

SELF-ESTEEM AND HEALTH-PROMOTING LIFESTYLE AS PREDICTORS OF  
HEALTH-RISK BEHAVIOR AMONG OLDER ADOLESCENTS

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COLLEGE OF NURSING

BY

MARTHA R. BUTLER, M.N.

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DENTON, TEXAS

MAY, 1995

TEXAS WOMAN'S UNIVERSITY  
DENTON, TEXAS

November 21, 1994  
Date

To the Associate Vice President for Research and Dean of the Graduate School:

I am submitting herewith a dissertation written by Martha R. Butler entitled "Self-Esteem and Health-Promoting Lifestyle as Predictors of Health-Risk Behavior Among Older Adolescents." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in nursing.

Maise Kashka  
Maise Kashka, Ph.D., Major Professor

We have read this dissertation  
and recommend its acceptance:

Patricia Harrison  
Glen H. Jennings

Accepted

Leslie M Thompson  
Associate Vice President for Research  
and Dean of the Graduate School

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This work is dedicated to my family, who many times have sacrificed, but have never questioned. Their love, support, and encouragement have helped to make this experience all that it has been.

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# SELF-ESTEEM AND HEALTH-PROMOTING LIFESTYLE AS PREDICTORS OF RISK BEHAVIOR AMONG OLDER ADOLESCENTS

## ABSTRACT

MARTHA R. BUTLER, M.N., R.N.

TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING  
MAY, 1995

The purpose of this study was to investigate a model of health-risk behavior among older adolescents. Specifically, relationships between self-esteem, health-promoting lifestyle, and health-risk behavior, and the importance of self-esteem and health-promoting lifestyle in predicting health-risk behavior were examined.

The conceptual framework was based on the concepts identified in self and symbolic interactionism theories, as well as those in health promotion, adolescent and problem behavior theories. The interaction among the variables identified in the conceptual framework guided the development of the five research hypotheses.

A predictive, correlational research method was used to test the hypotheses. The Rosenberg Self-Esteem Scale (Rosenberg, 1965), the Health-Promoting Lifestyle Profile (Walker, Sechrist, & Pender, 1987), and the Youth Risk Behavior Survey (YRBS) were used to collect data.

The study sample consisted of 120 college students attending a small, private,

four-year liberal arts college. Mean age was 18.8 years. Students participated after being informed verbally and in writing of the purpose and voluntary nature of the study.

Proposed relationships were analyzed by Pearson's product moment correlation and chi-square analysis. Discriminant function analysis was used to determine the power of health-promoting lifestyle and self-esteem in predicting health-risk behavior. Risk behavior was defined by specific YRBS items addressing sexual and alcohol-use behavior. One hypothesis was supported, one was not supported, and three hypotheses were partially supported. Relationships were found between self-esteem and health-promoting lifestyle, between health-promoting lifestyle and specific risk behaviors, and among specific personal characteristics such as academic self-assessment, religiosity, and physical health self-assessment and risk behaviors. Self-esteem was positively correlated with risk behavior, which was opposite the hypothesized direction. Self-esteem and health-promoting lifestyle were found to successfully predict membership into dichotomous risk behavior groups for two of the sexual behavior variables.

The study concluded that health-promoting lifestyle may have a positive effect on behavior, and may be useful in predicting health-risk behavior among older adolescents, but that self-esteem may have a spurious relationship with risk behavior, and should be investigated further.

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## CHAPTER 1

### INTRODUCTION

Adolescent health has attracted the attention of researchers in a variety of disciplines as professionals have sought to determine effective methods for the improvement of the health of adolescents. Adolescent health is of importance because negative health habits established in childhood or adolescence represent lifetime threats to health, and the morbidities of adolescence have shifted from primarily organic to primarily social etiologies (Bearinger, Wildly, Gephart, & Blum, 1992). Additionally, adolescents comprise a major at-risk group for serious threats to health. The United States Office of Technology Assessment estimated in 1991 that approximately one out of five of the 31 million adolescents ages 10-18 in the United States has at least one serious health problem, although many more may be in need of health services (Dougherty, 1993). According to the Department of Health and Human Services (1990), unintentional injuries account for about half of all deaths among adolescents, while violent behavior is the second leading cause of death among this age group. Use of tobacco continues to be a problem, as approximately 19% of high-school seniors report daily smoking. The use of smokeless tobacco has become a recent concern: between 1970 and 1986 snuff use increased fifteen-fold and chewing tobacco use increased fourfold among young men aged 17 through 19. Although alcohol consumption among

adolescents has declined since the early 1980's, it remains a major problem and continues to be the most widely-used drug (Oetting & Beauvais, 1990). In 1989, 60% of high-school seniors reported drinking alcohol in the previous month, while 33% reported occasions of heavy drinking. As many of 92% of high-school seniors report having used alcohol at some time in their life (Oetting & Beauvais, 1990). While use of illicit drugs among high-school students declined slightly during the late 1980's, it remains a problem for about 1.4% of this population, and experimentation with these substances often starts early. Lastly, sexual behavior among adolescents remains a major concern. An estimated 78% of adolescent females and 86% of adolescent boys have engaged in sexual intercourse by age 20. Of the 1.1 million girls aged 15 through 19 who become pregnant each year, an estimated 84% did not intend pregnancies. Risks of this indiscriminate sexual behavior include not only pregnancy, but sexually-transmitted diseases such as HIV and other infections and psychosocial risks as well. In addition to physical health problems, psychosocial risks include delayed or discontinued education, effects on interpersonal relationships, and potential progression to other categories of risk behaviors. These trends lend support to concern for what is termed the "new morbidities," or the potentially harmful outcomes of drugs, sex and violence among adolescents (Dryfoos, 1991).

Improvement of adolescent health, therefore, was cited as a major goal of the nation in 1986, and continues to be a focus of national concern (Department of Health



and Human Services, 1986; 1990). In order for these concerns to be addressed, the components of adolescent health must be studied more closely, and relationships among the antecedents of health behavior, as well as health-risk behavior, identified.

### Statement of the Problem

The problem of the study was: What is the influence of self-esteem and health-promoting lifestyle upon health-risk behavior among adolescents? Specific questions to be addressed in the study are as follows.

1. What health-promoting behaviors exist among adolescents?
2. Are there relationships among self-esteem, health-promoting lifestyle, and risk behaviors among adolescents?
3. Is there a difference in the frequency of health risk behaviors between adolescents who engage regularly in a health-promoting lifestyle and adolescents who do not?
4. What is the importance of self-esteem and health-promoting lifestyle in predicting health-risk behavior in adolescents?

### Purpose of the Study

The purpose of this study was to investigate a model of health-risk behavior among adolescents; specifically, the importance of the variables of self-esteem and

health-promoting lifestyle as predictors of health-risk behavior. The study's purpose is fourfold:

1. to examine health-promoting behaviors in adolescents;
2. to determine the existence of health-risk behaviors among adolescents;
3. to determine if adolescents who engage regularly in a health-promoting lifestyle differ in the frequency of health-risk behaviors; and
4. to determine the relative importance of self-esteem and health-promoting lifestyle as predictors of risk behavior among adolescents.

### Rationale for the Study

The assumed importance of health-promoting behavior among adolescents is well-documented in the literature. Adolescents are the only population in the United States who have not experienced a recent improvement in their health status (Bearinger, Wildey, Gephart, & Blum, 1992; Blum, 1987). Adolescent health problems and the causes of most adolescent deaths differ markedly from those of other age groups because health compromising risk-taking behaviors are so characteristic of adolescence (Brash, 1989). Further, various behaviors during adolescence can lead to lifestyle patterns which result in chronic illness later in life. Accordingly, the major risks to adult health, such as coronary heart disease and cancer, are closely linked to behavior developed early in life (Dignan, Steckler, Block, Howard, & Cosby, 1986). According to the Department of

Health, Education, and Welfare (1979), the majority of the mortality in the United States is due to unhealthy behavior or lifestyle.

Laffery (1985a) states that lifestyles are complex, involving numerous concerns and activities that may be far removed from a conscious awareness of health or disease. For adolescents, these concerns include the developmental task of struggling with identity and the accompanying preoccupation with self. Risk-taking behaviors may fulfill needs of adolescents, such as establishing independence and personal identity to help them deal with anxiety and stress, and are often interrelated (Brash, 1989). Since these behaviors do not usually exist in isolation from one another, they need to be studied comprehensively (Rakowski, 1988). Further, in order to effectively target health-risk behaviors, antecedent psychosocial determinants must be identified.

Various aspects of adolescent behavior have been studied, and developmental literature is replete with documentation of self-esteem development during adolescence. Additionally, research has shown a relationship between self-esteem and certain positive health practices, particularly among adults (Muhlenkamp & Sayles, 1986; Hallal, 1982). Little information, however, is available about the relationships among self-esteem, health-promoting lifestyle, and risk behavior, particularly among adolescents.

Although educational efforts designed to reduce adolescent health risk behaviors have demonstrated positive changes in knowledge and attitudes, results of programs to decrease such behavior among adolescents are often disappointing (Petosa, 1986).

Indeed, studies have consistently indicated that although adolescents are knowledgeable about the risks of specific behaviors, they continue to engage in those risky behaviors (Holmbeck, Crossman, Wandrei & Gasiewski, 1994). It follows, then, that in order for people, including adolescents, to truly embrace a desire to avoid risk-taking behaviors, they must go beyond being knowledgeable about health to an actual integration of health promotion behavior into their lifestyle. In addition, assessments that produce more than survey data regarding prevalence of behavior are important, particularly to the extent that various risky behaviors coexist, if adolescent risk behavior is to be better understood and addressed (Metzler, Noell, & Biglan, 1992).

Allan (1987) reviewed epidemiological studies that provided data on lifestyle and physiological precursors to major health problems, and concluded that improvements in the health status of individuals will not occur through emphasis on treatment but through efforts in prevention and health promotion. In order to focus on health promotion for adolescents, it will be important to take into account the social and psychological motivations and functions of health-damaging behavior (Hurrelman, 1990). Exploration of relationships among self-esteem, health-promoting lifestyle, and health-risk behavior could have important practical implications for adolescent health promotion. A better understanding of the factors which may predict adolescent risk behavior will provide nurses in a variety of settings with valuable information in order to target their educational and supportive efforts. If nurses are to reach the profession's goal of health

promotion (Donaldson & Crowley, 1978; Ellis, 1982), emphasis must be placed on this understanding.

### Conceptual Framework

The model to be investigated in this study is derived from the theoretical perspectives of the three variables: self-esteem, health-promoting lifestyle, and health-risk behavior.

