Kieckhefer (1988) conducted another study supportive of a relationship between self-care agency and self-care practices in adolescent populations. In this descriptive cross-sectional study a convenience sample of 51 adolescents aged 11-20 years who had asthma, diabetes, and/or convulsive disorders responded to Denyes' DSCAI and DSCPI. All self-care agency factors were found to be significantly correlated with self-care practices, except attitude toward health. The authors questioned whether the items measuring attitude toward health were appropriate for their population. In addition, a statistically significant positive relationship was found between self-care practices and health status ($r = .57$, $p < .001$). This study adds support for Orem's model for health promotion in that it demonstrated positive relationships between self-care agency, self-care practices and health status.

The relationships of many of the basic conditioning factors identified by Orem (including life experience, family system factors, social and economic state, available resources) to self-care agency and self-care practices have not yet been studied. While Denyes and Gaut and Kieckhefer's findings are preliminary, they suggest that the health of adolescents can be promoted when nursing systems are designed to assist persons to practice self-care. Further research regarding relationships between basic conditioning factors and the self-care agency and self-care practices of various populations of adolescents is warranted and will underscore the significance of promoting self-care practices through strengthening the self-care agency of obese adolescents.

Self-care practices. The demonstration of a positive relationship between actual day to day practices and the whole spectrum of physical health most frequently referred to by researchers and professionals is the landmark study by Belloc and Breslow (1972) of a large Alameda County California adult population. The idea that common habits (such as hours of sleep, regularity of meals, physical exercise, cigarette smoking, and alcohol consumption) may promote or detract from optimum physical health was generally accepted in the early 1970s but there was little empirical support for this belief. Data were gathered from questionnaires distributed to a probability sample of 6,928

adults (over the age of 20, or over 16 if married). Respondents reported their physical health status and their health practices related to the following: sleeping, eating, physical activity, alcoholic beverage consumption, and smoking. The study results indicated that good health practices were associated with positive health and that the effects of the practice of good habits are cumulative; that is, those who followed most or all of the health practices were in better health, even though older, than those who followed fewer of them. This association was found to exist independently of age, sex, or economic status.

Mechanic and Cleary (1980) identified factors associated with the maintenance of positive health behavior in an exploratory, longitudinal, 16-year study of 350 randomly selected mother-child pairs from seven Madison, Wisconsin schools. A combination of interviews and questionnaires were used to collect initial data on health and illness behaviors in 1961. In 1977, 333 of the 350 grown-up children were located and responded to a follow-up questionnaire that was changed slightly to improve some items and address new research concerns.

The researchers compared their findings from the 1961 reports of the mother and child and the repeated interviews in 1977, which included reports of parental behavior toward respondents when they were younger. Regression analyses indicated that having more education ($B = .24$) and being

female ($B = .22$) were the most important predictors of positive health behavior ($p < .05$). In comparing the health and illness behaviors reported in 1961 and 1977, there was little correlation in responses (range of $r = .02$ to $.20$). Items yielding the greatest stability over time were "not paying attention to pain", "taking risks", "not telling others when feeling ill", and "continuing usual activities when sick". There appeared to be some continuity in stoicism: that is, young children who did not pay attention to pain were more likely to become adults who deny pain, are willing to take risks involving possible injury, do not discuss their symptoms with others, and resist releasing themselves from activities when ill.

The authors concluded that health resources should be focused on targeted problems such as smoking, physical inactivity, and poor diet rather than global efforts to define and predict who will or will not be responsible for their health. One of the limitations of the research, identified by the authors, is that many of the behaviors correlated with damage to health are not under the individual's control due to prior developmental influences, biological reasons, or because the behaviors serve other personal needs. The findings obtained in this 16-year follow-up study do not provide a strong basis for development of major educational interventions to encourage more healthful behavior patterns during childhood.

However, this does not mean that influences during the childhood years are unimportant to the formulation of good health practices and the encouragement of self-responsibility.

Investigators who presented their research at a 1979 conference entitled "Self-Responsibility for Health: Focus on the Child and Family" evidenced variability in the theoretical approaches, definitions, and methods they had used as guidelines for their research concerning the health behavior of young children. Their conceptual frameworks regarding the development of positive health behavior suggested that predisposing, enabling, and reinforcing factors include family influences, child development and psychological characteristics that affect the health behavior of children and, consequently, their health status. Nine categories of health behavior that could be learned by children under age 14 were delineated during this conference. Categories were selected because of epidemiological data indicating that children were currently at risk or that the behaviors were likely to relate to future lifestyle and risk factors (Bruhn & Parcel, 1982).

The categories of positive health behaviors selected correspond very closely with the self-care practice instrument (PLQ) used in this study. A comparison of the self-care practice categories included in this instrument

and the positive health behaviors identified at the conference is presented in Table 3. The two lists are similar except the PLQ does not include stress management and dental hygiene, while it has the categories relaxation and general health promotion that were not included in the behavior categories delineated during the conference.

Bruhn and Parcel (1982) summarized the health behavior assumptions delineated by the Health Status Task Group at the conference. These assumptions are congruent with those foundational to the proposed study: (a) health behavior encompasses physical, social and mental health;

Table 3

Health Behaviors Recommended at the "Self-Responsibility for Health: Focus on the Child and the Family " Conference and Those Included in the PLQ *

Health Behavior Categories in Personal Lifestyle Questionnaire	Categories of Recommended Health Behaviors
safety	automobile, household and recreational safety
substance use	substance use
exercise	exercise
nutrition	food habits
relaxation	sleep and rest stress management
general health promotion	dental hygiene

* PLQ = Personal Lifestyle Questionnaire

(b) certain factors contribute to health behavior and certain interventions can affect health behavior; (c) currently it is not known how health behavior affects long term outcomes of health; and (d) there is a relationship between health behavior and health status.

Conclusions

The theoretical and empirical literature reviewed supported the inclusion of each of the independent and dependent variables in the theoretical framework and research design for this study. Both the theoretical and the research literature supported the view that adolescents are capable of determining their health status to some extent, of learning wellness behavior, and of developing into self-care agents. Whether obese adolescents perceive themselves to be healthy or not healthy has not been documented. Perceived self-efficacy theory and research suggests that obese adolescents' perceived self-efficacy warrants examination. In addition, family satisfaction studies have not been carried out on the obese adolescent population. Likewise, studies have not examined the role or function of life events in relation to self-care agency and self-care practices.

In summary, the literature review indicated that research is needed to assess the relationship between each of the independent variables and the outcome variables (self-care agency and self-care practices) among obese

adolescents. Descriptive studies to identify perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency and self-care practices in obese adolescent populations are needed to generate a better understanding of factors that influence the health behaviors of this population. This knowledge can lead to hypotheses development and to the testing of appropriate interventions to promote the general health and well-being of obese adolescents, as well as their attainment and maintenance of a desirable weight.

CHAPTER III

METHODOLOGY

The design of the study, as well as the methods used to implement it, are described in this chapter. The sample, the data collection instruments, the pilot study and main study data collection procedures, and the methods of data analysis are sequentially presented.

Design of the Study

A descriptive-correlational design was used to examine the relationships between selected basic conditioning factors and the self-care agency and self-care practices of obese adolescents. The theoretical framework for this study was based on Orem's (1971, 1980, 1985) self-care framework. This research design allowed for gathering information concerning the relationships between the independent variables (perceived health status, perceived self-efficacy, family satisfaction, life events) and the intermediate and dependent variables (self-care agency and self-care practices) in a sample of obese adolescents, as well as exploration of the relative predictive strength of each basic conditioning factor in relation to the outcome variables self-care agency and self-care

practices. The goal of this descriptive-correlational study was to describe relationships among variables rather than to infer any cause-effect and to lay the groundwork for further, more rigorous research which would test hypotheses related to the study variables (Polit & Hungler, 1983).

Description of the Sample

The target population for this study was all obese adolescents in California. The accessible population consisted of obese adolescents who attended two weight loss camps in southern California and obese adolescents who were recruited through health professionals throughout the state. Criteria for inclusion in the sample included: (a) between 12-18 years of age, (b) a relative weight of 20 percent or more above desirable weight, and (c) willingness to participate as indicated by returning a signed consent form and a completed questionnaire.

The convenience sample consisted of a total of 100 obese male and female adolescents who were between 12 and 18 years of age. Forty-six of the participants were attending one of two privately sponsored summer weight-loss camps in southern California that provided nutrition education, behavior modification, counseling, and a physical fitness program for children and adolescents aged 9 to 18. Of the twenty campers who attended the boys' camp, 12 qualified to participate; nine (75 percent) of the boys

who met the sample selection criteria completed the questionnaires. Forty-one of the 53 girls who attended the girls' camp qualified to participate; 37 (90 percent) of the girls who met the sample selection criteria completed the questionnaires. These adolescents were recruited as they registered to attend either a three or six week program.

In order to achieve a sample size of 100, an additional 54 participants were recruited by eight health professionals located in northern, middle and southern regions of California after a notice was displayed in the SHAPEDOWN newsletter. SHAPEDOWN is a weight management program offered by nurses, social workers, dieticians and mental health professionals throughout the country. The newsletter is a resource that provides updates on research and clinical practice for health professionals who operate SHAPEDOWN programs. The notice indicated that research volunteers were needed for a study of factors influencing health habits of obese adolescents and listed the investigator's phone number. Two registered dieticians and six registered nurses responded and recruited obese adolescents known to them. Five of the nurses were employed in hospitals or school settings; the dieticians and one nurse were in private practice.

A sample of 100 participants was deemed adequate based on Polit and Hungler's (1983) recommendation of a

sample size of 10, and preferably 20 or 30, subjects for each variable included in a study design. Since there were four independent variables (perceived health status, perceived self-efficacy, family satisfaction, and life events) and one intermediate variable (self-care agency) with self-care agency and self-care practices alternating as the dependent variable, a sample size of 100 was considered to be adequate.

Instruments

A demographic questionnaire and six self-report instruments comprised the questionnaire packet used to collect the data for this study. After consideration of conceptual congruency with the theoretical framework of the study, as well as ease of administration, availability and appropriateness of the instruments for use with adolescents, the following instruments were selected as the most appropriate for this study: (a) a Cantril Ladder (Cantril, 1965) to measure perceived health status, (b) the General Self-Efficacy Subscale (Sherer et al., 1982) to measure perceived self-efficacy, (c) the Family Satisfaction Questionnaire (Olson & Wilson, 1982) to measure satisfaction with one's family related to cohesion and adaptability, (d) the Adolescent-Family Inventory of Life Events & Changes (McCubbin et al., 1981) to measure family-oriented life events and changes experienced by the adolescent, (e) Denyes

Self-Care Agency Instrument (Denyes, 1980) to measure adolescents' capability for self-care, and (f) the Personal Lifestyle Questionnaire (Muhlenkamp & Brown, 1983) to measure the extent to which obese adolescents engage in self-care practices. Each of the instruments used in this study is described in the following sections.

Demographic Questionnaire. The Demographic Questionnaire developed by the investigator (see Appendix A) was designed to obtain information about personal characteristics in order to describe the study sample and to determine its representativeness. The first sheet asked for the testing location (city), if they were campers or volunteers by mail (noncampers), age, birthdate, height, weight, triceps skinfold (if known), and if medical problems existed. Relative weight was used to determine the camper and noncamper's degree of obesity since it was not possible to obtain triceps-skinfold measurements from each of the participants. The investigator calculated the relative weight of each participant, determined their qualification to participate based upon preestablished criteria, and coded their questionnaire with a number that corresponded with their testing location to determine who were campers and noncampers. The remainder of the self-report data requested includes: sex, race, grade level, number of people in family, parents' level of education and marital status, who currently influences

the adolescent's health habits the most, age when the individual first became overweight, and problems occurring within one year of the time they became overweight.

Cantril Ladder. This self-anchoring scale (see Appendix B) was used to measure perceived health status. The general format is to have subjects define their own anchoring points on a continuum between poles that represent the "best" and "worst" extremes. Based on their own perceptions, goals and values, and assumptions concerning what is being measured, respondents estimate their current situation by locating themselves anywhere along a vertical scale (Cantril, 1965). Cantril believed that a researcher could not accurately appraise individuals' worlds of reality if subjects were forced to make choices between categories, alternatives, symbols, or situations posed to them. Cantril's purpose in developing the scale was to enable researchers to obtain data about the world as it is perceived by the individuals tested instead of imposing the researchers' worlds on them. Cantril ladders have been used to measure a variety of variables, including perceived health status and life satisfaction (Barnett, 1989; Laffrey, 1986). Most researchers, including this investigator, have treated the responses as interval level data.