#### Self-Esteem

Self-concept is viewed as "how one sees oneself." Self-esteem is the affective, or evaluative component of self-concept, and therefore is based on the self-concept, regardless of the validity of the perceptions comprising it. Self-esteem, then, is "how one feels about how one sees oneself," and is a learned phenomenon involving a lifelong process (Stanwyck, 1983). According to Rosenberg (1965), self-esteem is a positive or negative attitude toward the self. Positive self-esteem or "high" self-esteem, implies that an individual feels that he/she is a person of worth, respects self for what he/she is, but does not necessarily consider himself/herself superior to others. Negative or "low" self-esteem implies self-rejection, self-dissatisfaction, or self-contempt. An individual with low self-esteem lacks respect for the self he/she observes (Rosenberg, 1965).

Humans act in a world that they define, according to their perceived idea of self (Charon, 1979). Thus, self-esteem may influence behavior, and further behavior is modified on the basis of the individual's perception of implications that the original

behavior has had (Charon, 1979). One's self-esteem, then, may influence certain behaviors, including health-promoting and health-risk behaviors, particularly during the developmental confusion of adolescence.

### Health Promoting Lifestyle

Health promotion is directed toward increasing the level of well-being and self-actualization of a given individual or group, and focuses on movement toward a state of enhanced health and improvement of quality of life (Pender, 1987; Duncan & Gold, 1986). Health-promoting behaviors are continuing activities that must be an integral part of an individual's lifestyle, and are an expression of the actualizing tendency (Pender, 1987). As such, these behaviors represent the individual acting on the environment in order to move toward higher levels of health, rather than to react to external influences or threats posed by the environment (Pender, 1987). Therefore, health-promoting behaviors are those about which individuals must make active decisions, and are influenced by individual values, attitudes, needs, and perceptions, as well as social and environmental forces (Petosa, 1986).

### Health Risk Behavior

Lifestyle risk factors equal, if not surpass, biological ones in causing disease and death (Department of Health and Human Services, 1990). During the stressful developmental transition of adolescence this reality may be intensified. Adolescent health problems and most adolescent deaths result from the health-compromising or

risk-taking behavior of this age group (Mullen, 1983; Brash, 1989).

In identifying risk behaviors among adolescents it is important to acknowledge the influence of the developmental maturity level of this stage. There seems to be an apparent lack of responsibility and forethought that accompanies certain behaviors of teenagers (Howe, 1986), and this situation may be attributable to the tasks during adolescence. Among adolescents, rapid personal development and increasing social expectations make the early years of this period a time of high psychosocial and physical vulnerability (Petosa, 1986). Furthermore, according to Petosa (1986), overreliance on peers, poor social competence, and a defiant, impulsive approach to lifestyle choices often circumvent responsible decision-making behavior. To complicate the issue, health-enhancing as well as health-damaging behavior are seen as part of the process of solving developmental tasks. Thus, risk behavior must be understood as being functional, i.e., instrumental, purposeful, and goal directed. It may have, from the adolescent's perspective, both positive and negative consequences (Hurrelmann, 1990). Therefore, health-risk behaviors among adolescents have a strong social influence and may be deliberate, however resulting consequences may not necessarily be realistically anticipated.

#### Characteristics of the Model

The model investigated theorized that relationships exist among the three variables. Through a predictive correlational method of investigation, the direct effect of

self-esteem and demographic variables on health-risk behavior was evaluated.

Furthermore, the indirect effect of demographic variables and self-esteem on health-risk behavior through their effect on health-promoting lifestyle was also investigated. The postulated relationships stated in the model to be investigated are depicted in Figure 1.

### Assumptions

1. Self-report is valid in the area of health-promoting behavior.
2. The model is adequately specified.
3. There are no variables omitted which would preclude adequate testing.
4. The sample chosen was a proxy for high-school age adolescents.
5. The sample chosen was capable of revealing the full range of relationships under investigation.
6. Self-esteem can be measured.
7. Health-promoting behaviors can be measured.
8. Health-risk behaviors can be measured.

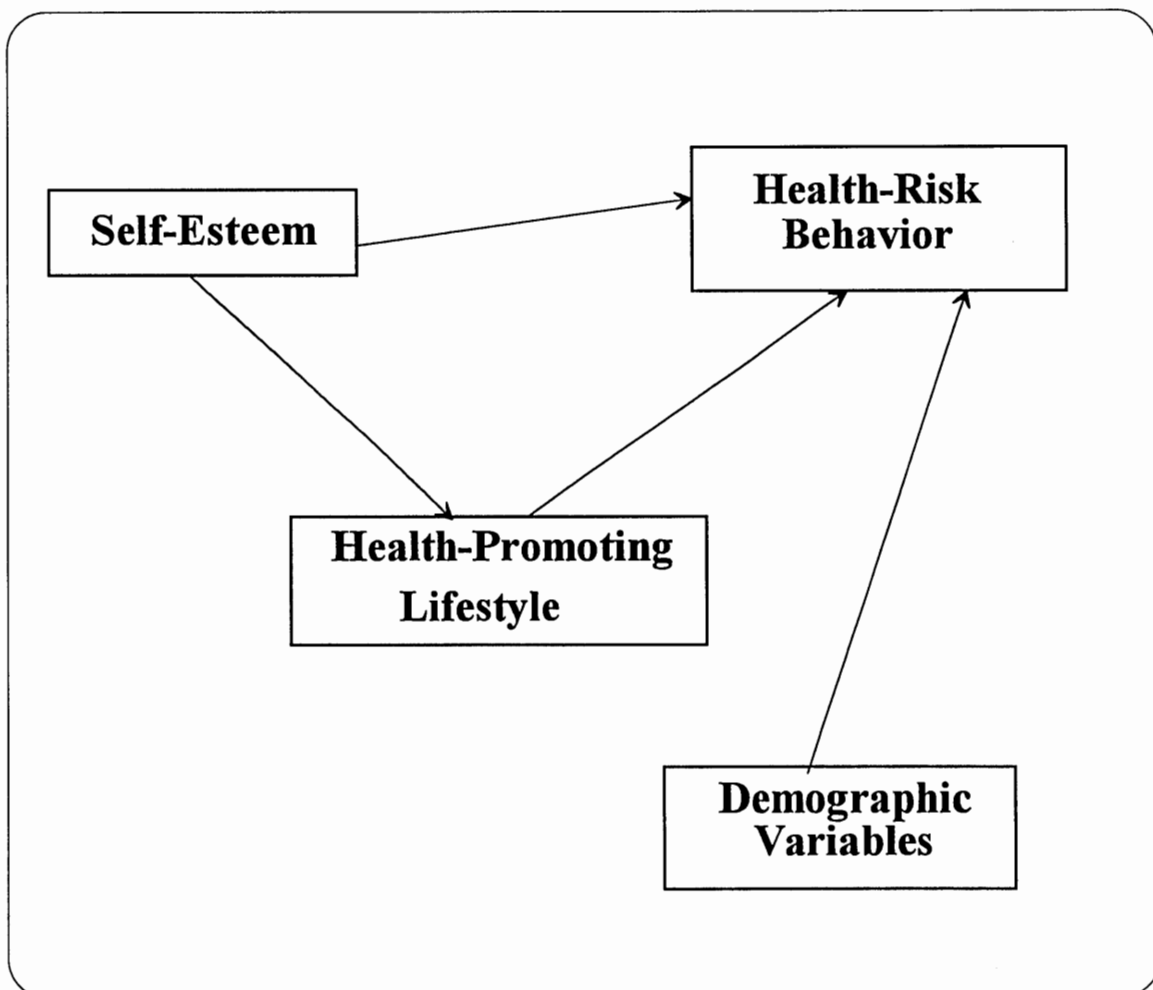
### Research Hypotheses

The following research hypotheses were derived from the theoretical model to be investigated in this study.



Figure 1

## Adolescent Health-Risk Behavior Model



Among adolescents:

1. There is a positive relationship between self-esteem and health-promoting lifestyle.
2. There is a negative relationship between self-esteem and health-risk behavior.

3. There is a negative relationship between health-promoting lifestyle and health-risk behavior.

4. There are relationships among demographic variables and health-risk behaviors among adolescents.

5. Self-esteem and health-promoting lifestyle are predictive of health-risk behaviors.

### Definition of Terms

#### Self-Esteem

Self-esteem is defined as the evaluative component of the self-concept. It involves how one feels about oneself, and is influenced by others' perceptions. The concept was operationally defined as the score on the Rosenberg Self-Esteem Scale (Rosenberg, 1965).

#### Health-Promoting Lifestyle

Health-promoting lifestyle is defined as that which is consciously chosen and involves attitudes and behaviors which improve one's potential for life-long well-being. The concept was operationalized as the scores on the Health-Promoting Lifestyle Profile, as well as the six subscales which are conceptualized to comprise the total profile score (Walker, 1985). These subscale concepts are:

##### 1. Self-Actualization

2. Health Responsibility
3. Exercise
4. Nutrition
5. Interpersonal Support
6. Stress Management

### Health-Risk Behavior

Health-risk behavior is defined as that which may result in a negative change in physical, emotional, or psychological health. Health-risk behaviors include those socially defined as problems, as sources of concern or undesirable by the norms of conventional society and institutions of adult authority (Jessor & Jessor, 1977). Health-risk behavior was operationally defined as three often-cited groups of behaviors which are implicated as deterrents to adolescent health promotion. These categories will be included on the Youth Risk Behavior Survey and include:

1. substance use, primarily use of alcohol, tobacco, and other drugs;
2. indiscriminate or permissive sexual activity; and
3. behaviors potentially leading to physical injury, such as irresponsible, careless, and violent or aggressive behavior, including suicide.

### Limitations

The limitations of this study were as follows.

1. A variety of variables which influence health-promoting behavior were not controlled. According to Pender (1987), these variables include cognitive-perceptual factors such as perceptions of control of health, self-efficacy, health status, benefits of health-promoting behaviors and barriers to health-promoting behaviors; importance of health; and definition of health. In addition, modifying influences which are interpersonal, situational, or behavioral in nature may influence health-promoting behavior (Pender, 1987), and were not controlled.

2. A variety of variables which influence health-risk behavior were not controlled. These variables include environmental influences as well as perceptions of those influences, existing behavioral patterns (Perry & Murray, 1982), and a variety of psychosocial influences which are thought to affect adolescent behavior.

3. The sensitive nature of some of the behaviors about which adolescents were questioned, as well as the self-report nature of the instruments, may have resulted in less than valid information.

4. The sample was nonrandom, since students at a small, private college do not represent the population of adolescents. Any student who was absent from class for any reason on the days of data collection was not included.

### Delimitations

1. The sample consisted of students between the ages of 18 and 21 who were

attending college in a small midwest town.

2. The study controlled for demographic variables such as age, gender, socioeconomic status, academic standing, and family situation, as well as certain biologic characteristics, such as chronic illness, congenital anomaly, or alteration in mental health. These are considered to be influences of health-promoting behavior (Pender, 1987).