The validity of the Cantril Ladder was supported by Garrity, Somes, and Marx's (1978) review of research

showing significant correlations between self-rated health and various hypothesized variables. In addition, responses to the self-rated health scale were reported to be stable over a 2-year period in a study by Suchman, Phillips, and Streib (1958).

General Self-Efficacy Scale (GSES). The GSES (see Appendix C) was used to measure perceived self-efficacy. This tool was developed by Sherer et al. (1982) as a measure of general expectations of self-efficacy that are not tied to specific situations or behaviors. The items focus on three areas: (a) willingness to initiate behavior, (b) willingness to expend effort in completing the behavior, and (c) persistence in the face of adversity. The original version had 36 items. The GSES is a 19 item, 5-point Likert-type rating scale (including 2 filler items) with responses ranging from "strongly disagree" to "strongly agree". The respondents place a check in the column beside each item which corresponds with the appropriate response. Corresponding numbers, frequently used with Likert-type scales, were omitted from the scale to avoid influencing adolescents' choices. Scoring consists of summing the responses (1 = strongly disagree, 5 = strongly agree) to obtain a total score. A higher score indicates greater self-efficacy.

In the development of the instrument, factor analysis yielded two subscales: a General Self-Efficacy Subscale

consisting of 17 items and a Social Self-Efficacy Subscale consisting of six items. Items loading on the General Self-Efficacy factor measure self-efficacy without reference to any specific behavioral domain. Sherer et al. (1982) reported a Cronbach alpha reliability coefficient of .86 for the GSES with a sample of college students in an introductory psychology class ($N = 376$).

Construct validity was established by correlating GSES scores with other personality characteristics. GSES scores were found to correlate negatively with scores on the following personality characteristics that are related to personal efficacy (although none are synonymous with self-efficacy): Internal-External Control Scale (Rotter, 1966), $r = -.287$; Personal Control Subscale of the I-E Scale (Gurin, Gurin, Lao, & Beattie, 1969), $r = -.355$; and the Self-Esteem Scale (Rosenberg, 1965), $r = -.510$. Positive correlations between GSES scores and the following measures have been reported: the Marlowe-Crowne Social Desirability Scale (Crown & Marlowe, 1964), $r = .431$; the Ego Strength Scale (Barron, 1953), $r = .290$, and the Interpersonal Competency Scale (Holland & Baird, 1968), $r = .451$. All of these correlations were statistically significant at $p < .0001$. They were all moderate in magnitude and in the appropriate direction to support the construct validity of the GSES. For example, the negative correlation between the Internal-External Control

scale and GSES was expected since low scores indicate an internal orientation and individuals with an internal locus of control are more likely to have high self-efficacy expectations than those with an external orientation. Likewise, the moderately strong inverse relationship between GSES and self-esteem was expected since low scores indicated a high self-esteem.

A second study was conducted to establish the criterion validity of the GSES (Sherer et al., 1982). It was hypothesized that individuals with a history of successful experiences in important life areas such as employment, education, and military service would have higher self-efficacy expectations than individuals who lack these experiences of success. The GSES was administered to 150 adults whose scores were correlated with results from a demographic questionnaire designed to measure their success in vocational, educational, and military areas. Relatively weak but statistically significant positive relationships were found between GSES scores and vocational level ($r = .218, p < .01$), educational level ($r = .268, p < .01$), and military rank ($r = .218, p < .01$). As hypothesized, scores on GSES were found to be positively related to past success in achieving vocational, educational, and military goals.

The GSES has been used with various age groups, including adolescents (Barnett, 1989; M. Sherer, personal

communication, February 21, 1990). In Barnett's (1989) study of an adolescent population, the reported Cronbach alpha reliabilities for the GSES were .80 with early adolescents, and .85 with middle and late adolescents. The Cronbach alpha for the GSES obtained from this study's sample was similar ($\underline{r} = .87, p < .05$).

Family Satisfaction Scale (FSS). The FSS (see Appendix D) was used to measure level of contentment with one's family. This scale was designed by Olson and Wilson (1982), based on theoretical considerations described in the literature review, to: (a) assess the respondent's perceptions of the family on the subscale dimensions of family cohesion and adaptability; and (b) to measure the respondent's level of satisfaction with his or her family in relation to these dimensions.

The 14 item FSS scale provides a direct method for assessing satisfaction with one's family. Although it provides subscales for satisfaction with family cohesion and adaptability, the authors found that the total score is the most reliable and valid measure of family satisfaction. The FSS is scored using a 5-point Likert scale with a potential score range from 14-60. For consistency with the other scales used in this study, the rating scale numbers beside each item were omitted from the forms. Respondents are instructed to place a check mark in the appropriate column beside each item

(1 = dissatisfied and 5 = extremely satisfied). Total scores are obtained by summing the scores for each item. A higher score indicates greater satisfaction with one's family. Only the total scores were used in the data analysis for this study.

Olson and Wilson (1982) designed the scale items to measure aspects of family cohesion and adaptability, such as emotional bonding, family boundaries, coalitions, time, space, friends, interests, recreation, assertiveness, control, discipline, negotiation, roles and rules. The 28 original items, which represented 14 subscales of the Circumplex Model, were factor analyzed using a varimax rotation of the principal axes. The results of the factor analysis indicated the family satisfaction scale is one dimensional, although the subscale satisfaction scores on family cohesion and adaptability can be used for clinical purposes. As part of the tool's development and testing, a satisfactory Cronbach alpha ($\alpha = .92$) was obtained from a sample of 1,026 adult couples and 412 adolescents who responded to a national survey (Olson, McCubbin, Barnes, Larsen, Muxen, & Wilson, 1983). In another study conducted by Olson et al. (1983), using 106 subjects from their national survey, a five week test-retest Pearson correlation coefficient of .75 for the total score was obtained indicating adequate stability of the FSS. The Cronbach alpha obtained from use of the scale in this study of obese

adolescents was .90 ($p < .05$), again indicating an acceptable level of internal consistency of the instrument.

Adolescent-Family Inventory of Life Events and Changes Scale (A-FILE). The A-FILE Scale (see Appendix E) was developed by McCubbin et al. (1981) to measure adolescents' perspectives on family life events and changes. The A-FILE Scale is a 50 item self-report instrument designed to record normative and nonnormative life events and changes that the adolescent's family has experienced during the past 12 months and prior to the past year. Respondents indicate with a check beside each item whether that type of change has occurred in their family within these two time periods. "Yes" is coded as "1"; "No" is coded as "0". A high score implies high stress. The A-FILE is scored by summing the total number of "Yes" responses. The initial development of the A-FILE was guided, in part, by the work of Coddington (1972) who developed a Life Event Scale for assessing adolescent life changes. The difference in the two scales is that the focus of McCubbin's et al. (1981) tool is on "family" oriented life events.

Life events experienced by any member of the family are recorded on the tool since, from a family systems perspective, what happens to one member affects other members to some degree. Families are usually dealing with several stressors simultaneously and A-FILE provides an index of an adolescent's vulnerability as a result

of family "pile-up".

Construct validity of the A-FILE was established with a sample of 500 junior and senior high school students. The initial 73 items were reduced to 50 items by three methods: (a) analysis of frequencies of occurrence of all the items, (b) factor analysis followed by tests of internal and external validity, and (c) reference to prior research and theories regarding life changes. The scale includes items related to transitions, sexuality, losses, responsibilities and strains, substance use, and legal conflict.

Additional evidence of construct validity was obtained by correlating the total scale with two outcome measures: adolescent substance use and adolescent health locus of control. McCubbin et al. (1981) hypothesized that a "pile-up" of family life events would be positively associated with the use of cigarettes and alcohol and negatively associated with the nonuse of cigarettes, alcohol and/or marijuana. Their hypothesis was supported since life changes were found to be positively correlated with adolescents' reported use of chemical substances during the past month ($r = .32, p < .05$) and during the past year ($r = .27, p < .05$).

The overall internal reliability estimates for the A-FILE based on two large adolescent samples ($N = 1330$ and $N = 1410$) were reported to be .83 and .80 respectively,

indicating acceptable internal consistency. An acceptable test-retest reliability estimate of .82 was obtained from administering the A-FILE to 72 junior and senior high school students on two occasions two weeks apart (McCubbin, et al., 1981). The Cronbach alpha reliability for the sample of obese adolescents in this study was .88 ($p < .05$).

Denyes Self-Care Agency Instrument (DSCAI). The DSCAI (see Appendix F) was used to measure adolescent self-care agency. The instrument (Denyes, 1980) consists of the following six subscales developed through factor analysis procedures: (a) ego strength and decision-making, (b) relative valuing of health, (c) health knowledge and health decision-making experience, (d) physical energy levels, (e) feelings, and (f) attention to health. Respondents fill in a number between 1 and 100 beside each item in this 35 item rating scale. A summed score is used for data analysis and is obtained by computing the mean scores for items within each subscale and then adding the mean scores. A higher score indicates a greater degree of self-care capability.

The development of this instrument was based on the work of Orem (1971, 1985) and the NDCG (1973, 1979), as discussed in Chapter 2. Initial evidence of construct validity was provided by Denyes' (1980) study which supported the hypothesized relationships between self-care

agency and self-care practices and health status. Denyes (1988) reported that subsequent research has provided further support for the DSCAI's construct validity through the finding of predicted relationships between self-care agency and the following: self-esteem, depression, physical symptoms, health-related problem-solving ability, health behavior, health status, and health problems (Campbell, 1989; Denyes, 1988; Gaut, & Kieckhefer, 1988). These studies were described in the literature review in Chapter 2.

Based on samples of 78 male and 137 female adolescents 14 to 18 years of age, internal consistency reliability estimates for the six DSCAI subscales were reported to range from .80 to .83 (Dennes, 1980, 1982). The total scale reliability estimates for these samples were .86 and .90 respectively. Additional evidence of internal consistency reliability was demonstrated with samples of healthy children and with chronically ill adolescents. Moore (1986) reported a total DSCAI alpha coefficient of .70 for a sample of 72 healthy children; and Gaut and Kieckhefer (1980) reported subscale alphas ranging from .65 to .87 with a sample of 51 chronically ill adolescents. The DSCAI total score alpha coefficient obtained from the sample in this study was .84 ($p < .05$). These reliability estimates reflect an acceptable degree of DSCAI internal consistency (Waltz, Strickland & Lenz, 1986).

Personal Lifestyle Questionnaire (PLQ). This instrument (see Appendix G) was developed by Muhlenkamp and Brown (1983) to measure the extent to which individuals engage in the following self-care practices: exercise, substance use, nutrition, relaxation, safety and general health promotion. It is a 24 item, 4-point summated rating scale which contains six subscales. However, only a total score was used for data analysis in this study. Responses range from "1 = never " to "4 = almost always", with a higher score representing a higher level of self-care practices.

Items selected for the PLQ were behaviors or activities portrayed in professional literature to be the most prevalent for self health care. In earlier studies, Harris and Guten (1979) had identified all the items selected as being the most commonly performed "health protective behaviors" based on interviews with 842 randomly selected adults. A cluster analysis of their reported health protective activities resulted in the identification of the six categories from which Muhlenkamp and Brown developed their PLQ. To determine the validity of the six subscales, a factor analysis of responses from 380 adult subjects was conducted by the tool developers. Age range and other subject characteristics were not reported. Seven factors emerged, five of which were almost identical to the original subscales. The authors reported that minimal changes were

made based on the factor analysis. The PLQ is useful as a short instrument to measure health practices and use of only the total score for data analysis is recommended by the tool's authors at this time.

Concurrent validity was established by administering the PLQ to two samples which included staff at a nursing school (N. Brown, personal communication, February 14, 1991) along with the Stevens Point Lifestyle Assessment (1980) which measures level of wellness (Muhlenkamp & Brown, 1983). The resulting coefficients were .83 for one sample and .72 for the other. The questionnaire was also administered to males ($n = 24$) and females ($n = 103$), ranging in age from 17 to 84 years ($M = 28$ years), who had taken the Health Hazard appraisal which results in a score that represents the degree to which one's overall health risk can be lowered by modifying one's health activities. The inverse correlation between PLQ scores and the modifiable risk scores ($r = -.25$, $p < .005$) provided further support for the PLQ's validity.

Two test-retest reliability analyses were performed by Muhlenkamp and Brown (1983). The first took place over a four week interval and resulted in a reliability coefficient of .78; and the second, conducted over a three week interval, resulted in a coefficient of .88. In addition, total score alpha coefficients of .74 and .76 respectively, were obtained for the four and three week intervals of the

two adult groups (subject's ages were not reported). Yarcheski and Mahon (1989) reported a Cronbach's alpha of .77 for the PLQ with a sample of 165 adolescents. A similar acceptable Cronbach alpha reliability was obtained from the sample in this study ($r = .75$, $p < .05$).

Pilot Study

Six volunteer overweight adolescents ranging from 12 to 16 years of age served as subjects in a pilot test of the data collection procedure. Three of the volunteers were enrolled in a weight loss program and three adolescents were acquaintances of the investigator who were contacted by mail. Prior to their participating, a letter describing the pilot study was mailed to each adolescent, along with a consent form. When the consent form was returned, the questionnaire packet was mailed to the adolescents to complete at their convenience. A stamped envelope was provided to facilitate return of the completed questionnaires to the investigator. The procedure was the same as that used in the main study except that the investigator was present while the campers in the main study completed the questionnaire.

The pilot study participants were instructed to complete the instruments as if they were research subjects and then answer three additional questions: How long did it take you to complete everything? Do you understand the directions? Do you have any comments?

Answers to the questions were written on the questionnaires and returned to the researcher. The average length of time required to complete the forms was reported to be 30-35 minutes. This time commitment was judged to be reasonable by the investigator. Directions were reported to be clear. The most frequent comment was that several questions within one of the DSCAI subscales seemed to be asking the same thing. After reviewing the comments, the instruments were left unchanged as were the plans for implementing data collection.

Protection of Human Subjects

Approval was obtained from the University of San Diego Committee on the Protection of Human Subjects (see Appendix H), prior to data collection, and procedures for the protection of human subjects were followed throughout the study. The subjects were informed of the voluntary nature of their participation and their right to withdraw at anytime. To assure confidentiality of responses, no personal identification appeared on the questionnaires. Information from this study is presented only as group data. The code sheet, which identified whether the participant was a camper or noncamper, was destroyed after all data were entered.

After camp registration was received by mail, the Camp Director mailed an information letter and consent form (see Appendix I) to the adolescents and their parents

explaining the purpose of the study, ages of subjects desired, the approximate time it would take to complete the questionnaire, time and place of data collection, and the confidentiality of the responses. The campers were asked to sign and return the consent form to the Director if they wished to participate in the study.

A similar information letter and consent form (see Appendix J) was prepared by the investigator and sent to the noncampers by the health professionals who responded to the request for subjects in the SHAPEDOWN newsletter. The letter indicated that the adolescents could withdraw at any time by simply not returning the questionnaire packet. When the consent form was returned to the professional, the packet of questionnaires was mailed to the adolescent and returned directly to the investigator in a stamped envelope. The health professionals mailed the consent forms to the investigator.

Data Collection Procedures

Arrangements were made with the Director of two summer weight-loss camps to recruit participants who attended these camps in July 1990 (see Appendix K). The weight-loss camp for girls was held at a private university in southern California. The boys' camp was held at a conference center that was also located in southern California.

The questionnaires were administered by the investigator at the camp sites during the first week of camp. The tools

were given to each of the subjects in the following order: Cantril Ladder, GSES, DSCAI, PLQ, A-FILE, and FSS. The questionnaires were placed in this order to help avoid fatigue and loss of interest. Shorter questionnaires were alternated with longer questionnaires. The adolescents were given as much time as they needed to complete the questionnaires and were allowed to ask questions for clarification. Most adolescents completed the questionnaires within 35-40 minutes. Several adolescents asked questions to clarify the meaning of a word; however, most of the adolescents completed the questionnaires without assistance.

It was necessary to recruit additional subjects through a notice in a newsletter for adolescent obesity counselors which described the author's study and requested interested professionals to call for more information. This information consisted of a letter describing the purpose of the study (see Appendix L), ages of subjects desired, approximate time to complete the questionnaire, confidential treatment of the questionnaire responses, the voluntary nature of participation, a sample letter to the adolescent and parents, and the consent form. The health professionals located throughout California who responded to the newsletter notice reviewed the information that they received by mail and asked for volunteers among their obese adolescent contacts. Volunteers were sent the information

letter, consent form, and questionnaires upon request.

The noncampers completed the questionnaires at their homes and returned them by mail directly to the researcher in an enclosed stamped envelope. The questionnaire data were coded with the health professional's location so that follow-up results could be provided to both the health professionals and the volunteers. Data collection occurred over a period of five months (July through November, 1990).

Data Analysis Procedures

Descriptive statistics were used to describe the study variables and the sample. Prior to statistical testing, the questionnaires that contained missing data were identified (10 or 10 percent of the total). Missing data were coded with a -9. A conservative method of replacing the missing data was selected by calculating a mean score for the instruments where the missing data occurred for each subject, and then placed in the empty slot. Data analyses were performed on the total sample ($N=100$) with the exception of the intercorrelation matrix for the instruments. In this instance, questionnaires with missing data (10) were excluded from the analysis to increase accuracy of the results (S. Paul, personal communication, August 14, 1990).

The t-test for independent samples was used to test for differences between the mean scores of the camper and noncamper participants' responses related to the major

variables of the study to identify whether there were significant differences between the two groups of volunteers that comprised the sample. In addition, one-way analysis of variances (ANOVA) was used to determine if differences existed between the mean scores for the study variables in three level of obesity groups and three level of maturity groups as described in the Definition of Terms section in Chapter 1. In each analysis, Hartley's F-max test was used for testing the assumption of equal variances between subjects since there were an unequal number of scores in each of the various groups.

The Crunch statistical package (1987) was used for completion of the correlations and multiple regression analyses required to answer the research questions. For all inferential statistical procedures used, a .05 level of probability was considered to indicate statistical significance. Scores for each of the instruments administered were calculated as previously described in the Instruments section. Bivariate correlation coefficients (Pearson product moment correlation or Pearson r) between each of the dependent and independent variables were obtained to determine if multicollinearity existed between or among any variables. An intercorrelation matrix was used to present these findings.

The strength of the relationships between the independent variables (perceived health status, perceived

self-efficacy, family satisfaction, life events) and self-care agency (the intermediate variable) were also examined using Pearson r correlations since the data were judged to be at the interval level. The same procedure was used to analyze the relationship between self-care agency (as the independent variable) and self-care practices (as the dependent variable).

General (listwise) multiple regression procedures were performed to examine the strength of perceived health status, perceived self-efficacy, family satisfaction, and adolescent life events as predictors of self-care agency and of self-care practices. General multiple regression was used rather than hierarchical regression as there was no theoretical basis for ordering of the independent variables. Regression analyses output was examined for (a) beta weights and their significance level, (b) amount of variance (R-square) accounted for by the variables, and (c) significance of the R-square. The predictor variable with the largest beta weight for self-care agency and self-care practices, positive or negative, was considered to be the best predictor (Huck, Cormier, & Bounds, 1974). Results were tabulated showing the explained variances of self-care agency and self-care practices.

In summary, the methods for the study were selected based on the following assumptions:

1. The independent variables selected for study were

those that promised to do the "best" job of explaining the variance in self-care agency and self-care practices.

2. The subjects understood the self-report instruments and their responses were honest.

3. The variables were measured with minimal or no error. The mean of errors for each observation, over many replications, is zero; and the errors were assumed not to be correlated with the independent variables (Munro, Visintainer, & Page, 1986).

Threats to Internal Validity

This descriptive-correlational study did not attempt to measure cause and effect. Caution was exercised in interpreting the results and drawing conclusions from them. Only subjects who were homogenous with respect to the criteria set for participation (i.e., met criteria for obesity, were within a desired age range and volunteered to participate) were considered for inclusion in the sample. Variables in nonexperimental research tend to be intercorrelated and, thus, implications of regression coefficients for policy decisions would be questionable (Pedhazur, 1982). The findings of this study were considered to be exploratory, and require further study before their use to influence policy decisions would be appropriate. That is, the findings are not meant to be used for making program procedural changes at this time.

Pedhazur (1982) cited specification errors,

measurement errors, multicollinearity, standardized versus unstandardized regression coefficients, and role of theory as being some of the major interpretive problems of multiple regression research. Specification errors refer to a misspecified model; that is, when irrelevant variables are included or when relevant variables are omitted. The most important protection against the commission of specification errors is a sound theoretical framework. A weakness of multiple regression is a tendency to throw variables into the equation. According to Munro et al. (1986), there should be some rationale for each variable included. This study was based on early theories about self-care and self-care practices which are still in the testing phase. However, support was found in the literature for inclusion of each variable in the design for this study.

Measurement errors affecting internal validity may include conceptual, consistent and random errors (Pedhazur, 1982). Conceptual errors are committed when a proxy is used instead of the variable of interest. This study attempted to use specific instruments intended to measure each variable of interest. Consistent errors occur when respondents provide systematically erroneous information. Such errors may emanate from instruments, research setting, interviewers, or raters. Random or nonsystematic errors may occur as a result of temporary fluctuations in

respondents and/or settings. In contrast to the camp setting data collection, the researcher had no control over the testing environment for the noncamper participants. It is possible that questionnaires were completed over several sittings with several interruptions. Raw data were examined for evidence of consistent errors of measurement (e.g., extremes in instrument scores prior to analyses along with scatterplots of the distribution of scores). Measurement errors were not evident.

The age of participants may also result in errors due to maturity level. However, ANOVA procedures comparing the mean scores of early, middle and late adolescents revealed no significant differences in test scores related to age as an index of maturity level.

Multicollinearity refers to the existence of any correlations among the independent variables. A matrix of intercorrelations was examined to detect multicollinearity between independent variables and will be discussed with the study findings.

Pedhazur recommended that both standardized (Beta) and unstandardized (b) beta weight coefficients be reported in studies where multiple regression is used. Beta is easier to interpret than b, because all the variables have been converted to standard scores and the regression is calculated. Standardized Beta weights (B) were reported in this study to show which variables contributed most to

the prediction of self-care agency and self-care practices within the sample. The unstandardized beta weights (b) cannot be compared against one another but they convey information about the variables' correlations with the outcome variables, which is of interest to the reader. Most authors (Huck et al., 1974; Pedhazur, 1982) recommend that the standardized regression weight (B) be used when comparing the effects of different variables within a single population, and that $b(s)$ be used to compare the effects of given variables across populations. Thus, both standardized and nonstandardized beta weights were reported.

Patterns of causation were not specified in the conceptual model which served as a framework for the study, because the variables chosen for the study had not been previously examined in obese adolescents. The goal was to explore the relationships between the independent, intermediate, and dependent variables of the study.

Threats to External Validity

Threats to external validity include: a nonrepresentative sample, the Hawthorne effect, and experimenter and measurement effects (Polit & Hungler, 1983). The sample was specifically selected based on criteria demonstrating adolescent obesity. The results described only the group of obese adolescents who attended two weight loss camps in Southern California and volunteers who participated by mail from several California regions.

The sample represented a subgroup of the target population (all obese adolescents in California) since the camper participants were in a weight program and the noncamper participants had contact with a health professional. Not all obese adolescents seek out weight loss programs or are in contact with a health professional. This indicates one way in which the accessible population may have differed from the target population.

There may have been more of a Hawthorne Effect in the camper group than in the noncamper group because of the presence of the investigator, even though the investigator tried to maintain a low profile. Another common threat to external validity is the effect of social desirability. It is possible that the obese adolescents who participated in this study chose what seemed to be "the more socially desirable" responses.

Experimenter effects were minimal in that there was little or no contact between the researcher and participants. All interested participants received the same adolescent/parent letter of explanation about the study, including permission to withdraw simply by not returning the questionnaires. At the camp setting, the investigator answered questions concisely, matter of factly, but pleasantly. There was no direct contact between the researcher and the noncamper participants.