### Summary

Chapter one explored the need to examine adolescent risk behavior in relation to self-esteem and health-promoting lifestyle. The proposed model, based on the Health Promotion Model developed by Pender (1987) and the Adolescent Health Behavior Model proposed by Perry and Murray (1982), was presented. Assumptions underlying the model have been identified. A positive relationship between self-esteem and health-promoting lifestyle, and negative relationships between self-esteem and health-risk behavior, and between health-promoting lifestyle and health-risk behavior were hypothesized. Terms relevant to the hypotheses were defined, and limitations and delimitations of the study conclude the chapter.

## CHAPTER 2

### REVIEW OF LITERATURE

The literature review is the result of analysis of resources located through the use of manual and electronic on-line and CD-ROM searches. On-line searches utilized include ERIC, MEDLINE, and Health Information File; while CD-ROM searches included the Cumulative Index to Nursing and Allied Health Literature Silver Platter and the Expanded Academic Index (Infotrak). The review is presented in four sections. The first addresses classical self and self-esteem literature. The second section focuses on research conducted to examine the relationship between self-esteem and various health-related variables. The third section reviews general health-promotion literature. Finally, the fourth section addresses adolescent health promotion and adolescent health-risk behavior. Subsections include adolescent health promotion, adolescent development and health-risk behavior, specific health-risk behaviors among adolescents, and coexistence and predictors of risk behaviors. Summary statements are provided at the conclusion of each section, and a summary paragraph concludes the review of literature.

#### Development of Self and Self-Esteem

Concepts related to the self have been studied throughout history. William James described self-concept in 1890 as the unique kind of interest which the human mind

perceives and which influences a person's decisions and actions (Rosenberg, 1979; Tzeng, Maxey, Fortier, & Landis, 1985). The "social-self" is a concept developed by Cooley in the early twentieth century, and from it was coined "the Looking Glass Self." This dimension results from imagining how one's appearance, mannerisms, or personality is viewed by others, and the individual becomes emotionally affected by this view.

According to Cooley, "the process of developing an image of oneself includes the imagined appearance of oneself to the other, and finally an affect, or 'self-feeling' such as pride or embarrassment. These feelings of self begin at birth and are embellished by experiences the child encounters which promote their growing complexity" (Hoover, 1984, p. 126).

George Herbert Mead supported Cooley's ideas and in 1934 articulated three premises of symbolic interactionism which describe the ability of an individual to serve as both subject and object simultaneously (Rosenberg, 1979; George, 1982). These premises state that "(a) human beings act toward things on the basis of the meanings the things have for them, (b) these meanings are a result of social interaction in human society, and (c) these meanings are modified through an interpretive process by each individual" (George, 1982, p. 191). Further, the "I" gives the individual's self a sense of uniqueness; where the "me" is the self that one can reflect upon and objectively evaluate. Development of the self-concept, according to Mead, is a lifelong process which involves taking on the viewpoint of another individual (Hoover, 1984). Mead, therefore, viewed

self-concept as a function of the individual's concern about how others react to him (Drieuer, 1976).

Similarly, Sullivan described the self-concept as arising out of social interaction. Based on rewards and punishments imposed by one's significant others, the person forms a "reflected appraisal" of himself. Thus, this interaction becomes the key to formulation of the self-concept (Drieuer, 1976; Muhlenkamp & Sayles, 1986).

Lewin (1936) described the self-concept as a life space region that determines the present belief about the self. Life space included the individual's universe of personal experience. According to Andreoli (1980), Combs and Snygg postulated that self-concept is a basic variable affecting and controlling perceptions, which eventually affects the behavior of the individual. Therefore, goals toward which people aspire are dependent upon the degree to which they perceive the goals as contributing to the maintenance of the enhancement of self (Andreoli, 1981). This theory views the self-concept as a map that each individual consults in order to understand himself, especially during moments of crisis or indecision (Drieuer, 1976).

Carl Rogers viewed the self-concept as a phenomenological concept; the self as seen by the experiencing person. Further, there is no reality for the individual other than that given by his perceptions. Once the self has developed, experiences are perceived and evaluated in terms of their relevance and significance to the self. The self-concept then becomes the most significant determinant of response to the environment. Rogers



discussed the ability of an individual to allow changes to occur in the self-concept, according to the needs perceived by the individual (Patterson, 1979).

Self-concept was defined by Driever (1976) as "the composite of beliefs and feelings that one holds about oneself at a given time, formed from perceptions, particularly of others' reactions and directing one's behavior" (p. 169). The component parts of the self-concept are believed by various theorists to include the physical self, the intellectual self, the moral-ethical self, the emotional self, and the social self; each of which has an associated evaluative dimension that is labeled self-esteem (Taft, 1985). Therefore, self-esteem involves an affective quality of the self-concept. An individual is thus able to place a value on each component of the self-concept which determines the satisfaction or dissatisfaction individuals experience with their self-concept (Taft, 1985).

This idea is consistent with Stanwyck's (1983) definition of self-esteem as involving "how I feel about how I see myself" (p. 11). Self-esteem, according to Stanwyck, is based on self-concept, regardless of the validity of the perceptions that comprise the self-concept. Stanwyck views self-consistency theory as closely related to self-esteem in that behavior and interpretation of experiences rely heavily on self-esteem and will be used to confirm it. For adolescents, according to Stanwyck, the achievement of identity and autonomy are major sources of self-esteem.

As the concept of self develops, behaviors are involved which help to identify and label the individual's unique personality (Hoover, 1984). Furthermore, the individual

utilizes behaviors to compare and contrast himself to others in society, and depending on motivation, behavioral styles are chosen (Gergen, 1971).

Rosenberg (1979), in a discussion of the nature of the self-concept, identified three broad aspects: (1) the extant self, or how the individual sees himself; (2) the desired self, or how the individual would like to see himself; and (3) the presenting self, or how the individual shows himself to others. Self concept was defined by Rosenberg as the "totality of an individual's thoughts and feelings having reference to himself as an object"--not as a subject (Rosenberg, 1979, p. 7).

Earlier, in a study of 5,024 adolescents, Rosenberg (1965) sought to determine their view and feelings of themselves, and the criteria they were using for this evaluation. Specifically, the study's purpose was to determine the bearing of certain social factors on self-esteem as well as to identify the influence of self-esteem on socially significant attitudes and behavior. A major assumption of the study was that the self-image is central to the subjective life of an individual and is a determinant of thoughts, feelings, and behavior. Rosenberg did not specify the distinction among self-concept, self-image, and self-esteem. Data were collected using a ten-item Guttman scale which Rosenberg believed had "satisfactory reproducibility and scalability" (Rosenberg, 1965, p. 16).

Results of the study indicated that self-esteem is influenced by a wide array of variables (Rosenberg, 1965). Certain family composition variables, and extreme parental indifference (as opposed to punitive parental reactions) were associated with low

self-esteem. Subjects experiencing dissonant religious or social contexts were found to exhibit slightly lower self-esteem scores than those not experiencing these situations, indicating that youths who are uncertain about their worth become even more confused or doubtful when defined by others as different. It was also theorized that self-esteem may influence variables such as anxiety. It was found that low self-esteem may generate anxiety because of instability of self-pictures, strain of protecting the "presenting-self", sensitivity to feelings of inadequacy, incompetence, or worthlessness, and feelings of isolation.

In turn, Rosenberg's results supported the idea that self-esteem has an effect on attitudes and behavior. Because adolescents with low self-esteem experience an extreme sensitivity to criticism or ridicule, may find interpersonal relationships difficult or awkward, and lack confidence, they may avoid other people or at least fail to initiate social contact. Rosenberg's subjects tended to believe that they lacked appealing qualities, and that they were unimportant and uninteresting to other people. They further indicated that, as a result, they would make special efforts to gain success at interpersonal relationships. Subjects low in self-esteem also tended to have higher levels of detachment and isolation, distrust of others, and docility. Because of these findings, Rosenberg further theorized that "people act on the basis of their assumptions of what they are like, and these actions, in turn, have characteristic consequences for their lives in society" (p. 187). It was noted that adolescents with low self-esteem were less likely to be involved

in extracurricular activities, to participate in informal or formal discussions, to hold an elected post in a club or school organization, to be interested in political affairs, or to hold a position which will cause them to be in conflict or competition with others.

Greene and Reed (1992) compared college and non-college youth on self-esteem and patterns of associations between self-concept and self-esteem within each group. Some of their findings were consistent with Rosenberg's formulation that self-esteem is associated with certain self-concept dimensions (achievement, adjustment, and masculinity/femininity). However, self-esteem was not associated with sociability. Agency, a concept which predicted self-esteem in college, but not non-college, youth seemed to reflect the sense that one can accomplish life tasks or goals. Achievement, on the other hand, predicted self-esteem in noncollege, but not college, youths. This concept seemed to reflect goals on end states to which one aspires independent of their likely accomplishments. The authors emphasized the importance of distinguishing between evaluative and connotative aspects of self-perception particularly when differences in social context (college vs. noncollege) are considered.

In summary, feelings about the self have origins in one's imagined appearance as well as in individuals' interactions with others. The symbolic interactionist view supports the importance of social interaction in the development of the self concept through providing meaning for the individual. There is agreement in the literature that a part of the self exists which provides a reflected evaluation about the self, and this component is

self-esteem. Further, this perception of oneself, as well as the impact of the experiences on the self, constitutes the reality which guides and directs behavior. Self-concept affects perceptions, thus affecting behavior since people aspire to goals they perceive as self enhancing. There is also agreement that self-esteem is the result of family and social variables, and that behavior relies on self-esteem and will be used to confirm it.

### Self-Esteem and Health

Self-concept and self-esteem have been extensively studied in relationship to numerous variables. Current research involving self-concept and self-esteem in relation to health, health attitudes, health behaviors, and health practices are summarized here.

Reasoner (1983) emphasized the significance of self-esteem for mental and physical health, academic achievement, job satisfaction, and success in life. According to Reasoner, research has indicated that academic and job performance can be more accurately predicted from self-concept measures than from those measuring intelligence. Further, self-esteem is a basic personality characteristic essential for not only academic achievement and creativity, but also for productive behavior in general (Reasoner, 1983).

In order to explore the relationship between physical health and self-esteem, Antonucci and Jackson (1983) studied data from 2,264 adults aged 21 years or older. Measures included items from the Rosenberg Self-Esteem Scale, sociodemographic characteristics, and a self-report instrument designed to measure health. For health, three

predictor variables were measured: the existence of a health problem, the type of health problem, and the subject's perception of the health problem. Data analysis focused on the univariate and relative relationships of the predictor variables to self-esteem, while sociodemographic measures were used as control variables. Results indicated a relationship between self-reported health and self-esteem. Existence of a health problem, regardless of type or severity, was associated with significantly lower self-esteem than was an absence of a problem [ $F(1, 2015) = 56.38, p < .01$ ]. Significant differences in self-esteem were also found among individuals reporting no health problems, mild health problems, and severe physical disabilities [ $F(3, 1968) = 20.09, p < .01$ ]. The self-report nature of the measure of health was identified as a limitation of the study, and the investigator emphasized the fact that the direction of the relationship between self-esteem and health is still unclear (Antonucci & Jackson, 1983).