Interaction of history and treatment effects may also

effect validity. History was not a concern in this study since the analysis was based on a one time administration of the questionnaire. There also was no treatment administered. Measurement effects occur when investigators collect a considerable amount of data from one group but use different data collection procedures for another group of people. Since there were some differences between the way data were collected from the campers and noncampers, it is possible that this could have had some differential effect on the way the camper and noncamper groups responded to the instruments.

In summary, threats to internal and external validity were considered when designing the study and selecting the sample and instruments. The researcher attempted to minimize bias and measurement error throughout the study. This investigation of the perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency and self-care practices among obese adolescents was aimed at contributing new knowledge in the area of adolescent health promotion. Claims of causality based on the results would be premature and were not inferred; rather, this descriptive correlational study sought to describe relationships between the study variables that had not been previously examined.

Limitations of the Study Design

Due to the nonrandom nature of the obese adolescent

sample, generalization of the results to other obese adolescents with similar characteristics can only be done with great caution. Camper and noncamper obese adolescents who did not volunteer to participate in the study may differ from this study's sample in significant respects that were not measured. Without replication with other campers and/or noncampers, the results cannot be generalized to other obese adolescents.

The restricted time the investigator had to complete the study was also a limitation. If the data could have been collected over a two or three year period, the camper sample size would have been larger, eliminating the need to obtain a subsample of noncampers.

Another limitation is the scope of the study--many variables were not investigated that may have an impact on the self-care agency and self-care practices of obese adolescents. For example, parental influences--such as their weight, health status, self-care practices, and/or value of health--may also be important influencers upon obese adolescents.

CHAPTER IV

PRESENTATION AND DISCUSSION OF FINDINGS

In this Chapter the results of the data analysis are presented in four sections. The first section includes a description of the sample. The second section presents descriptive analyses of the study variables derived from each of the instruments. The third section presents the inferential statistical analyses related to each of the research questions followed by interpretation of the statistical results, including comparisons of the findings of this study with those of other researchers. Finally, the results of supplementary statistical analyses are presented and discussed in section four.

Description of the Sample

When describing the sample's characteristics, only frequencies will be reported since they are the same due to the sample size ($N = 100$). Forty-six participants were recruited from a male and a female weight loss camp and fifty-four were recruited from throughout the state. In addition to the 100 usable questionnaires, six questionnaires were returned by participants who did not qualify due to a low relative weight and one other questionnaire was eliminated because a page was left

unanswered.

Table 4 provides a demographic profile of the adolescent study participants. The ages of the subjects ranged from 12 to 18 years. The mean age of the sample was 14.14 years ($SD = 1.81$). Sixty-three participants were early adolescents (ages 12 through 14); 21 were middle adolescents (ages 15 through 16); and 16 were late adolescents (ages 17 through 18). Thus, the majority of the sample was comprised of early adolescents. The sample consisted of 20 male subjects and 80 female subjects. The participants reported being in grades 5 through 12, and the majority were in eighth or ninth grade ($n = 40$).

The number of people in the adolescents' immediate family ranged from 2 to 11. The majority ($n = 78$) reported having five or fewer family members. The mean family size was 4.38 ($SD = 1.65$).

T-tests were done to determine differences between the camper and noncamper participants' responses to demographic questions. There were no significant differences in the mean ages ($t = -0.49$, $df = 98$, $p < .62$), grade level ($t = -0.19$, $df = 98$, $p < .84$), or number in family ($t = -0.39$, $df = 97$, $p < .69$) between the two groups. Therefore, the two subsamples were considered to be equivalent in regard to these characteristics.

Additional demographic information is presented in the following section. Participants were predominately

Table 4

Demographic Profile of Adolescents (N = 100)

	Campers <u>n</u>	Noncampers <u>n</u>	Total
<u>Ages</u>			
12-14	30	33	63
15-16	9	12	21
17-18	7	9	16
<u>Gender</u>			
Male	9	11	20
Female	37	43	80
<u>Grade Level</u>			
5	2	0	2
6	1	4	5
7	4	7	11
8	11	10	21
9	10	9	19
10	7	7	14
11	4	9	13
12	7	7	14
<u>Number of Family Members</u>			
2	6	3	9
3-4	21	27	48
5-6	14	20	34
7-8	3	3	6
9-10	0	1	1
11 or more	1	0	1
Missing data	0	1	1

Caucasian ($n = 79$). Other ethnic groups represented included: Black ($n = 3$), American Indian ($n = 4$), Asian ($n = 5$), and Hispanic ($n = 9$). Parental education ranged from no high school to college graduate. Three parents had no high school education, 13 graduated from high school, 24 had some college education, and 57 were college graduates. The high level of parental education is suggestive of at least the majority of the sample being in an upper-middle to upper socioeconomic class, although income was not measured. In regard to marital status, the majority of the adolescents' parents were married ($n = 58$) while 18 were divorced, 17 had remarried, three were separated, and three were living with a person other than their parents.

Mother was most frequently identified as the individual who most influenced these adolescents' health habits ($n = 42$), followed by influence from both parents ($n = 21$). A smaller number ($n = 10$) identified television and friends as the major influences on their health habits. Only two adolescents identified a health professional as the most significant influential person.

Additional information reported included what was going on within one year of the time the adolescents first became overweight. The reported problems, in order of frequency, were related to changes in mood ($n = 23$), family problems ($n = 20$), school problems ($n = 19$), relocating ($n = 17$), changed schools ($n = 15$), problems with friends or peers

(\underline{n} = 14), parents separated or divorced (\underline{n} = 10), death of someone close (\underline{n} = 9), money worries (\underline{n} = 8), and a new babysitter (\underline{n} = 1).

Independent samples chi-square tests were used to determine whether there was a difference between the campers and noncampers in relation to reported medical problems, ethnicity, parents' level of education, parents' marital status, who influenced adolescents' health habits, and frequencies of 13 life situations within one year of their initial weight gain.

The cross-tabulations of these variables between the camper and noncamper groups revealed that the only statistically significant difference in proportion between the two groups was in relation to who influenced the adolescents' health ($p < .04$). Noncamper participants identified mother and both parents more frequently than the campers. The validity of this finding may be questioned since some respondents checked more than one major influencer. These findings provided further support for the comparability of the two subsamples.

Table 5 provides additional descriptive information on the adolescent participants in relation to their reported medical problems, relative weight and the age they first became overweight. Sixty reported no existing medical problems, while the following frequencies of existing

Table 5

Descriptive Profile of Adolescents (n = 100)Frequency of Existing Medical Problems

	Campers	Noncampers
	<u>n</u>	<u>n</u>
No Problems	31	29
Hypertension	6	14
Orthopedic	5	8
Thyroid	1	0
Depression	3	0
Other	0	3

Relative Weight

mild obesity (20-30%)	14	19
moderate obesity (30-40%)	12	14
severe obesity (above 40%)	21	21

Age First
Overweight

1-3	7	1
4-6	6	3
7-9	14	18
10-12	7	22
13-15	5	3
16-18	1	0
Missing data	5	5

health problems were reported: hypertension (n = 20), orthopedic problems (n = 13), depression (n = 3), thyroid disorder (n = 1), and other problems (n = 3), which included high cholesterol, allergies, and a heart murmur.

Thirty-three of the obese adolescents had relative

weights between 20 and 30 percent above the mean for their age, height and weight; 26 adolescents were between 30 and 40 percent relative weight; and 42 adolescents had a relative weight greater than 40 percent.

The reported age when these adolescents first became overweight ranged from at birth to 17 years of age; the mean age for onset of overweight was 8.75 years ($SD = 3.41$). Forty-five reported first becoming overweight at or before eight years of age. A t -test between the camper and noncamper participants revealed that the age when first became overweight was significantly different for the two groups ($t = -2.21$, $df = 88$, $p < .03$). On the average, the campers ($M = 7.90$, $SD = 4.07$) reported becoming overweight approximately one and a half years earlier than the noncamper participants ($M = 9.46$, $SD = 2.58$).

Descriptive Analysis of Study Variables

In relation to each study variable, descriptive statistics are presented in Table 6 with a display of the ranges, means, and standard deviations of scores from the perceived health status, perceived self-efficacy, family satisfaction, self-care agency, and self-care practice questionnaires. Table 7 presents the mean scores for each study variable related to the three relative weight groups, while Table 8 displays the results of the one-way analysis of variance related to the relative weight groups. Table 9 presents the mean scores for each study variable related

to the three maturity levels of the obese adolescents and Table 10 displays the one-way analysis of variance of each study variable related to maturity level. T-test analyses of the results between camper and noncamper participants are presented in Table 11.

The obese adolescents' mean for perceived health status in this study was 5.83 (SD = 1.85) representing a moderate level on a scale of 1 to 10. A one-way analysis of variance indicated that the differences in perceived health status scores in relation to relative weight were close to the accepted probability level of $p < .05$, although the differences between the mean scores failed to reach significance ($F = 2.90$, $p = .05$). The highest perceived health status mean score was found in the adolescent group with the lowest relative weight ($M = 6.03$) and the lowest perceived health status mean score was found in the highest relative weight group. The one-way analysis of variance ($F = 2.31$, $p < .10$) related to maturity level indicated there were no significant differences in the perceived health status mean scores for early, middle, or late adolescents. The t-test comparing the camper and noncamper participants' perceived health status means also revealed no statistically significant differences in their responses ($t = -1.50$, $df = 97$, $p < .13$).

The obese adolescents' perceived health status mean scores in this study were lower ($M = 5.83$) than those

Table 6

Ranges, Means, and Standard Deviations of Scores
Related to Study Variables (N = 100)

Variables	Possible Range of Scores	Adolescents' Range of Scores	<u>M</u>	Standard Deviation
Perceived Health Status	1-10	1-10	5.8	1.85
Perceived Self-Efficacy	17-85	27-84	59.85	11.66
Family Satisfaction	14-70	22-68	46.54	12.60
Life Events	1-77	1-39	11.03	8.28
Self-Care Agency (Subscales)	1-100	31.53-90.75	64.15	12.77
Ego Strength and Health Decision-Making Capability	1-100	11.66-100	60.31	19.75
Relative Valuing of Health	1-100	0-107	11.49	20.33
Health Knowledge and Decision-Making Experience	1-100	8.66-100	67.99	18.47
Physical Energy Levels	1-100	21.40-99.60	63.94	18.08
Feelings	1-100	26.25-100	76.04	17.64
Attention to Health	1-100	18.33-89.16	55.10	15.94
Self-Care Practices	24-96	50-92	69.97	8.69

Table 7

Study Variable Mean Scores of Relative Weight (RW) Groups

Variable	Group 1	Group 2	Group 3
	20 - 30% RW	30 - 40% RW	above 40% RW
	<u>M</u>	<u>M</u>	<u>M</u>
PHS	6.03	6.40	5.31
PSE	60.42	58.22	60.41
FS	45.54	43.94	48.81
LE	13.18	11.24	9.21
SCA	66.82	61.15	63.84
SCP	73.27	69.74	67.40

Key: PHS = Perceived Health Status
PSE = Perceived Self-Efficacy
FS = Family Satisfaction
LE = Life Events
SCA = Self-Care Agency
SCP = Self-Care Practices

Table 8

Summary Table of One-Way Analysis of Variance for
Relative Weight

Study Variable	Mean Square Between Groups	df	Mean Square Within Groups	F	p
PHS	9.61	2/96	3.31	2.90	.05
PSE	44.74	2/94	137.98	.32	.72
FS	205.55	2/96	157.85	1.30	.27
LE	146.03	2/97	67.03	2.18	.11
SCA	231.67	2/96	161.66	1.43	.24
SCP	303.35	2/91	70.64	4.29	.01*

* Scheffe' test .01

KEY: PHS = Perceived Health Status
 PSE = Perceived Self-Efficacy
 FS = Family Satisfaction
 LE = Life Events
 SCA = Self-Care Agency
 SCP = Self-Care Practices

Table 9

Study Variable Mean Scores of Maturity Level Groups

Variable	Early Adolescents	Middle Adolescents	Late Adolescents
	<u>M</u>	<u>M</u>	<u>M</u>
PHS	6.00	6.04	4.93
PSE	60.55	58.44	58.73
FS	47.71	42.39	47.44
LE	10.88	13.28	8.62
SCA	63.16	64.35	68.06
SCP	70.70	68.80	68.76

Key: PHS = Perceived Health Status
 PSE = Perceived Self-Efficacy
 FS = Family Satisfaction
 LE = Life Events
 SCA = Self-Care Agency
 SCP = Self-Care Practices

Table 10

Summary Table of One-Way Analysis of Variance for
Maturity Level

Study Variable	Mean Square Between Groups	df	Mean Square Within Groups	F	p
PHS	7.76	2/96	3.35	2.31	.10
PSE	44.37	2/94	137.99	.32	.72
FS	229.78	2/96	157.35	1.46	.23
LE	100.32	2/97	67.98	1.47	.23
SCA	146.07	2/96	163.44	.89	.41
SCP	41.34	2/91	76.40	.54	.58

KEY: PHS = Perceived Health Status
PSE = Perceived Self-Efficacy
FS = Family Satisfaction
LE = Life Events
SCA = Self-Care Agency
SCP = Self-Care Practices

Table 11

Comparison of Camper and Noncamper Subsamples in Relation to Study Variables

Study Variables	Campers		Noncampers		df	t	p
	<u>M</u>	SD	<u>M</u>	SD			
PHS	5.53	1.76	6.09	1.90	97	- 1.50	.13
PSE	57.77	10.86	61.57	12.12	95	- 1.61	.11
FS	46.27	13.26	46.76	12.14	97	- 0.19	.84
LE	11.37	9.10	10.74	7.59	98	0.38	.70
SCA	61.27	13.42	66.56	11.78	97	- 2.09	.03*
SCP	66.83	8.23	72.30	8.35	92	- 3.16	.00**

* $p < .05$

** $p < .001$

KEY: PHS = Perceived Health Status
 PSE = Perceived Self-Efficacy
 FS = Family Satisfaction
 LE = Life Events
 SCA = Self-Care Agency
 SCP = Self-Care Practices

reported by Barnett (1989) from a sample of healthy early, middle and late female adolescents (\bar{M} = 8.23, 7.47, and 6.75 respectively).

Perceived self-efficacy. The self-efficacy mean score for the study sample was 59.85 (SD = 11.66), reflecting a moderate degree of this variable. One-way analysis of variance between the three relative weight groups (F = .32, p < .72) and between the three maturity levels (F = .32, p < .72) indicated no significant differences in perceived self-efficacy scores. The t-test comparing the camper and noncamper participants' perceived self-efficacy mean scores also indicated that there were no statistically significant differences between the two groups (t = -1.61, df = 95, p < .11).

The study sample's mean scores for perceived self-efficacy were again slightly lower (\bar{M} = 59.85) than the mean scores reported by Barnett (1989), who used the same instrument in a study of healthy adolescents' health promoting behaviors. Barnett's reported mean scores for early, middle, and late adolescent females were 61.59, 60.80, and 63 respectively. The means for the three maturity level groups in this study were 60.55, 58.44, and 58.73. As in Barnett's sample, the middle adolescents in this study had the lowest perceived self-efficacy scores. These lower scores may be related to the high occurrence of life events also reported by this middle adolescent age

group.

The family satisfaction mean score for obese adolescents was 46.54 (SD = 12.60), reflecting a moderate level of satisfaction with their families' cohesion and adaptability. One-way analysis of variance comparing the means of the three relative weight groups ($F = 1.30$, $p < .27$) and the three age groups ($F = 1.46$, $p < .23$) in this study indicated no significant differences in family satisfaction related to weight or maturity level. As with perceived self-efficacy, the middle adolescents had a lower family satisfaction score mean ($M = 42.39$, $SD = 11.24$) than the early ($M = 47.71$) or late ($M = 47.44$) adolescent groups.

The adolescents' family satisfaction mean score in this study ($M = 46.54$) was relatively close to the mean score ($M = 45$) reported by Olson and Wilson (1982) from a sample of 412 adolescents. Mean subscale scores for family cohesion and family adaptability were 27.22 (SD = 7.53) and 19.31 (SD = 5.51), compared with slightly lower mean scores of 26.5 and 18.5 for the general adolescent sample in Olson and Wilson's study. Thus, the mean overall level of family satisfaction of the obese adolescents in this study was relatively close to the mean for a general national sample of adolescents, as was their level of satisfaction with their families' cohesion and adaptability. The t-test between camper and noncamper participants' mean scores ($t = -.19$, $df = 97$, $p < .84$) also revealed no significant

differences in level of family satisfaction.

The life events responses of the study sample resulted in a mean score of 11 ($SD = 8.28$), which indicates a moderate level of this variable. One-way analysis of variance to compare the means of the three relative weight groups revealed no significant differences in number of life events ($F = 2.18, p < .11$). In this study, middle adolescents reported the highest number of life events ($M = 13.28, SD = 7.68$) and late adolescents reported the lowest level ($M = 8.62, SD = 5.63$). One-way analysis of variance ($F = 1.47, p < .23$) indicated that the mean differences between the age groups were not significant. The t-test indicated that there were also no statistically significant differences between camper and noncamper participants' ($t = .38, df = 98, p < .70$) in their mean responses concerning life events.

The life events mean score obtained for the total sample in this study ($M = 11, SD = 8.28$) was higher than the means reported by McCubbin et al. (1981) for 402 junior and senior high school seniors ($M = 7.53, SD = 5.30$). The difference indicates that this study's sample of obese adolescents have experienced more life changes than their general adolescent sample.

The mean score for self-care agency obtained in this study was 64.15 ($SD = 12.77$), which indicates a moderate level of this variable. One-way analysis of

variance indicated that there were no statistically significant differences between the self-care agency scores of the three relative weight groups ($F = 1.43, p < .24$) or between the three age groups ($F = .89, p < .41$). The t-test indicated that there was a statistically significant difference in self-care agency scores between the camper and noncamper subsamples ($t = -2.09, df = 97, p < .03$). Camper participants ($M = 61.27, SD = 13.42$) reported significantly lower self-care agency scores than noncamper participants ($M = 66.56, SD = 11.78$). The lower self-care agency score may be related to the campers report of first experiencing obesity at an earlier age than the noncampers. One account for this may be due to the length of time that the campers had experienced being obese resulting in lower levels of ego strength, feelings, and/or attention to health (subscales of self-care agency) than the noncampers who had been obese for a shorter period of time. Or, perhaps the noncampers scored higher in their self-care agency because they had seen a health professional for their weight problem.

Normative mean scores were not available for comparison with the results obtained in this study since other authors had revised Denyes' instrument for younger populations or used a different self-care agency tool (Moore, 1986; Rundahl, 1980). Means for the DSCAI subscales are also presented in Table 6. Scores appear to be midrange

in all categories, with the exception of relative valuing of health. The study sample's mean of 11.49 was low, considering the range of scores (0-107). The particular questions in this subscale ask the adolescents to identify how many things they value more than their own health and to identify how many things they think their family and friends value more than their own health. From the extreme score range, it appeared that adolescents perceived that they themselves, as well as their family and friends, valued many things more than they valued their health. For example, one adolescent indicated that his friends valued 300 things more than their own health. This resulted in an average score of 107 that is above the usual range of scores.

The self-care practices mean score for the total sample in this study was 69.97 (SD = 8.69), representing a moderate level of self-care practices. One-way analysis of variance ($F = 4.29$, $p < .01$) indicated that there was a statistically significant difference in self-care practice mean scores between the mild ($M = 73.27$, $SD = 8.28$), moderate ($M = 69.74$, $SD = 9.28$), and severely overweight groups ($M = 67.40$, $SD = 7.95$). Adolescents who were between 20-30 percent overweight scored significantly higher on self-care practices than the adolescents who were greater than 40 percent overweight. A Scheffe' post hoc test indicated that this difference between the moderate and severely overweight groups was statistically significant ($p < .01$).

In contrast, one-way analysis of variance indicated that there were no significant differences in self-care practice mean scores between the three maturity levels ($F = .54$, $p < .58$). T-tests comparing camper and noncamper mean scores for self-care practices revealed a statistically significant difference between the two groups of participants ($t = -3.16$, $p < .00$). The camper participants reported significantly lower self-care practice scores than the noncamper participants. The explanation for this finding is not clear to the investigator. Self-care agency scores were also lower in the camper groups. There may be a relationship between the longer history of being overweight reported by the campers and their lower self-care agency and self-care practice scores.

Data Analysis and Discussion

Related to the Research Questions

The major focus of this research was to describe the relationships between perceived health status, perceived self-efficacy, family satisfaction, life events and the self-care agency and self-care practices of obese adolescents. The results of the data analyses related to each research question are presented and discussed in the following section.

Research Question 1: What are the relationships between the perceived health status, perceived self-efficacy, family satisfaction, life events, and the self-care agency

of obese adolescents?

Pearson r correlations between each of the independent variables (perceived health status, perceived self-efficacy, family satisfaction, life events) and the dependent variable (self-care agency) were obtained using the Crunch correlation program. As shown in Table 12, there were statistically significant, moderately positive correlations between self-care agency and perceived health status ($r = .34$, $p < .001$), perceived self-efficacy ($r = .47$, $p < .001$), and family satisfaction ($r = .32$, $p < .001$). This indicated that adolescents with higher scores on perceived health status, perceived self-efficacy, and family satisfaction tended to also score higher on self-care agency. Only life events ($r = -.20$, $p < .05$) was found to have a statistically significant but moderately weak negative correlation with self-care agency. This indicated a tendency for adolescents with higher scores on the life events scale to score lower on self-care agency than adolescents who reported experiencing fewer life events.

The positive correlation between perceived health status and self-care agency concurs with Gaut and Kieckhefer's (1988) findings with a sample of chronically ill adolescents and Denyes' findings with healthy adolescents; that is, adolescents who reported higher levels of self-care agency tended to perceive themselves to be healthier than adolescents who reported lower levels of

Table 12

Correlations between Independent Variables and
Self-Care Agency (N = 100).

Independent Variable	Self-Care Agency <i>r</i>
Perceived Health Status	.34**
Perceived Self-Efficacy	.47**
Family Satisfaction	.32**
Life Events	-.20*

* $p < .05$

** $p < .001$

self-care agency.

Prior studies of the relationships between perceived general self-efficacy and family satisfaction and self-care agency were not available for comparison with the findings of this study. Of the four independent variables in this study, perceived general self-efficacy had the strongest correlation with self-care agency. If family satisfaction is viewed as being reflective of internal family dynamics, the positive correlation between family satisfaction and self-care agency supports Duffy's (1988) findings which suggested that internal family dynamics affect the health and health promotion behaviors of all family members.

Research Question 2: What are the relationships between the perceived health status, perceived self-efficacy, family satisfaction, life events, and

self-care agency of obese adolescents and their self-care practices?

Pearson r correlations between each of the independent variables (perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency) and the dependent variable (self-care practices) were obtained using the Crunch correlation program. As shown in Table 13, statistically significant moderately positive correlations between the dependent variable, self-care practices, and perceived health status ($r = .39$), perceived self-efficacy ($r = .41$), family satisfaction ($r = .36$), and self-care agency ($r = .47$), were obtained. All of these correlations were statistically significant at the $<.001$ level. Life events was found to have a weak inverse relationship with self-care practices which was not statistically significant.

The finding of a statistically significant relationship between perceived health status and self-care practices suggests that adolescents who perceive themselves to be at higher levels of health also tended to report more self-care practices than those who perceived themselves to be at lower levels of health. This finding is consistent with Walker, Sechrist and Pender's (1987) reports from an adult population; and Barnett's (1989) reports of positive correlations between health status and self-care practices in adolescent populations. These researchers also reported statistically significant correlations between perceived

Table 13

Correlations between Independent Variables
and Self-Care Practices (N = 100).

Independent Variable	Self-Care Practices
	<i>r</i>
Perceived Health Status	.39*
Perceived Self-Efficacy	.41*
Family Satisfaction	.36*
Life Events	-.17
Self-Care Agency	.47*

* $p < .001$

general self-efficacy and self-care practices, as were found in this study. The positive correlation between self-care agency and self-care practices also concurs with Denyes' (1988) results and adds empirical support to the theoretical relationships between these variables proposed by Orem.