Hallal (1982) conducted a descriptive study of 207 women drawn from a variety of settings, and found that women who practiced breast self-examination had higher self-concept levels than those who did not engage in this practice ( $r = .347, p = .01$ ). Muhlenkamp and Sayles (1986) studied the relationships among perceived social support, self-esteem, and positive health practices among 98 adults, and reported both self-esteem ( $r = .25, p < .01$ ) and social support ( $r = .26, p < .01$ ) are positive indicators of lifestyle. However, Andreoli (1981) compared Tennessee Self-Concept Scale and Health Behavior Questionnaire scores of compliant hypertensive clients to those of noncompliant

hypertensive clients, and found no statistically significant difference between the two groups ( $t = .928, p > .05$ ).

Rew (1990) conducted an explanatory, correlational survey in order to determine predictors of a health-promoting lifestyle and sexual satisfaction among a group of 41 healthy men. The Rosenberg Global Self-Esteem Scale was used to measure self-esteem and the Health-Promoting Lifestyle Profile was used to measure health-promoting behaviors. Other instruments were used to measure variables such as gender role, body image and sexual satisfaction. Significant predictors of health-promoting lifestyle were body image ( $r = .57, p < .0001$ ), education ( $r = .66, p < .0001$ ), and self-esteem ( $r = .71, p < .0001$ ). Rew (1990) concluded that positive self-esteem may contribute to a healthy lifestyle, and suggested further research to investigate these relationships with both genders.

In a study designed to examine the effects of self-concept and personal values on health behavior, Petersen-Martin and Cottrell (1987) surveyed 83 subjects between the ages of 17 and 49. Measures included the self-concept component of the Index of Adjustment and Values, the terminal values section of the Rokeach Values Survey, and the Martin Index of Health Behavior. A significant positive correlation ( $r = .29, p = .009$ ) was found between health behavior scores and self-concept scores, and it was determined that 8.4% of the variance in health behavior scores was explained by self-concept. Additionally, subjects placing a high value on health had higher health behavior scores

(Petersen-Martin & Cottrell, 1987).

Leonardson (1986) studied the relationship between self-concept and selected academic and personal factors with 165 high-school students in grades nine through twelve. A questionnaire was developed by the investigator to obtain data about demographic characteristics, perceived physical health, perceived home environment, and extent of participation in extracurricular activities. The Piers-Harris Child Self-Concept Scale was used to measure self-concept. One finding of the study was that self-concept scores were found to be positively correlated ( $r = .34$ ,  $p = .01$ ), significantly, with physical health scores. In addition, extracurricular activity and self-concept scores were found to be significantly correlated ( $r = .487$ ,  $p = .01$ ).

A descriptive study by Simmons, Corey, Cowen, Keenan, Robertson, and Levison, (1985) compared the behavior of adolescent female cystic fibrosis patients to that of males. Results indicated that adolescents with cystic fibrosis are able to maintain a good self-concept (as measured by the Tennessee Self-Concept Scale), be socially competent, and perceive that they are in control of their health, while showing an increase in behavior problems (results not stated as critical values but rather whether score was above or below junior high school norms). Females relied heavily on denial and are more behaviorally compliant, whereas boys used less denial but showed more behavior problems. Males appeared to integrate having a physical disorder into their self-concept, whereas females did not. The findings demonstrated a difference in mechanisms of



coping with cystic fibrosis between male and female adolescents with the disease, which may contribute to the decline in physical status of females and better survival of males.

Gross, Delcher, Snitzer, Bianchi, and Epstein (1985) compared insulin-dependent diabetic children ( $N = 37$ ) and a group of their non-diabetic peers ( $N = 30$ ) on measures of self-concept, locus of control, and health locus of control. Data analyses revealed that metabolic control was not related to any of the personality measures in the diabetic sample. Diabetic and non-diabetic children did not differ on measures of locus of control ( $t = 1.5, p > .05$ ) and self-concept ( $t = 1.2, p > .05$ ), but diabetic children exhibited a health locus of control which was significantly more internal than that of control subjects ( $t = 2.5, p < .01$ ).

Herold, Goodwin, and Lero (1979) found in their study of 486 adolescent females that those subjects with higher self-esteem had more positive attitudes about birth control and were more apt to obtain and use contraception effectively. Specifically, self-esteem was significantly correlated with positive attitudes toward using birth-control pills ( $r = .15, p < .01$ ), use of effective contraception at last intercourse ( $r = .20, p < .01$ ), consistent use of birth control ( $r = .16, p < .01$ ), lack of embarrassment about coming to the clinic ( $r = .20, p < .01$ ), and lack of embarrassment over the internal exam ( $r = .24, p < .01$ ).

Chassin, Tetzloff, and Hershey (1985) investigated the social image of adolescent drinking among 266 public high school students. Results indicated that adolescents were

more likely to drink if their self-concepts and ideal self-concepts were consistent with a drinking image (boys:  $F = 11.45$ , 2/104,  $p < .0001$ ; girls:  $F = 3.49$ , 2/93,  $p < .03$ ).

Bonaguro and Bonaguro (1987) studied 934 adolescents for differences in stress symptomatology and self-concept between users and non-users of cigarettes. Results indicated that smokers reported significantly lower scores on self, home, and peer esteem levels (utilizing the Hare Self-Concept Scale), and significantly higher scores on stress symptomatology. Similar relationships between smoking and self-esteem were obtained by McDermott et al. (1992).

Recent research further suggests relationships between self-esteem and health habits (McKaig, 1989; Vines & Williams-Burgess, 1994); health promotion (Wood, 1991); positive attitudes toward rehabilitation (Conn, Taylor, & Casey, 1992); and participation in an exercise program (Bonheur & Young, 1991).

In summary, the literature addresses the relationships between concepts of self and health, but some of the available research results are conflicting. Relationships have been suggested between self-esteem and self-reported health, positive attitudes about contraception, the practice of breast self exam, and health-promoting lifestyle. Similarly, relationships have been demonstrated between self-concept and health behavior and physical health scores. However, although Herold et al. (1979) found positive relationships between self-esteem and specific health-related variables, there have been few studies to support these findings, particularly with adolescents. Therefore, more

research is needed to demonstrate the relationships of self-esteem to health-related variables.

### Health Promotion

Health promotion has been a major concern for nursing since its origin.

Donaldson and Crowley (1978) chronicled the themes which recur in nurses' attempts to explain the essence of nursing. They concluded that three general themes emerged, including concern with: (1) principles governing human life processes, well-being, and optimum functioning; (2) patterns of human behavior in interaction with the environment; and (3) the processes by which positive changes in health status are affected. These themes encompass the concepts of prevention, environmental interaction, coping processes and support as unique concerns of nursing (Donaldson & Crowley, 1978).

The concept of health promotion has been defined broadly and loosely. Its definition has subsumed such concepts as reparation, protection, maintenance, prevention, rehabilitation, and well-being, as well as active participation in improving health status. Duncan and Gold (1986) discuss the literal meaning of the term "health-promotion." They point to the World Health Organization's definition of health: "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Duncan & Gold, 1986, p. 48). This definition is combined with "promotion," which is derived from the Latin root "promovere," meaning "to advance or

to move forward" (Duncan & Gold, 1986, p. 48). Health promotion, then, includes activities aimed at healthy individuals or populations which contribute to the growth, enlargement or excellence of their health, or of achieving high-level wellness (Duncan & Gold, 1986).

Researchers have, in the recent past, struggled with the measurement of health status because of lack of agreement regarding the conceptualization of health (Bergman, 1985). Difficulty has been in differentiating health from the factors that are antecedent to it. Bergman developed a conceptualization of health which includes elements that are an integral part of the person and excludes those that exist and act independently of the person. She further identified five dimensions of health status: genetic foundation, biochemical, physiologic and anatomic conditions, functional condition, mental condition, and health potential. Further, she uses the term "superhealth," the benefits of which include quick recovery from acute illness, productivity, personal satisfaction, and longevity (Bergman, 1985).

Bruhn, Cordova, Williams, and Fuentes (1977) utilize the term "wellness" to identify a process which continually evolves and changes, one in which individuals may participate, and involves an integration of all aspects of physical, mental, social, and environmental well-being. In addition, wellness involves processes of learning and development and can occur in the presence of physical illness. Furthermore, these authors propose that wellness is in part dependent upon certain personality factors, and

that persons who have high self-esteem and who find life challenging and satisfying may possibly have high capability of adopting preventive health measures and resisting illness. Since wellness is an integral part of one's personality, there are certain "wellness" tasks that one must complete during the various stages of development. For example, the adolescent must be able to reconcile "discrepancies between personal health concepts and observed health behavior of others" while learning to cope with problems and life events (Bruhn et al., 1977, p. 216).

Hettler (1984), in describing the wellness program at the University of Wisconsin, defined wellness as "an active process through which individuals become aware of and make choices toward a more successful existence" (p. 13). Therefore, it is a goal of this program to assist students to begin to see themselves as their own health manager. This approach involves learning through educational opportunities, which Hettler believed to be successful. This supports Bruhn et al. (1977) idea that wellness is in part a learned value.

Smith (1981) believes that health defines the objectives of nursing and medicine, while directing practice toward differing goals. Health exists at one end of the health-illness continuum, and as such is a comparative concept, allowing for degrees of the phenomenon to occur rather than "either/or" occurrences. Smith, in an effort to provide a basis for scientific inquiry, divided the nature of health into four models. The eudaimonistic model extends the idea of health to general well being and self-realization.

In this view, health is the realization of the individual's intrinsic potential which results in fulfillment and complete development. The adaptive model involves uniting the goals of preventive and therapeutic medicine, and views disease as a failure of adaptation. In this context, health is viewed as effective interaction with physical and social environment. The role-performance model defines health as the condition which exists if an individual is able to perform his or her responsibilities. Illness occurs if the individual is prevented from performing adequately. The clinical model involves an episodic approach to health care, in which an alleviation or elimination of pain and suffering is sought. Health involves an absence of signs or symptoms of disease. These models illustrate the fact that health has come to be viewed as more than the absence of illness; that it embraces behavioral and environmental factors as well, and well being is not merely incidental, but is central to a humane society (Smith, 1981).

Laffery (1985a; 1985b; 1986) defined health-promoting behavior as involving a series of choices that people make to achieve higher potentials for health or well-being. Laffery (1985a) believes that health promotion is a fundamental concept for the nursing profession, but that the predominant view of health is illness-oriented. In order to determine the health conceptions of healthy persons, she conducted a survey study of 78 adults aged 18 to 64; asking the question "What would you mean if you said you were in very good health?" Responses included both mental and physical ideas of health, and these responses were categorized into Smith's (1981) four models of health. According to

Laffery (1985a), the goal of health promotion is "an optimally satisfying and fulfilling life for the patient and family", and she contends that health promotion can occur within each of the four models.