Research Question 3: To what extent do the variables perceived health status, perceived self-efficacy, family satisfaction, and life events predict self-care agency in obese adolescents?

General (listwise) multiple regression analysis was used to explore the ability of the independent variables (perceived health status, perceived self-efficacy, family satisfaction, and life events) to collectively predict self-care agency and to determine the relative predictive

strength of each independent variable.

Of the four variables, taken separately, only perceived self-efficacy was found to be a significant predictor of self-care agency ($B = .368$, $p < .001$) (see Table 14).

The Beta for perceived health status approached the accepted .05 level of significance ($B = .179$, $p < .07$). The multiple R (.56) between the four predictor variables and the outcome variable, self-care agency, was statistically significant ($p < .000$); that is, 32 percent of the variance in self-care agency was explained by the four independent variables. The F test (9.979) of the overall regression was significant at the 0.000 level.

When predictor variables are highly correlated with each other, there is less clarity in interpretation of the results and an increased possibility of less stability over replication (Munro et al., 1986). Therefore, to ascertain the extent to which the variables were independent of each other, an intercorrelation matrix was calculated (see Table 15). Correlations between the four predictor variables ranged from $-.03$ to $.48$. The lowest bivariate intercorrelation was between life events and health status ($r = -.03$) and the highest intercorrelation was between general self-efficacy and self-care agency ($r = .48$). Multicollinearity was not considered a problem for subsequent analyses since none of the correlations were greater than $.70$ (Nunnally, 1978).

Table 14

General regression of PHS, PSE, FS, and LE
on Self-Care Agency (N = 89)

<hr/>				
Multiple R = 0.5653				
R-square = 0.3195				
		Regression	df	F
		Residual	85	9.979
				p
				0.0000
<hr/>				
Variable	B	Beta	Standard Error	p-Value
<hr/>				
PHS	1.30319	0.17998	0.71107	0.0704
PSE	0.41064	0.36868	0.10681	0.0002*
FS	0.15102	0.14077	0.11078	0.1764
LE	-0.20298	-0.13197	0.14976	0.1789
constant	27.49204			
<hr/>				

Note. Because of missing data, N = 89.

* significant at $p < .05$

Key: PHS = Perceived Health Status
PSE = Perceived Self-Efficacy
FS = Family Satisfaction
LE = Life Events

Table 15

Intercorrelation Matrix of the Study Variables (N = 90)

Variable	PHS	PSE	FS	LE	SCA	SCP
PHS	1.00					
PSE	.308*	1.00				
FS	.321*	.256*	1.00			
LE	-.033	-.150	-.374**	1.00		
SCA	.343**	.480**	.342**	-.246*	1.00	
SCP	.403**	.387**	.377**	-.227*	.463**	1.00

Note. Because of missing data, N = 90.

* $p \leq .05$ two-tailed ** $p \leq .001$, two-tailed

Key: PHS = Perceived Health Status
 PSE = Perceived Self-Efficacy
 FS = Family Satisfaction
 LE = Life Events
 SCA = Self-Care Agency
 SCP = Self-Care Practices

Research Question 4: To what extent do the variables perceived health status, perceived self-efficacy, family satisfaction, life events, and self-care agency predict self-care practices of obese adolescents?

Perceived health status, perceived self-efficacy, life events, family satisfaction and self-care agency were entered simultaneously for regression analysis to explore the ability of these five independent variables to collectively predict self-care practices and to determine the relative

predictive strength of each factor. As shown in Table 16, the multiple R between the five predictor variables and self-care practices was computed to be .58. The F test for the overall regression ($F = 8.518$) was significant at the 0.000 level. The five independent variables taken together explained 34 percent of the variance in self-care practices ($R^2 = .34$). Both perceived health status ($B = .221$, $p < .05$) and self-care agency ($B = .241$, $p < .05$) were found to be the strongest predictors of self-care practices.

The results from the multiple regression analyses supported Denyes' (1988) research finding that self-care agency was a significant predictor of self-care practices of adolescents. The addition of self-care agency to the regression analysis as an additional predictor variable, however, resulted in only a 2 percent increase in the coefficient of multiple correlation. A possible reason for the small increase in the explanation of the variance in self-care practices with the addition of self-care agency to the multiple regression may be related to this variable's moderately strong correlation with perceived self-efficacy ($r = .48$).

Additional regression analyses were utilized to determine the unique predictive strength of each independent variable in relation to self-care practices (see Table 16). Self-care practices was entered as the dependent variable. Each variable was entered, singularly, to explore its effect

Table 16

General regression of PHS, PSE, FS, LE, and SCA on
Self-Care Practices (N=89)

Multiple R = 0.5800			df	F	p
R-square = 0.3364		Regression	5	8.518	0.000
		Residual	84		
Variable	B	Beta	Standard Error	p-Value	
PHS	1.06986	0.22170	0.47996	0.0285*	
PSE	0.11217	0.15112	0.07661	0.1469	
FS	0.11056	0.15463	0.07414	0.1396	
LE	-0.08154	-0.07955	0.10021	0.4181	
SCA	0.16116	0.24182	0.07181	0.0274*	
constant	42.53160				

Note. Because of missing data, N = 89.

* significant at $p < .05$

Key: PHS = Perceived Health Status
PSE = Perceived Self-Efficacy
FS = Family Satisfaction
LE = Life Events
SCA = Self-Care Agency

on the variance of self-care practices after the effects of the other four variables had been controlled for. This type of analysis is used to determine a variable's unique contribution to the variance in the outcome variable. In Table 17, the original Pearson r correlation is shown along with the outcome from the individual regression analyses. From this table, it can be seen that perceived health status

Table 17

Study Variables' Unique Contribution to Self-Care Practices

Variable	Pearson r	R 2 Summary	Squared Semi-partial Unique Contribution	p-Value
PHS	.39		.039	.02*
PSE	.41		.016	.14
FS	.36		.017	.13
LE	-.17		.005	.41
SCA	.47		.039	.02*
All variables		.336		.00*

* significant at $p < .05$
df = 5/84

and self-care agency each were found to contribute four percent to the variance in self-care practices and this contribution was statistically significant ($p < .05$). The other three independent variables (perceived self-efficacy, family satisfaction, and life events) were not found to contribute significantly to the variance in the outcome variable. Thus, together, the five variables accounted for 34 percent of the variance in self-care practices, but individually they explained very little of the variance. These results may indicate that the effects of these variables are synergistic or that they are not distinctly separate variables, despite the fact that the variables

were not found to be highly intercorrelated.

Presentation and Discussion of Findings from
Supplemental Data Analysis

Because of the investigator's interest in comparing this study's findings with Denyes' (1988) prior research and learning more about the characteristics of the two adolescent subgroups in this study, further data analysis was done to answer two additional research questions. The results of the data analysis related to each additional research question are presented and briefly discussed in the following section.

Medical problems, perceived health status, and self-care practices: Is there a relationship between the existence of medical problems and perceived health status or self-care practices?

The existence of medical problems was recoded (No = 0, Yes = 1). As recommended by Huck et al. (1974), the point-biserial procedure was used to correlate a dichotomous variable (e.g., medical problems) with continuous variables (e.g., perceived health status and self-care practices). The analysis indicated there were no significant relationships between the existence of medical problems and perceived health status ($r = -.14$, $p < .15$) nor was there a significant relationship between the existence of medical problems and self-care practices ($r = .10$, $p < .30$). T-test results also indicated there were no statistically

significant relationships between the existence of medical problems and perceived health status ($t = 1.33$, $df = 98$, $p < .18$), nor was there a significant relationship between the existence of medical problems and self-care practices ($t = -1.35$, $df = 98$, $p < .18$). These findings were also reported in Denyes' (1988) study with an adolescent population. Although an inverse relationship between medical problems and health status would logically be expected, adolescents may not perceive that high blood pressure, orthopedic conditions, or thyroid problems affect their health. These reported problems may not be perceived as interfering with adolescents' daily activities.

Self-care agency and self-care practices: Is there a difference between the self-care practice scores of adolescents who scored above the mean on self-care agency and those who scored below the mean on self-care agency?

The adolescents were divided into two groups: a) those scoring less than the self-care agency mean score, and b) those scoring more than the self-care agency mean score. The t-test was used to test for differences between adolescents with lower and higher self-care agency mean scores. The results ($t = -3.99$, $df = 91$, $p = < .000$) indicated that there was a statistically significant difference in self-care practices between the two groups. The mean for Group 1 was 65.98 compared with a mean of 72.79 for Group 2. That is, the adolescent group with the high

self-care agency scores, had a significantly higher self-care practice mean score than the low self-care agency score group. This corroborates other study findings of positive relationships between self-care agency and self-care practices (Denyes, 1988; Gaut & Kieckhefer, 1988).

Limitations

The nonrandom nature of the study sample may have constituted a threat to the external validity of the study. The camper participants were a self-selected group by having decided to attend a camp for their weight problem. Due to the necessity of increasing the sample size, noncampers were also recruited in a nonrandom fashion. Preexisting differences in the two groups can also result in alternative explanations for observed scoring differences related to the study variables. For example, there may be certain common, extraneous, unmeasured characteristics of the campers and noncampers that influenced their self-care agency and self-care practices as much or more than the measured variables. In addition, the sample was primarily composed of Caucasian, early adolescents who were primarily female and from families with college-graduate parents, thereby limiting generalization to groups of adolescents with these characteristics.

In summary, the need for two different subsamples with different data collection processes for each, posed a possible threat to the external validity of the study.

Interpretation of the findings is limited to the study sample and generalization of the findings to the target population of all obese adolescents is not warranted. The findings can be applied to obese adolescents with characteristics similar to those of the study sample only with great caution.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter includes a summary of the research design and method as well as the findings and conclusions, implications for nursing practice, education, administration, and recommendations for further research.

Summary of the Study

The purpose of this descriptive-correlational study was to investigate the relationships between selected basic conditioning factors (perceived health status, perceived self-efficacy, family satisfaction, and life events) and the self-care agency and self-care practices of obese adolescents as well as the relative predictive strength of each conditioning factor in relation to the outcome variables self-care agency and self-care practices. The theoretical framework for this study was based on Orem's (1971, 1980, 1985) self-care framework.

This study was designed to add to the fund of knowledge regarding obese adolescents' perceptions of their health status, self-efficacy, family satisfaction, life events, and self-care agency, and contribute to understanding of the factors that influence their self-care agency and self-care practices. It was hoped that this knowledge could be used to guide professionals in the

development of pertinent interventions to enhance obese adolescents' existing strengths and foster more effective self-care.

This study addressed the following research questions:

1. What are the relationships between perceived health status, perceived self-efficacy, family satisfaction, life events, and the self-care agency of obese adolescents?
2. What are the relationships between the perceived health status, perceived self-efficacy, family satisfaction, life events, and self-care agency of obese adolescents and their self-care practices?
3. To what extent do the variables perceived health status, perceived self-efficacy, family satisfaction, and life events predict self-care agency in obese adolescents?
4. To what extent do the variables perceived health status, perceived self-efficacy, family satisfaction, life events, and self-care agency predict self-care practices in obese adolescents?

The relationships between the study variables were explored using a descriptive, multiple correlation design. A sample of 100 obese male ($n = 20$) and female ($n = 80$) adolescents volunteered to participate. Forty-six subjects were recruited from two southern California weight loss camps, and 54 noncamper subjects from throughout the state volunteered to participate after being contacted by a registered dietician or nurse who gave them information

about the research study. Criteria for inclusion in the sample included: a) being between the ages of 12 and 18; and b) being 20 percent or above the mean weight for height, age and sex. Written information and consent forms were mailed to all interested participants. After the consent forms were returned by mail, the campers completed the questionnaires at their camp site during the first week of camp with the investigator present. The noncampers received their questionnaires by mail, completed them in their homes, and returned the questionnaires by mail to the investigator.