Laffery (1985c) further explored the concept of health promotion in a study of 95 healthy adults. Health conceptions were measured using the Health Conception Scale, a 28-item Likert scale developed by the author from responses gathered during the earlier study. Health behavior choices were measured by the Health Behavior Choice Scale, which rated reasons for which subjects chose each behavior. These reasons were then placed on a continuum from least promotive to most promotive. Health conception and health choice behavior were found to be significantly related ( $r = .44$ ;  $p < .001$ ), in that subjects holding a more eudiamonistic view of health also tended to engage in health behaviors primarily to promote a greater level of health. In a subset of the larger sample, perceived health status was significantly related to health conception in a normal weight group ( $r = .31$ ;  $p = .04$ ), but was not related to health behavior choice in either obese subjects or those of normal weight. The author concluded from this research that one's definition of health is more closely related to the reasons for engaging in health behavior, than to how healthy or unhealthy one believes oneself to be (Laffery, 1985b, 1985c).

According to Laffery (1985a), while evidence indicates that lifestyle choices lead to conditions which are the major causes of death, lifestyles are complex and may involve concerns and activities which are far removed from a conscious awareness of disease.

For adolescents, this may include developmental tasks and preoccupation with self, as well as specific behavioral choices. Laffery's (1986) definition of health emphasizes the active role that individuals must take in assuming the primary responsibility for his or her own health.

A study to compare the terms "self-care," "wholistic health care," "prevention," "high-level wellness," and "health promotion" was conducted by Green (1985). She stated that health promotion emerges as a viable concept and method of health care, and postulated that the key to health promotion is responsibility by the health-care consumer. Green proposed a model of health promotion which encompasses the more specific concepts of prevention, high-level wellness, and wholistic health care.

In order to begin to focus on specific outcomes and to differentiate between the terms "health prevention" and "health promotion", which are commonly used interchangeably, Brubaker (1983) conducted a linguistic analysis of the term "health promotion." He discovered that health promotion is also associated with other terms as well, such as health maintenance, health protection, wellness promotion, and health education. Brubaker presents two themes which emerge in the health promotion literature: the call for goals beyond the status quo and that produce a positive state of health; and the need for health and changes in lifestyle. Brubaker raises important questions about the specific distinguishing characteristics of health promotion, and defines it as "health care directed toward high-level wellness through processes that encourage



alteration of personal habits or the environment in which people live. It occurs after health stability is present and assumes disease prevention and health maintenance as prerequisites or by-products." This definition allows inclusion of individuals not in perfect health, but excludes those who direct their efforts toward merely staying alive or preventing illness. Brubaker (1985) differentiates between health promotion, and health maintenance or disease prevention by stating that the latter two aim to preserve the current level of health, or neutral health.

Walker, Volkan, Sechrist, and Pender, (1988) also differentiate between health promotion and prevention, and support the use of a wellness model. They conducted a study in which older adults' health-promoting lifestyles and life-style dimensions were compared to those of young and middle-aged adults. The Health-Promoting Lifestyle Profile was used to collect data from 452 individuals ranging in age from 18 to 88 years. The authors concluded that older adults reported the highest total frequency of health-promoting behaviors, a finding consistent with earlier studies comparing the health-seeking behavior of older and younger adults within a preventive framework.

A model of health promotion which provides a complementary counterpart to models of health protection and serves to provide order among concepts that may explain the occurrence of health-promoting behavior was proposed by Pender (1987). According to Pender, health promotion is directed toward increasing the level of well-being and self-actualization; desire for growth, quality of life, and expression of human potential are

the motivating factors for health-promoting behaviors. The model provides support for the idea that health-promoting behaviors are continuing activities that must be integrated into an individual's lifestyle. Since these behaviors are an expression of the actualizing tendency, they are directed toward maximizing positive arousal such as increased self-awareness, self-satisfaction, enjoyment, and pleasure. Therefore, as individuals perceive activities as positive and satisfying, these internal sensations become motivating factors for the continuance of the behavior. Health-promoting behaviors thus represent individuals acting on the environment to move toward higher levels of health, rather than reacting to an external threat (Pender, 1987).

The Health Promotion Model proposed by Pender (1987) derives from social learning theory, and is structured so that determinants of health-promoting behavior are categorized according to the type of influence on behavior. Cognitive-perceptual factors are those which serve as primary motivational mechanisms for initiation and maintenance of health-promoting actions, therefore, directly affecting those behaviors. Included in the model as cognitive-perceptual factors are importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of and barriers to health-promoting behaviors. Modifying factors indirectly influence patterns of health behavior, and include demographic factors, biological characteristics, interpersonal influences, situational factors and behavioral factors. Cues to action of either internal or external origin also influence the likelihood of

health-promoting behavior (Pender, 1987).

In summary, the health promotion literature reviewed contains numerous definitions of the concept of health promotion; however, it is concluded that more similarities exist than differences. There is agreement about the major components of health promotion, and common themes include the following.

1. Individuals advance toward higher levels of health.
2. Health promotion is an evolving process.
3. Health promotion is an active process involving learning and developing.
4. Health promotion is an integrative process, involving all aspects of one's being (biological, psychological, sociological, and spiritual).
5. Health promotion is an individually self-motivated process.
6. Health promotion includes the development of potential for growth and well being.
7. Health promotion is a process involving conscious decisions and choices.

In addition, lifestyle is conceptualized as a major factor influencing health promotion, as may be personality characteristics such as self-esteem.

## Adolescent Health Promotion and Health-Risk Behavior

### Adolescent Health Promotion

A broad range of literature exists concerning adolescent health and the challenge of adolescent health promotion. This section will focus on defining adolescent health and its specific components, the significance of adolescent health to health promotion, and adolescents' perceptions of health.

Although current national efforts have begun to target teenagers, adolescent health has not received a great deal of attention in the past. There is no medical or allied health specialty which claims adolescent health as its focus, and many teenagers "slip through the cracks" of the health care system between pediatric and adult health care (Bridgman, 1987; Sternlieb & Munan, 1972). Indeed, the United States Office of Technology Assessment found that few health-care or youth services professionals have been specially trained to treat adolescents. In addition, lack of a central locus for consideration of adolescent health leads to fragmentation and unnecessary duplication of effort (Dougherty et al., 1992). Adolescent health has traditionally been the responsibility of schools and has focused on primary care of individuals rather than on needs of youth as a group, and is too often problem-oriented since adolescents do not usually seek health-promotion or health-protective services (Magilvy, 1987). The result has been an episodic, "hit or miss" approach to health care of adolescents.

Because of current recognition that health-promoting behavior during childhood and adolescence may enhance the probability of a healthier adulthood through delay or avoidance of behavioral risk factors, the literature is replete with information about adolescent health promotion in general. Health promotion for adolescents is important, too, because patterns of health service utilization may be shaped during childhood and it is important for teens to practice decision-making skills regarding the appropriate use of health services (Mickalide, 1986). However, although the need to focus on adolescent health has not been clearly defined. The definition must include health-related behavior, positive components of health such as social competence, consideration of the impact of social and physical influences on health, the impact of developmental changes, and health and well-being from the perspective of adolescents themselves (Dougherty et al., 1992).

In an effort to define health in adolescence, Sleet and Dane (1985) conducted a Delphi-like study to identify the conceptual components, behavioral characteristics, and attributes of wellness in adolescents aged 12-17. Data were initially collected which reflected the experience and opinion of eight experts from the fields of preventive medicine, pediatrics, psychiatry, and health education. After second-round data collection, synthesized definitions of health characteristics and a ranked listing of attributes were developed. The major categories of health were physical, social and emotional; subcategories provided detailed descriptions of characteristics pertaining to the healthy adolescence with reference to the subcategory. The study provided insight

into the components of wellness among adolescents, and supported the broad and multifaceted quality of the concept (Sleet & Dane, 1985).

According to Perry (1984), the concept of health encompasses four domains: physical (physiological functioning), psychological (sense of well-being), social (social effectiveness and role fulfillment), and personal (realization of individual potential). Perry asserted that these domains are interrelated, and this model is useful for adolescents since it allows inclusion of the consequences of behavior in all domains. Health promotion involves efforts that are oriented toward weakening, reducing, and eliminating behaviors that compromise health, as well as those aimed toward strengthening, introducing, and reinforcing behaviors that enhance health.

According to Petosa (1986), the social nature of health promotion for adolescents is a key factor, illustrated by the fact that knowledge by itself has not improved adolescent health. It is thus important to go beyond what teens know about their health and staying healthy, and to look as well into the role of individuals' attitudes, values, needs, perceptions, and social and environmental forces which may exert an influence on health behavior. Petosa thus defines health promotion as an organized application of educational, social, and environmental resources which facilitate the adoption and maintenance of behaviors that reduce disease risk and enhance wellness.

Adolescent health promotion involves understanding the types of health issues or problems that commonly concern teenagers. Smith, Turner, and Jacobsen (1987)

conducted a descriptive study of 149 adolescents between the ages of 12 and 15 in order to obtain a description of self-reported health concerns. A 45-item questionnaire including the categories of physical function, physical appearance, mental health, interpersonal relations and social/sexual concerns was administered to the subjects. Subjects generally reported two predominant types of health concerns: those of a social-personal nature (concerns about future, feelings and emotions, and family harmony); and physical appearance types of concerns (skin, hair, muscles, weight). The study addressed the fact that the assumed concerns may not be the concerns felt most strongly by the adolescent. For boys, the following percentages were obtained for various concerns: future, 48%; body build and vision, 44%; muscles, 41%; teeth, 39%; getting enough sleep, 35%; acne, 31%; body weight and height, hair, and hearing, 27%; getting along at school and with friends, 21%; heart, 24%; and skin, 21%. For girls, the top concerns occurred as follows: body weight, 73%; future, 69%; hair, 62%; figure and skin, 60%; teeth, 54%; emotions and feelings, 51%; acne, 47%; vision, 46%; getting along at school, 45%; and getting along with friends, 41%.

Sternlieb and Munan (1972) earlier had conducted a similar study which examined the health problems, practices, and needs of 1,376 teens between the ages of 15 and 21. A 28-item questionnaire addressing sociodemographic variables, the subject's habits and health preoccupations, and services desired in a youth clinic. The study posed two major questions: one addressed health problems and the other addressed personal problems.