The data collection instruments used to measure factors that influence health practices in this study included: a Cantril Ladder (Kilpatrick and Cantril, 1960) to measure perceived health status; the General Self-Efficacy Subscale (Sherer et al., 1982) to measure perceived self-efficacy; the Family Satisfaction Questionnaire (Olson & Wilson, 1982) to measure satisfaction with one's family related to cohesion and adaptability; the Adolescent-Family Inventory of Life Events and Changes (McCubbin et al., 1981) to measure family oriented life events and changes experienced by the adolescent; the Denyes (1980) Self-Care Agency Instrument to measure adolescents' capability for self-care; and the Personal Lifestyle Questionnaire (Muhlenkamp & Brown, 1983) to measure the extent to which adolescents engage in self-care practices. The total scores from each of the questionnaires were used to answer the research

questions. Scores were compared with established norms when available. Family Satisfaction and Self-Care Agency Subscale scores were examined to gain additional insight regarding obese adolescents' perceptions of their family cohesion and adaptability and to better understand obese adolescents' self-care capability.

Quantitative data were analyzed using the Crunch statistical package. Data were analyzed using descriptive statistics (i.e., means, standard deviations and frequencies) to describe the sample and study variables. Pearson Product Moment correlations, t-tests, analysis of variance [with Scheffe' test], and multiple regression were used to answer the research questions. Point-biserial correlations, t-tests, and chi-square analyses were used for supplemental data analysis.

The demographic profile of this obese adolescent sample included: a mean age of 14 years, predominantly Caucasian ($n = 61$), and enrolled in grades four through 13. Sixty-three subjects were in early adolescence (ages 12 through 14), 21 were in middle adolescence (ages 15 through 16), and 16 were in late adolescence (ages 17 through 18). Forty-two adolescents had a relative weight greater than 40 percent above the mean for their age, height, and weight; 60 reported no health problems. The mean family size was four, 57 of the adolescents' parents were college graduates, and 58 of the adolescents' parents were married. Only one

statistically significant difference in demographic characteristics existed between the camper and noncamper participants: the campers reported a mean age of seven years when they first became overweight, compared to the noncampers who reported a mean age of nine years when they first became overweight.

The study sample's perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency and self-care practice scores were all in midrange. Perceived health status and perceived self-efficacy scores were slightly lower than those obtained from general adolescent populations (Barnett, 1989), whereas their life events scores were slightly higher than established norms (McCubbin et al., 1981). Family satisfaction scores of these obese adolescents were also very close to published norms, as were their family adaptability and cohesion subscale scores (Olson & Wilson, 1982). Self-care agency and self-care practice scale norms were not available for comparison.

Differences between maturity level and obesity level subgroups related to each of the study variables were examined using analysis of variance. No differences were found between the three adolescent age groups for any of the study variables. In contrast, differences between the mild, moderate, and severely overweight groups were found in relation to perceived health status and self-care

practices. Further analysis indicated that the most overweight group had significantly lower perceived health status and self-care practice scores than the group who were least overweight.

In relation to the first research question, statistically significant positive relationships were found between health status ($r = .34$, $p < .000$), perceived self-efficacy ($r = .47$, $p < .000$), family satisfaction ($r = .32$, $p < .001$), and the dependent variable self-care agency. A statistically significant inverse relationship was found between life events ($r = -.20$, $p < .038$) and self-care agency. This was expected since the occurrence of the measured life events represent increased stress for the adolescent (Miller, 1981).

In regard to the second research question, significant positive relationships were found between perceived health status ($r = .39$, $p < .000$), perceived self-efficacy ($r = .47$, $p < .000$), family satisfaction ($r = .36$, $p < .000$), self-care agency ($r = .47$, $p < .000$), and the dependent variable self-care practices. In contrast, life events were found to have an inverse, although not statistically significant, relationship with self-care practices.

These findings are significant for nursing theory and knowledge development in that they support Orem's theory and the findings of other nursing research (Barnett, 1989; Denyes, 1988) including: (a) a relationship between

self-care agency and self-care practices as reported by Denyes; and (b) a relationship between health status and perceived self-efficacy and self-care practices as reported by Barnett (1989), Gaut and Kieckhefer (1988), and Walker, Sechrist, and Pender (1987).

In regard to the third research question, the four predictor variables taken together explained 32 percent of the variance in self-care agency. Of the four variables, only perceived self-efficacy was, by itself, a statistically significant predictor of self-care agency. Self-efficacy comprises the beliefs or perceptions about one's capability to perform the behavior required to produce a desired outcome (Bandura, 1986). This finding provided support for the conclusion of other researchers (Barnett, 1989; Gilchrist & Schinke, 1983; Weitzel, 1989) regarding the influence of perceived self-efficacy on health behaviors and indicated that perceived self-efficacy is a significant contributor to an intervening factor, self-care agency, that is predictive of self-care practices.

In relation to the fourth research question, the five predictor variables taken together explained 34 percent of the variance in self-care practices. Both perceived health status and self-care agency were, by themselves, significant predictors of self-care practices. The addition of self-care agency to the regression equation only accounted for another two percent of the variance in self-care practices. Since

none of the independent variables were strong predictors individually, together they may have a synergistic effect. These findings provided further evidence that perceived health status and self-care agency are significant contributors to the prediction of self-care practices, and support the findings of previous nursing research (Denyes, 1988; Gaut & Kieckhefer, 1988) and Orem's theory.

The six study variables (perceived health status, perceived self-efficacy, family satisfaction, life events, self-care agency and self-care practices) had not been included in prior research studies of obese adolescents. The interrelationships between these variables identified in this study have added to our knowledge of how these factors influence the self-care agency and self-care practices of obese adolescents.

Conclusions

The review of the literature indicated that few nurses are involved in research with obese adolescents. Unlike many of the studies on obese adolescents reviewed, this study was based upon a self-care theoretical framework and examined many perceptions and feelings not previously examined in obese adolescents. This study has made a contribution to foundational knowledge concerning the health-related perceptions and habits of obese adolescents. The results have provided additional insights into the relationships between basic conditioning factors and self-care agency and

self-care practices among obese adolescents.

The following conclusions were drawn from the study findings:

1. Obese adolescents with higher self-efficacy levels tend to be more effective self-care agents.
2. Obese adolescents with higher perceived health status and higher self-care agency levels tend to engage in more self-care practices.
3. Perceived health status, perceived self-efficacy, and self-care agency need to be fostered in an integrated way since alone they are not as predictive of self-care practices. Therefore, fostering each of these characteristics may help to enhance the self-care practices of obese adolescents more than interventions focused on enhancing one of these variables.

Implications for Nursing Practice, Education, and Administration

The implications of findings from this study for nursing practice, education, and administration are presented in the following section.

Nursing Practice. The implications of the study findings for nursing practice focus on the predictive relationship found between perceived self-efficacy and self-care agency, and the positive relationship between perceived health status and self-care agency and self-care practices. According to the findings of this study, there

is a moderately strong tendency for an obese adolescents' self-care agency to increase as their perceived self-efficacy increases. Then, as their self-care agency increases, the number of self-care practices they engage in tend to increase. In like manner, the more positive the perceptions obese adolescents have concerning their health status the more self-care practices they tend to report.

In nursing practice, the assessment of obese adolescents' perceived health status, perceived self-efficacy, self-care agency and self-care practices would provide a basis for determining the appropriateness or effectiveness of nursing interventions designed to enhance these factors. The study results may offer some tentative suggestions for weight reduction program directors and for health professionals who work with obese adolescents.

For example, in regard to perceived health status, the findings indicated that obese adolescents perceive themselves to be relatively healthy. An assessment of their body fat and fitness level (measured by endurance, strength, and flexibility) compared with percentiles from general adolescent populations, might increase the adolescents' awareness of how much their physical status departs from that of normal weight adolescents. This could decrease their perceived health status temporarily, resulting in an increased need to boost perceived self-efficacy and use

positive reinforcement to restore positive perceptions of their health status. Nurses could then include periodic fitness assessments and an exercise program in their interventions. Regular exercise would result in an improved fitness score and a higher perceived health status which seems to be positively related to self-care practices.

Since perceived self-efficacy was an important contributor to adolescents' self-care agency, this may also be an important factor for the nurse to assess. The theoretical literature reviewed in Chapter 2 discussed specific means of enhancing self-efficacy which may be pertinent after an assessment has indicated a low self-efficacy perception.

Based on the findings from this study, self-care agency is considered to be an important contributor to self-care practices. The degree of the adolescents' obesity does not seem to influence their self-care agency scores in the same way that it influenced their self-care practice scores. However, if health professionals' goals include improving obese adolescents' self-care practices, it seems that an assessment of their self-care agency would be an essential prerequisite. Then, nursing interventions could also be focused on enhancing those self-care agency components that are weakest.

Family satisfaction and life events were not found to be significant predictors of the dependent variable in this

study, although a positive relationship was noted between family satisfaction and self-care agency and self-care practices. Although the mean level of family satisfaction (measured as family cohesion and adaptability) obtained in this study did not appear to differ from general adolescent norms, prior research has indicated that family system abnormalities exist when eating disorders exist (Kog & Vandereycken, 1989). Therefore, a careful assessment of obese adolescents' family satisfaction might help to identify adolescents at risk for eating disorders. According to the literature, scores that are extreme on either pole can alert health professionals to possible problems, such as extreme cohesiveness or chaoticness which have been associated with weight problems and with eating disorders. Interventions might then be focused on the family system to promote a more balanced degree of cohesion and adaptability.

Obese adolescents were found to identify a greater number of life changes compared with other adolescents and life events were found to be negatively related to self-care agency. Considering the evidence from prior research (Heisel et al., 1973), life events seem to have a negative influence on health status and might have a negative influence on weight loss success. Since this variable is not amenable to direct management, health professionals may best contribute to adolescents' health promotion by teaching

coping skills for adapting to life changes. Thus, methods of dealing with adolescent and family life changes need to be explored and adolescent stressors, such as frequency of life events, need to be assessed.

Nursing Education. Nurse educators need to promote the continuing exploration and assessment of key factors that influence obese adolescents' self-care agency and self-care practices. Nursing education, particularly in family health nursing, should continue to educate students to assess families' health promotion behaviors. In addition, when working with obese family members, nurses should be encouraged to include an assessment of the adolescent's perceived health status, perceived self-efficacy, family satisfaction, and life events, as well as to explore other extraneous factors that may influence their self-care capability and self-care practices. An evaluation of these basic conditioning factors, along with other family system factors, may strengthen nursing students' understanding of obese family members' behavior and possibly add to their effectiveness in planning nursing systems to promote healthy lifestyle practices.

Nurse educators should emphasize that responsibility for self-care needs to be emphasized at an early age and families should be encouraged to evaluate what they are doing to positively influence their child or adolescents'

health behaviors. Nursing education can enable family health nurses to play greater roles as change agents, not only with individual and family systems, but in community systems as well.

Nursing Administration. Nurse administrators who oversee the care of obese adolescents could see that staff are trained to assess and intervene with a family systems approach. Since there are so many factors that influence self-care practices, it seems that professionals and/or programs need to offer a multidimensional modality in the assessment and treatment of obese adolescents. Nurses need to be given time to do the comprehensive assessments required, and rewarded for trying innovative interventions to enhance characteristics predictive of effective self-care practices.

Recommendations for Further Research

1. It is recommended that this study be replicated with a larger sample of obese adolescents comprised of a greater diversity of ethnic groups and socioeconomic levels without two groups and two types of data collection procedures. A representative sample with comparable numbers of male and female adolescents would also make the findings more generalizable.

2. Other variables need to be explored and added to the model of factors predictive of self-care practices of obese adolescents. For example, researchers may want to

explore the relationship between locus of control (being "internally" versus "externally" controlled), and self-care agency and self-care practices. Since other researchers (Chambliss & Murray, 1979) reported significant weight loss differences in patients who were "internal" and who were given self-efficacy communication, this experiment could be repeated with an obese adolescent population.

Variables such as parental weight and self-care practices could also be included in study designs since the number of variables that possibly influence the self-care practices of obese adolescents has not been exhausted. Researchers may also want to include a qualitative component to future studies in this area which could include open-ended questions that encourage obese adolescents and/or their parents to further express their perceptions, attitudes, and self-care practices related to their body weight. Interviews with adolescents and their parents would also allow the researcher to explore other health practice influencers that have not yet been identified.