Health was not conceptually defined, but was considered to be whatever the responses to the questionnaire indicated it to be. Subjects classified as health problems such concerns as acne (18.3%), obesity (5.9%), menstruation (10.0%), nervousness (29.2%), headache (8.9%), worries about health (9.0%), venereal disease (0.7%), and dental disease (27.7%). Personal problems identified were drugs (6.9%), alcohol (6.8%), sex (16.5%), work (11.9%), school (30.1%), psychological (12.0%), family (20.9%), religion (16.2%), and communication (13.4%). This study presumably utilized a medical model to view health, and does not provide insight into the meaning of health for adolescents. However, it does provide information regarding the types of concerns which are most problematic from the adolescent's point of view.

Barley (1987) reported on the findings of the Colorado Department of Health's Advisory Council on Adolescent Health. This group provided information regarding adolescent health concerns, which were categorized into nine areas: mental health concerns (stress, depression, suicide), teen pregnancy, alcohol/drug abuse, injuries, smoking, violence (including physical and sexual abuse), sexually transmitted diseases, poor fitness, and damaging nutritional patterns. In another Colorado study, Magilvy (1987) explored the meaning of health through interviews with a sample of over 50 teenagers between the ages of 13 and 17. When asked about the importance of health, the teens generally responded that they "rarely thought about it" (Magilvy, 1987, p. 296). In addition, most teens related health to looking good, feeling fit, eating right and being



happy. Activities mentioned by the subjects which might promote health were physical activity, eating well, weight control, and not smoking. Several of the teens related good health to having a good self-image, having some time alone, being free from stress or depression, thinking clearly, and having goals. Therefore, even though mental health concerns were cited less often than physical health concerns, mental health was associated with health by some subjects.

Perry and Murray (1982) proposed an adolescent health promotion model which incorporated Jessor and Jessor's (1977) problem behavior theory. Both perspectives emphasized the importance of environmental and personality variables in influencing problematic behavior. This is consistent with Pender's (1987) model of health promotion which recognizes both internal (personality) and external (environmental) determinants of action. These authors identified two major systems of influence which are considered to be important determinants of adolescent health behavior: the environmental influences system and the personal influences system. The environmental influences system consists of four components: 1) the model structure (or actual behavior of significant others); 2) the network structure (peer groups, neighborhoods and families); 3) social systems (including the rules, constraints, or health messages of formal groups); and 4) the community message structure, which offers general messages about health through governmental regulations, media messages, and private health organizations.

The personal influences system includes factors that account for individual

differences in behavior. This system encompasses three structures that originate within the individual. These structures are: 1) the behavioral repertoire of the adolescent; 2) the adolescent's perception of the environment; and 3) the personality structure of the individual.

The behavioral repertoire refers to a group of behaviors developed by the adolescent to respond in various situations. Adolescents develop a degree of competence in performing certain behaviors as responses to the environment, and Perry and Murray (1982) assert that analyzing these behaviors may be valuable in predicting future behaviors of an individual.

The perceived environment is another structure of the personal influences system. The adolescent's view of the environment, including the models, networks, social systems and community which make up the personal world, is an important behavioral influence. The behavior of the peers and others within the social circle, as well as perceptions of the level of approval for certain behaviors support the adolescent's perception of the environment (Perry & Murray, 1982).

Finally, the personality structure is comprised of individual factors which may affect health behaviors generally or influence which particular behaviors are selected. Specific components of the personality structure such as personal values, future orientation, degree of personal self-management and beliefs about ability, outcomes and meaning of specific behavior may all be predictors of actual health behavior (Perry &

Murray, 1982). As an example, one of the personality structure factors, self-esteem, may mediate peer influence and behavioral impulsivity. Positive self-esteem may lessen the desirability or fascination of perceived "adult" behaviors, that, in reality place the individual at risk, while providing the adolescent with the strength and skill to cope with a changing environment. Perry and Murray's model suggests that adolescents who have positive personality structure factors (such as positive regard for the value of health, understanding of the consequences of poor health practices, and positive self-esteem) will engage in health-promoting activities to a greater extent than will those adolescents lacking these attributes.

Additionally, according to Pender (1987), individuals can choose to act on the environment to move toward higher levels of health. Adolescents, who are struggling with the issue of establishing independence, may choose this course of action. This model proposes that if adolescents make deliberate decisions to promote health, they may be less likely to "sabotage" that effort by engaging in risk behavior. Therefore, it can be further hypothesized that adolescents who engage in health-promoting activities will more likely resist situations which would cause them to engage in deliberate health-risk behaviors.

In summary, the literature supports the idea that although adolescents are at risk for health problems, adolescent health promotion is defined in differing ways. Definitions include narrow descriptions of categories of health services needed by adolescents, as well as broad conceptualizations about the nature of health. Problems unique to the

promotion of adolescent health involve an awareness of the social nature of this age group and the resulting meaning of health. The literature stresses that the health concerns of adolescents may be different from those of other age groups, and encompass a wide variety ranging from interferences with physical appearance to mental and physical health treats and concerns about family, religion, and communication. Finally, models developed by Perry and Murray (1982) and Pender (1987) provide a framework for viewing possible influences on adolescent health.

#### Adolescent Development and Health Risk Behavior

Health promotion for adolescents must involve an understanding of the fact that behaviors are functional, interrelated, and have meaning to the adolescent that is not inherent in the behavior (Harrelmann, 1990; Mullen, 1983). Additionally, the unique developmental processes experienced by adolescents significantly influence the meaning of health for this group. Certain beliefs, such as personal vulnerability to health problems are formed by age 14, and may influence attitudes toward health (Mullen, 1983).

According to Smith, Turner, and Jacobsen (1987), adolescence is a transitional period of insecurity and involves attempts to separate from one's family through risk-taking and experimenting with independence. At the same time, the adolescent seeks identification with a group which is apart from the family. Peer approval takes on new levels of importance; therefore, adolescents believe that they must make decisions for themselves (Dignan, Steckler, Block, Howard, & Cosby, 1986). Petosa (1986) states that rapid

personal development, increasing social expectations, a belief that the environment is too competitive, over-reliance on peers, poor social competence, and a defiant, impulsive approach to lifestyle choices often result in poor decision-making among adolescents. Uncertainties about autonomy and independence along with the shift in influence from family to peers may lead to inner distress and increased psychosomatic complaints. Higher frequencies of psychosomatic symptoms have been associated with undesirable decision-making, resulting in negative coping behaviors such as increased alcohol and drug use (Bonaguro & Bonaguro, 1987). Other risk behaviors displayed by adolescents include sexual activity resulting in pregnancy or disease, poor nutritional habits, and nonspecific behaviors resulting in unintentional injuries (Department of Health and Human Services, 1986).

Adolescents, as developing adults, are impressionable. In a state of transition from childhood to adulthood, they need to begin to make decisions for themselves in order to form their unique identity. However, often certain risk behaviors are considered "adult" behavior and are viewed by adolescents as fascinating and desirable (Dignan et al., 1986). In their quest for identity, they may therefore trade health, well-being, and safety for approval of the primary reference group, their peers.

Believing or assuming that one is somehow immune to health risks is a common attitude during adolescence, even if health knowledge level is high (Jack, 1989). Elkind (1967) described this attitude as a shield from vulnerability, terming it the "Personal

Fable", and asserted that it seemed to be responsible for many risk-taking behaviors of adolescents. According to Elkind (1967), Personal Fable develops out of the egocentric thinking of adolescents; the belief that they are special and unique, and therefore will be protected from realistic problems. Jack (1989) hypothesized a relationship between Personal Fable and self-esteem as an influence on behavior. Jack further postulated that Personal Fable might be a protective mechanism for adolescents with low self-esteem by allowing them to engage in risk behavior to bolster self-esteem while preventing a realistic appraisal of consequences. A sample of 114 adolescents between the ages of 11 and 15 years was given measures of self-esteem (Coopersmith Self-Esteem Inventory), Personal Fable (Enright's Egocentrism Scale), and body image (Tanner's Pubertal Stage Instrument and the Offer Self-Image Questionnaire Body Image Subscale) in an effort to determine whether pubertal adolescents who viewed this as a stressful experience would have high Personal Fable scores in order to protect self-esteem. No correlation was found between Personal Fable and self-esteem or body image. However, Jack states that since subjects were found to display little stress and unusually high self-esteem, perhaps the heterogeneity of the sample explained the lack of relationships. The author maintains that associating Personal Fable with self-esteem has intuitive value because of the logical role Personal Fable may have in protecting and enhancing self-esteem through belief in one's uniqueness, and recommended further research to clarify the role of the Personal Fable.

Quadrel, Fischhoff and Davis (1993) reviewed numerous studies and found little empirical support for the claim that perceived invulnerability (a construct for which Elkind's concept of egocentrism is most frequently cited as the theoretical basis) is particularly large during adolescence. Neither did they find support that adolescents are markedly less proficient than adults in estimating risk. A study by Quadrel, et al. (1993) also failed to support the idea of perceived invulnerability as an exclusively adolescent phenomenon.

However, Jahnke and Blanchard-Fields (1993) investigated predictors of adolescent egocentrism (operationalized as personal fable and imaginary audience): formal operational thinking ability and level of interpersonal understanding. They found partial support for the hypothesis that interpersonal understanding would predict egocentrism above and beyond the contribution of formal operational thought. While these findings do not necessarily support Elkind's thesis of adolescent egocentrism as a result of emerging formal operations, they do provide support for the possible influence of interpersonal understanding on imaginary audience and personal fable. Further, these results may indicate that imaginary audience and personal fable serve as coping mechanisms during the adolescent's development of the separation-individuation process.

These recent studies testing Elkind's theory of adolescent egocentrism may provide new insights into the understanding of adolescent problem or risk behavior. It may be possible that the difference between adolescent thinking processes and those of

adults is not as great as originally thought. In addition, imaginary audience and personal fable, sometimes viewed as negative aspects of adolescent development, may serve as positive coping mechanisms during the adolescent's struggle for independence and identity.

Jessor and Jessor (1977) conducted longitudinal studies of over 600 youth ages 12 to 22 in order to provide empirical support for a conceptual framework offered to explain adolescent problem behavior. The model conceptualizes the occurrence of behavior as the result of an interaction of personality and environmental influence. Three systems are involved, and each is comprised of interrelated variables which provide an explanation for a greater or lesser likelihood of problem behavior. The personality system includes the motivational-instigation structure, which provides motivational sources or pressures for goal attainment, the personal belief structure, which provides restraints on engaging in nonconformity that originate in beliefs about self and society, and the personal control structure, which is concerned with control against nonnormative behavior. The personal belief structure includes four variables: social criticism, alienation, self-esteem, and internal-external locus of control. The perceived environment system includes variables which serve to characterize the social context that supports problem behavior. Within the behavior system are those behaviors that are the target of this framework. Jessor refers to problem behavior as that which is "socially defined as a problem, a source of concern or as undesirable by the conventional society and the



institutions of adult authority, and its occurrence usually indicates some kind of social control response" (p. 33). This research included investigation into the syndromelike character of the behaviors of activism, drug use, sexual intercourse, drinking, problem drinking, and general deviant behavior, as well as the occurrence of the individual behaviors themselves.

One of the aspects of the personal belief structure of the personality system as outlined in Jessor and Jessor's theory is the focus of the present study. It is the importance of self-esteem in predicting problem behavior that will be investigated. Jessor and Jessor describe self-esteem as a belief variable that is linked with control against problem behavior. Although high self-esteem can be seen to represent a stake in positive self-regard, which could be jeopardized by nonconforming behavior, the preservation of high self-esteem may serve as a barrier to engaging in deviance. Where self-esteem is low there may be little to lose, and problem behavior does not pose the risk of vulnerability.

Jessor and Jessor (1977) developed a comprehensive, theory-oriented questionnaire for data collection focusing on the components of the motivational-instigation structure, the personal belief structure, and the personal control structure. Problem behaviors were measured in six specific areas: marijuana use, sexual intercourse, activist protest, drinking, problem drinking, and general deviant behavior. In measuring self-esteem, Jessor and Jessor utilized a newly-developed 10-item scale covering a variety of areas likely to be indicative of self-evaluation among youth:

intellectual competence, social attractiveness, decision-making ability, and potential for self-development. Significant relationships were found between problem behavior and all variables in the personal control structure (tolerance of deviance:  $r = -.47$ ,  $p < .001$  for males;  $r = -.48$ ,  $p < .001$  for females; religiosity:  $r = -.23$ ,  $p < .01$  for males;  $r = -.31$ ,  $p < .001$  for females; drinking disjunctions:  $r = .16$ ,  $p < .05$  for males;  $r = .28$ ,  $p < .001$  for females; drug disjunctions:  $r = .40$ ,  $p < .001$  for males;  $r = .61$ ,  $p < .001$  for females; and sex disjunctions:  $r = .30$ ,  $p < .001$  for males;  $r = .47$ ,  $p < .001$  for females). However, empirical data did not provide support for the relationship between self-esteem and behavior; this variable failed to show consistent linkages with variation in behavior. Jessor and Jessor suggest further testing focusing on this aspect of their model. It is possible that the self-esteem or behavioral measures are responsible for the failure to support the entire model.

More recently, studies have examined the relationships among self-esteem, health behaviors, and other psychosocial variables. McCaleb (1991) studied 160 15 and 16-year-olds to determine if there is a relationship between self-concept and self-care practices of healthy adolescents, and to examine relationships between self-concept and demographic variables. Results indicated that the subjects engaged in self-care practices to meet general and universal self-care; self-concept for this sample was average or slightly above average. The relationship between self-concept and self-care practices was found to be positive and significant ( $r = .41$ ,  $p < .001$ ). Stepwise multiple regression

analysis revealed four significant predictors of self-care practices ( $R^2 = .26$ ,  $F = 11.9$ ,  $p < .001$ ): self-concept, church-attendance, race, and participation in the paid lunch program. Since self-concept was found to be the single best predictor of self-care practices ( $R^2 = .17$ ,  $F = 28.8$ ,  $p < .001$ ), it can be concluded that this variable may be important in explaining health behaviors, and warrants further study.

In summary, the literature reviewed supports the importance of developmental tasks in relation to adolescent health-risk behavior. Certain behaviors during this period become meaningful, and may be further encouraged because of the insecurity, beliefs about vulnerability and invulnerability, forced decision-making, and impulsivity which occur as adolescents attempt to separate from parental influence and react to social pressure. The need to protect one's vulnerability and self-esteem has been suggested in the literature. Relationships between self-esteem and problematic or risk behavior have been hypothesized but not consistently supported by the data.

#### Specific Health-Risk Behaviors Among Adolescents

Identification and monitoring of the prevalence of the most significant health risks among youth were among the goals of the Centers for Disease Control in the development of the Division of Adolescent and School Health in 1988. As a result, the national school-based Youth Risk Behavior Surveillance System was implemented, which periodically measures the prevalence of priority health-risk behaviors among youth through comparable national, state, and local surveys. The major causes of mortality,

morbidity, and social problems for youth were placed into six categories for study, including injury behaviors, drug and alcohol use, sexual behaviors, tobacco use, dietary behaviors, and physical activity (Kolbe, 1990). In the 1990 national Youth Risk Behavior Survey (YRBS), a three-stage sample design was used to obtain a representative sample of 11,631 students in grades nine through 12 throughout the United States in order to obtain epidemiological data in each of these categories. Results of the survey will be included in the following sections of the literature review.

Tobacco use. A major risk behavior, cigarette smoking continues to compromise the health of youth. According to Blum (1987), there has been a steady decline in smoking behavior among adolescents since its peak at the end of the 1970's. However, O'Rourke, Smith, and Nolte (1984) found that of a sample of 5,411 students in grades seven through 12, 16% were regular or occasional smokers. This total percentage represented three percent of seventh graders, gradually increasing to 25% of 12th graders. Ninety-two percent of this same sample, however, agreed or strongly agreed that smoking constitutes a real health problem.

The 1990 YRBS found that 36% of all students reported tobacco use during the 30 days preceding the survey, and the prevalence of tobacco use was significantly greater among male students (40.4%) than among female students (31.7%). Tobacco use increased by grade of student, from 32.1% of ninth grade students to 41.2% of 12th grade students (Centers for Disease Control and Prevention, 1991a). 1991 YRBS data indicated

that between 2% and 17% reported smoking on 20 or more of the 30 days preceding the survey (Centers for Disease Control and Prevention, 1992b).

According to Dignan et al. (1986), using tobacco and alcohol is considered adult behavior, and is an object of fascination by adolescents who wish to experiment and imitate such behavior. In order to estimate the prevalence of alcohol and drug use among adolescents, these researchers conducted a survey of 386 seventh-grade students. Data were also analyzed to determine knowledge of and attitudes toward alcohol and smoking, self-concept, and locus of control. Data were divided into four age-race categories, and results indicated that African-American males had the highest prevalence of both smoking (20%) and drinking (16%) behavior. Caucasian boys had the second-highest prevalence of drinking behavior (8.8%), while both Caucasian and African-American girls had the second-highest prevalence of smoking behavior (13.6%). Caucasian boys had the lowest prevalence of smoking behavior (11.9%). Use of smokeless tobacco was highest among caucasian boys (13.5%), followed by African-American boys (3.8%). Both Caucasian and African-American girls reported a low use of smokeless tobacco.

With regard to self-concept scores, Caucasian boys reported the most positive self-image, as indicated by mean total raw score. Second were African-American girls, scoring second highest, followed by African-American boys, while Caucasian girls had the lowest average self-concept scores. The authors concluded that African-American boys were at highest health risk and also have the second-lowest self-esteem scores. On the

other hand, since Caucasian boys are the group with the next highest rate of health-risk behavior while having highest self-concept scores, other influencing factors such as desire to appear older, peer pressure, and desire to belong must be considered.

African-American girls scored higher than caucasian girls on the self-concept measure; however the differences between the two groups on the behavior measures was mixed.

The relationship between smoking behavior and self-esteem is supported in the literature. Tucker (1985) sought to determine the extent to which multiple physical, psychological, social, and lifestyle variables differ among high-school males classified according to cigarette smoking intention status. Results indicated that among the 386 male respondents (mean age 15.75 years), low self-concept was a primary risk factor related to cigarette smoking intention. Similarly, Bonaguro and Bonaguro (1987) sampled 934 students in grades four through 12 in order to examine psychosocial variables associated with cigarette use. Results indicated that, in comparison to nonsmokers, smokers displayed significantly lower scores on self ( $F = 46.73, 4/927, p = .000$ ), home ( $F = 92.07, 4/927, p = .000$ ), and peer esteem ( $F = 4.62, 4/927, p = .032$ ) levels, while displaying significantly higher scores on stress symptomatology ( $F = 16.81, 4, 927, p = .000$ ). Furthermore, in their study of 1,143 preadolescents, Sunseri et al. (1983) found that, while a non-significant relationship was found between current smoking behavior and self-esteem, high self-esteem was related significantly to not smoking in the future ( $X^2 = 20.7, p = .05$ ), to not buying cigarettes ( $t = 3.0, p = .003$ ), and to having non-smoking

friends ( $\bar{X}_i = 21.9$ ,  $p = .009$ ). Finally, Murphy and Price (1988) concluded from their analysis of selected antecedents of smoking initiation among 1,513 eighth-grade students that adolescents at highest risk for developing the smoking habit include those with low self-esteem in addition to other factors. This study cannot be generalized to the total population of adolescents, however, because it was conducted in a tobacco-producing region (Murphy & Price, 1988).

Dusenbury et al., (1992) studied predictors of smoking behavior among 3129 Latino sixth and seventh graders in New York public schools. Results indicated that age and academic performance were significant predictors of current smoking, while the proportion of friends who smoked was the most important predictor of current smoking, as it was for experimental smoking. Students who reported that between 50% and 100% of their friends smoked were 17 times as likely to be current smokers. Parental smoking behavior and attitudes were also correlated with current smoking.

Use of smokeless tobacco presents another form of chemical threat to adolescent health. Jones and Moberg (1988) studied a random sample of 1,030 adolescent males, and determined that consumption of smokeless tobacco increased from nine percent in the seventh grade to 22% by grade 12. This finding is consistent with Blum's (1987) discussion which indicates that use of smokeless tobacco increased from four percent in 1980 to 22% in 1987. Smokeless tobacco is closely associated with other negative behaviors, and may indeed introduce teens to other substances of abuse (Jones and

Moberg, 1988).

Alcohol and drug use. Alcohol and other drug use also pose significant risks to adolescents. The 1990 YRBS found that of all students in grades nine through 12, 88.1% had consumed alcohol in their lifetime, and 58.6% had consumed alcohol at least once during the 30 days preceding the survey. Male students (62.2%) were significantly more likely than female students (55.0%) to have consumed alcohol during the 30 days preceding the survey. Students in grade twelve were significantly more likely to have had a drink of alcohol during the 30 days preceding the survey (65.6%) than were students in grade nine (82.6% and 50.1%, respectively) (Centers for Disease Control and Prevention, 1991b). The 1991 YRBS found alcohol use by between 24% - 60% at least once during the 30 days preceding the survey, and heavy episodic drinking was reported by between 12% and 43% of students (Centers for Disease Control and Prevention, 1992b).

These findings are supported by other studies. Three national surveys using distinctively different methodologies, the American Drug and Alcohol survey, the National Senior Survey, and the National Student Health Survey confirm that a majority (72-77%) of eighth graders report having used alcohol, and that this percentage increases to 92% by grade 12 (Oetting & Beauvais, 1990). Furthermore, Novacek, Raskin & Hogan (1990) found that 15.5% of middle-school students and 43.1% of high-school students reported using alcohol monthly or more often.