3. Exploration of the effects of various interventions on the factors that influence self-care practices (perceived health status, perceived self-efficacy, and self-care agency) is needed. Prior research has provided guidelines for enhancing these factors (Chambliss & Murray, 1979; Moore, 1986; Strecher, DeVellis, Becker, & Rosenstock, 1986; Walker, Sechrist, & Pender, 1987; Weitzel, 1989).

4. Further experimental or quasi-experimental research is needed to compare participants' self-care agency and self-care practices prior to and following nursing interventions as a basis for determining if strategies for increasing self-care agency and/or self-care practices are effective. In addition, research should go beyond measuring only perceptions and, perhaps, include observations of behaviors or of physical parameters like weight loss and/or parental reports of their adolescent's behaviors.

5. Since there were differences between the campers and noncampers, it is recommended that the same statistics be repeated with the camper and noncamper groups. Path analysis could also be used to further explore contributing factors and further test the conceptual framework for this study.

Since the incidence of adolescent obesity has increased in the past one and a half decades in the United States, interventions are badly needed that will result in weight loss and reduce the risk of adulthood obesity. With continued research in this area nursing will be better prepared to develop effective interventions to promote, not only weight loss and maintenance of desirable weight among adolescents, but improvements in their perceived health status, perceived self-efficacy, family satisfaction, and management of life stresses. In turn, these changes may result in improved self-care agency, self-care practices, and general well-being in the obese adolescent.

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APPENDIX A
DEMOGRAPHIC QUESTIONNAIRE

Code # _____

Testing Location _____
(city)

Type of participant

_____ Camper

_____ Volunteer by mail

Demographic Information

_____ Age Birthdate _____

_____ Height _____ Weight

_____ Triceps Skinfold (if known)

Existing Medical Problems

_____ No

_____ Yes (please describe)

_____ Hypertension

_____ Orthopedic problems (describe)

_____ Thyroid

_____ Depression

_____ Other _____

Questionnaire A

INSTRUCTIONS: Please fill in the blank or circle the correct number to each question.

1. Age: I am _____ years old.
2. Sex:
 - 1 Male
 - 2 Female
3. Race:
 - 1 American Indian
 - 2 Asian
 - 3 American
 - 4 Black
 - 5 Hispanic
4. Education: My current grade in school is:

5 6 7 8 9 10 11 12
5. Number of people in your family _____ (include brothers and sisters who have moved out)
6. Parents' level of education (please check one)
 - 1 high school graduate
 - 2 some college education
 - 3 college graduate
7. Parents' marital status
 - 1 Married
 - 2 Divorced
 - 3 Remarried
 - 4 Separated
 - 5 Living with someone
8. Who influences your health habits the most right now?
Circle one.
 - 1 Mother
 - 2 Father
 - 3 Mother and Father
 - 4 Grandparent
 - 5 Sister or Brother
 - 6 Friends
 - 7 Television
 - 8 Magazines
 - 9 A health professional
 - 10 An important other adult
 - 11 _____ other person (write in)

Questionnaire A cont.

9. At what age were you first overweight? ____Never was
At age____
10. What was going on within one year of the time you first
became overweight? (Check all that apply.)
- __school problems
 - __moved
 - __changed schools
 - __problems with friends/peers
 - __problems with drugs or alcohol
 - __mood problems
 - __money worries
 - __parents separated or divorced
 - __parent remarried
 - __family problems
 - __health problems
 - __serious illness of someone close
 - __death of someone close
 - __other problems:_____

APPENDIX B
CANTRIL LADDER

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APPENDIX C
GENERAL SELF-EFFICACY SCALE

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APPENDIX D
FAMILY SATISFACTION SCALE

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APPENDIX E
ADOLESCENT-FAMILY INVENTORY OF LIFE EVENTS AND CHANGES

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APPENDIX F
DENYES SELF-CARE AGENCY INSTRUMENT

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APPENDIX G
PERSONAL LIFESTYLE QUESTIONNAIRE

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APPENDIX H
HUMAN SUBJECTS LETTER

University of San Diego
COMMITTEE ON THE PROTECTION OF HUMAN SUBJECTS

05 July 1990

Ms. Kathy James
617 Serpentine Dr.
Del Mar, CA 92014

Dear Ms. James,

Your proposal entitled "A Study of Factors Related to Self Care Agency and Self Care Practices of Obese Adolescents" was approved by CPHS at its meeting today. Formal notification and documentation of the committee's action has been forwarded to your faculty advisor, in care of Dr. Strause.

Sincerely,

Dr. Dán Moriarty, Chair

APPENDIX I
PARENT/ADOLESCENT CAMPER LETTER AND CONSENT FORM



University of San Diego

Philip Y. Hahn School of Nursing

Dear Adolescents and Parents,

I am conducting a study on factors that influence adolescents' health habits for my doctoral dissertation. The study is designed to provide professionals with a better understanding of overweight adolescents. I need adolescent volunteers between the ages of 12-18. I would appreciate it if you would participate in my study.

Participation will involve filling out questionnaires that take approximately 30 minutes to complete. These will be completed during your program registration. Please be assured that your responses will be strictly confidential. This is not a test with right or wrong answers. You may withdraw from the study at any time without interfering with your program status. To withdraw, you may return the questionnaire to the researcher and then continue with your scheduled orientation.

I realize that participation requires some of your time. However, by participating, you will be providing valuable information about your needs, beliefs, and habits which will be helpful in designing and improving adolescent health and weight loss programs.

If you have any questions, please call me at (619) 481-2750.

Enclosed is a consent form if you are willing to participate. Please sign and return the form to the camp director or when you register at camp.

Sincerely,

Kathy James, DNSc (candidate)

P.S. The camp has reviewed this study, and we feel that campers who participate will find the results interesting. The camp encourages research that we feel will add to our knowledge and understanding of the needs and concerns of adolescents and their health habits. Participation is voluntary, and will not take campers away from other activities, or disrupt their schedule.

Alcala Park, San Diego, California 92110 619/260-4548

CONSENT FORM

I give permission for Kathy James, a doctoral candidate in the School of Nursing at the University of San Diego, to use information from my questionnaires to examine what influences health habits of adolescents.

I understand that my participation is completely voluntary, and I may refuse to participate and/or withdraw from the study at any time with no negative consequences or disruptions in my care. This assurance has also been indicated by the camp administrator.

I understand the testing time is approximately 30 minutes and involves filling out questionnaires. The questionnaires will be completed during the first week of camp.

I agree to give Kathy James access to medical data available at the camp to collect information on my height, weight, tricep measurement and medical history.

I understand that my research records will be kept completely confidential. My identity will not be disclosed without consent required by law. I further understand that to preserve my anonymity, only group data will be used in any publication of the results of this study. I will receive no compensation, financial or otherwise.

I understand that there are no physical or social risks involved. If I experience any discomfort or anxiety from any of the questions, I may withdraw from the study at that time and/or arrange to talk with the researcher who is a family health nurse to discuss my concerns.

There was the opportunity to ask questions about the study prior to signing this form by contacting Kathy James at (619) 481-2750.

There is no agreement between myself and the researcher, written or verbal, beyond that expressed on this consent form.

I, the undersigned, understand the above explanations and, on that basis, I give consent to my voluntary participation in this research.

Signature of Adolescent Date

Signature of Parent Date

Location (e.g., San Diego, CA)

Signature of Researcher Date

Signature of Witness Date

APPENDIX J

NONCAMPER PARENT/ADOLESCENT LETTER AND CONSENT FORM



University of San Diego

Philip Y. Hahn School of Nursing

617 Serpentine Dr.
Del Mar, CA 92014
August 29, 1990

Dear Adolescent and Parent,

Thank you for responding to my notice for volunteers.

I am currently conducting a study on factors that influence adolescents' health habits for my doctoral dissertation. The study is designed to provide professionals with a better understanding of overweight adolescents. I need adolescent volunteers between the ages of 12-18. I would appreciate it if you would participate in my study.

Participation would involve filling out questionnaires that take about 30 minutes to complete. You would fill them out at home and return them in a stamped, addressed envelope to me.

Please be assured that your responses will be strictly confidential. This is not a test with right or wrong answers. You may withdraw from the study at any time by simply not returning the questionnaire.

I realize that participation requires some of your time. However, by participating you will be providing valuable information about your needs, beliefs, and habits which will be helpful in designing and improving adolescent health and weight loss programs.

If you have any questions, please call me at (619) 481-1244 or write me at the above address.

Enclosed is a consent form if you are willing to participate. Please sign and return it in the stamped envelope and I will mail the questionnaires to you.

Thank you for considering to help me with my research.

Sincerely,

Kathy James, RN, DNSc (candidate)

CONSENT FORM

I give permission for Kathy James, a doctoral candidate in the School of Nursing at the University of San Diego, to use information from my questionnaires to examine what influences health habits of adolescents.

The results of this study will provide information about overweight adolescents' feelings and their health habits. These results will provide needed information to develop programs to meet the needs and concerns of overweight adolescents.

I understand that my participation is completely voluntary, and I may refuse to participate and/or withdraw from the study at any time.

I understand the testing time is approximately 30 minutes and involves filling out questionnaires.

I understand that the information collected will be kept completely confidential. My identity will not be disclosed without consent required by law. I further understand that to preserve my anonymity, only group data will be used in any publication of the results of this study. I will receive no compensation, financial or otherwise.

I understand that there are no physical or social risks involved. If I experience any discomfort or anxiety from any of the questions, I may withdraw from the study at that time and/or arrange to talk with the researcher who is a family health nurse to discuss my concerns.

There was the opportunity to ask questions about the study prior to signing this form by contacting Kathy James at (619) 481-1244.

There is no agreement between myself and the researcher, written or verbal, beyond that expressed on this consent form.

I, the undersigned, understand the above explanations and, on that basis, I give consent to my voluntary participation in this research.

Signature of Adolescent Date

Signature of Parent Date

Location (e.g., San Diego, CA)

Signature of Researcher Date

Signature of Witness Date

APPENDIX K
LETTER OF PERMISSION FOR DATA COLLECTION
AT SUMMER CAMP

CAMP

California 92122 Telephone (619)

June 18, 1990

TO: Committee on the Protection of Human Subjects
University of San Diego

Please be advised that Kathy James has obtained permission to conduct her study of Factors Related to Self-Care Agency and Self-Care Practices of Obese Adolescents with volunteer participants attending Camp and Camp the summer of 1990.

Sincerely,

Executive Director

APPENDIX L
LETTER TO PROFESSIONALS TO SOLICIT
NONCAMPER PARTICIPANTS

617 Serpentine Drive
Del Mar, CA, 92014
(619) 481-1244

Dear Professional,

As mentioned in the recent SHAPEDOWN newsletter, I am conducting a study on factors that influence health habits of overweight teens (12-18) for my doctoral dissertation. The purpose of the study is to add to our knowledge base information on how teens perceive themselves, their general belief that they can make lifestyle changes, the influence of family and individual life changes, decision-making experience and capability and health practices. My interest in teens stems from my involvement as a SHAPEDOWN provider also. I have offered the program for five years now and remain enthusiastic about what SHAPEDOWN has to offer.

The purpose of this letter is to ask for your assistance. As a student and doctoral candidate in nursing, I need participants to fill out a one time questionnaire that takes approximately 35 minutes to complete. The teen may fill the questionnaire out at home and return it to me in the self-addressed, stamped envelope. The requirement for participation is that the adolescent is between 12 and 18 and is overweight (20% above expected range or tricep greater than 85th percentile). The teens do not have to be enrolled in a program to participate. Perhaps you are counseling them individually or know of an overweight teen.

Procedure: If you have an interested teen, send or hand them a letter and consent form. After they have returned the signed form, mail them the prestamped questionnaire packet. They can return it directly to me in the envelope provided. No personal identification is requested.

If you are interested in research and would help me out, simply return the postcard and indicate how many information packets you would like. I will be collecting data as long as it takes to obtain 100 participants. However, please ask the volunteer to return the forms as soon as possible. I am striving to finish data collection by the end of September but will continue to accept questionnaires after that time. Regardless if you have two or twenty volunteers, I am interested in your assistance. I will provide a follow-up summary in the newsletter in the future.

If you have any questions, please do not hesitate to call me collect at (619) 481-1244. Thank you very much for your consideration of this project. Enclosed is a sample questionnaire for your review and postcard.

Sincerely,

Kathy James/RN, Doct. Cand.