Using a sample of 1,841 seventh and tenth graders, Wechsler, Rohman, Kotch, and



Idelson (1984) found that 82% of respondents in the over-sixteen age group had used alcohol at some time in their lives. Thirty-five percent of the boys and 19% of the girls who had used alcohol during the school year reported drinking once a week or more often. The study further indicated that 57% of students reported trying marijuana at some time in their lives, and this use tended to be regular, since 46% of those using the drug reported using it at least once a week, and 29% admitted to using it every day. The most commonly-used other drugs among students age 16 and older were amphetamines (18%), cocaine (17%), barbiturates (14%), hallucinogens (14%), tranquilizers (7%), PCP (3%), and heroin or other opiates (2%). These statistics are troubling themselves; however, to compound the problem, the likelihood of drinking and driving or riding with a drinking driver was strongly associated with the quantity of alcohol typically consumed (critical values not specified). Heavier drinking, drug use and driving were highly correlated, and these behaviors seem to be part of a constellation of risk-taking behaviors among adolescents (Wechsler et al., 1984).

Blum (1987) concurred with the prevalence of alcohol and drug use by teens, stating that nearly all graduating high-school seniors report some drinking behavior, with one in seven drinking to inebriation on a weekly basis. Nearly 40% of tenth graders report being intoxicated during the school year.

Other substance abuse continues to occur as well, although its occurrence is declining. In 1982, 60% of high-school seniors reported past use of marijuana, but the

Department of Health and Human Services (1990) found that by 1989, use had decreased to 17%. Use of illicit drugs in general had reached a record low of about 20% in 1989 (Department of Health and Human Services, 1990). However, for most drugs of abuse, the age of initiation has declined, with onset peaking between 16 and 18 years (Blum, 1987). In a 1987 survey, six percent of eighth graders and 10% of tenth graders reported using marijuana in the preceding month (Department of Health and Human Services, 1990), while 15% of eighth graders and 32%-35% of 10th graders reported some lifetime use (Oetting & Beauvais, 1990). The 1990 YRBS found that 31.4% of all students had used marijuana at least once, and 13.9% had used marijuana during the 30 days preceding the survey. Male students were significantly more likely to have used marijuana in their lifetime (35.9%) and to have used marijuana during the 30 days preceding the survey (16.9%) than were female students (27.0% and 11.1% respectively). Students in grade 12 were significantly more likely to have used marijuana in their lifetime (42.2%) and to have used marijuana during the 30 days preceding the survey than were students in grade nine (20.6% and 9.5%, respectively) (CDC, 1991b). This figure is supported by the American Drug and Alcohol Survey and the National Senior Survey, which found that 47% of high-school seniors reported lifetime use of marijuana (Oetting & Beauvais, 1990). Most recent alcohol and drug surveys indicate that use of all categories of drugs (tobacco, alcohol, illicit drugs) increases as students progress from middle school through the senior year in high school (Oetting & Beauvais, 1990; Novacek et al., 1991).

Evidence indicates that use of cocaine continues to exist among adolescents. Of all students in grades nine through 12 who participated in the 1990 YRBS, 6.6% had used cocaine at least once, and 2.1% had used cocaine during the 30 days preceding the survey. Male students were significantly more likely to have used cocaine in their lifetime (8.1%) and to have used it during the 30 days preceding the survey (3.3%) than were female students 5.2% and 1.0%, respectively) (Centers for Disease Control and Prevention, 1991b).

To explore developmental patterns of drug involvement in adolescence, Kandel and Yamaguchi (1993) conducted a study of 1,108 twelfth graders attending New York public and private schools. Descriptive data concerning age of initiation of drug use revealed that on the average, marijuana was initiated at age 14.6, 2.5 years later than cigarettes or alcoholic beverages. Cocaine and crack were initiated slightly more than a year later than marijuana. The Bayesian Information Criteria statistic was used to compare the fit of alternate models of drug use development. The data provided strong evidence for a sequential pattern of adolescent drug use. The earliest stage involves use of at least one licit drug (alcohol and/or cigarettes), and subsequent stages involve marijuana and other illicit drugs such as cocaine. In most cases crack is initiated after experience with marijuana. The best fit, for both sexes, was found to be the model that delineates an order between cocaine and crack. Interestingly, the best fitting model specifies use of cigarettes prior to experimentation with marijuana, and among males

alcohol consistently precedes the use of marijuana.

Bailey (1992) explored patterns of multisubstance use, particularly the role of alcohol and cigarettes in subsequent patterns of use. A cohort of 4192 secondary students were surveyed three times over a period of four years, beginning with sixth, seventh, and eighth grades. Results indicated that it was less the level of alcohol and cigarette use that indicated subsequent multisubstance use than it was the progression to greater frequencies of use. Students who first initiated use at high levels were less likely to use these and other substances subsequently than were those who increased their frequencies of use. The researcher concluded that these results supported those reported by others concluding that the longer the substance use career, the more serious it is likely to be.

Among college-age adolescents, recent research indicates that alcohol use is widespread, and other drugs are used by enough students to cause concern. Between 86% and 93% of students report using alcohol within the past year, making it the drug of choice. Tobacco is used by 21% of students, marijuana is reportedly used by 10.2%-42%, stimulants are used by 13.2%-20% of students and cocaine used is reported by 1.5%-13% of the students surveyed (Kriegler, Baldwin & Scott, 1994; Spigner, Hawkins & Loren, 1993). Kriegler, et al. (1994) found in their study of 984 health-profession students that a majority (61.6%) drank less than once a week, but 50.6% drank average quantities of one to three drinks per occasion while 35.5% drank

four or more drinks per occasion. Spigner, Hawkins, and Loren (1994) studied a more heterogeneous (in terms of major) sample of 1,244 undergraduates and found that 80% reported alcohol use in the past 30 days. although college students begin regular use of alcohol after beginning their college career, many students aged 21-25 begin experimentation earlier: 26.8% began alcohol or drug use at age 16-17; 11.8% began at 14-15. Thirty-four percent of students under age 21 reported beginning alcohol and drug use at 16-17 and 17.1% when they were 14-15. This pattern may lend support to the idea that adolescents are beginning to use alcohol at a younger age. Klein (1994) studied changes in students' alcohol use over the four years of college attendance in a sample of 526 undergraduates. Results indicated that, on the average, males and females reported drinking between three to four times per month, and there was no significant decrease in this pattern from freshman to senior year. However, while men reported maintaining, on the average, a drinking pattern of 2.5-3 drinks per drinking occasion during the four years, women reported a significant decrease from freshman to senior year (from 2.27 to 1.88;  $F = 5.711$ ,  $p < .02$ ). this study also found that only about 18.3% of the students surveyed reported not having "problems" associated with alcohol abuse. For men, these problems did not decrease during the four years, however, women noted a significant decrease in problems from freshman to senior year ( $F = 9.23$ ,  $p < .003$ ).

Intentional and unintentional injuries. Unintentional injuries resulting from motor vehicle accidents, drowning, poisonings, firearms, burns, and falls are the primary cause

of death among adolescents (Blum, 1987). According to the Center for the Study of Social Policy (1991), a teenager's chances for violent death, either by accident, suicide, or murder increased during the 1980's. In 1984, 11,722 teens died by accident, suicide or murder, and by 1988 that number had risen to 12,692. The teen violent death rate increased from 62.4 per 100,000 teenagers ages 15-19 in 1984 to 69.7 in 1988 (Center for the Study of Social Policy, 1991). According to Blum (1987), in 1982 there were 15.2 million nonfatal injuries among children ages six to 14. Over half of the fatal motor vehicle crashes involve alcohol; nationally, over 50% of high school students report drinking alcohol in a car (Blum, 1987). Young Caucasian men had the highest death rate for motor vehicle crashes in 1987, at 59 per 100,000; and the rate for women of both races was even lower (Department of Health and Human Services, 1990). Mayhew, Donelson, Beirness, and Simpson (1986) conducted a literature review focusing on research into possible explanations for the overrepresentation of young adults in road crashes. They state that 70% to 92.5% of 16-18 year olds report having consumed alcohol at some time. Further, they report that research suggests approximately 40% of male drivers and 10% of female drivers under the age of 20 have driven after drinking at some time. Case-control studies have consistently found that young people who drive after drinking have a higher relative risk of crash involvement than older drinking drivers. Finally, 16-19-year-olds have a higher relative risk of fatal crash involvement than older drivers, regardless of blood alcohol content (Mayhew et al., 1986).

Weapon-related violence among adolescents is a significant health problem in the United States as well. Violent behavior among adolescents has resulted in the homicides of more than 11,000 persons between 1980 and 1989 (Centers for Disease Control and Prevention, 1991c). These violent crimes were committed by high-school-aged youth using firearms, cutting instruments, or blunt objects. The Youth Risk Behavior Survey found that nearly 20% of all students in grades nine through 12 reported they had carried a weapon at least once during the 30 days preceding the survey (Centers for Disease Control and Prevention, 1991c).

Homicide is the second leading cause of death for youths aged 15-19 years, and of the 2771 homicide victims aged 10 to 19 years in 1989, 80% were killed with guns and 10% were stabbed to death. Predictably, a higher incidence of gun carrying among youths has been implicated as a key factor contributing to this increasing youth violence. National survey data on high-school students reported a monthly prevalence of weapon carrying of 20% in 1990 (Webster, Gainer, & Champion, 1993).

Suicide is considered the second leading cause of death among U.S. youth aged 15 to 19, and is therefore gaining preeminence as a concern to adolescent health-care providers (Department of Health and Human Services, 1991). In 1988, a total of 2,059 adolescents ages 15-19 and 243 children under age 15 committed suicide. Between 1960 and 1988, the suicide rate increased from 3.6 to 11.3 per 100,000 population. Among adolescents, the rate has increased much more dramatically than it has in the

general population; adolescent suicide rose by more than 200%, compared with a general population increase of 17% (Garland & Zigler, 1993).

Various items concerning suicide were included in the 1990 YRBS, and findings indicated that for the 12 months preceding the survey, 27.3% of all students in grades nine through 12 reported that they had thought seriously about attempting suicide. Fewer students (16.3%) reported that they had made a specific plan to attempt suicide, while about half of these (8.3%) reported that they actually attempted suicide. Two percent of the students reported that they made a suicide attempt that resulted in an injury or poisoning requiring medical attention (Centers for Disease Control and Prevention, 1991d).

Felts, Chenier, and Barnes (1992) utilized 1990 YRBS data obtained from 3064 North Carolina students to determine if relationships existed between suicide ideation and behavior and substance abuse among this subset of respondents. The North Carolina data closely paralleled the national YRBS results, which surveyed frequency of behavior only. For this analysis, principal component factor analysis, with varimax rotation was applied separately to the drug use and suicide questions, then relationships between the extracted factors were determined through correlational analysis and comparisons of mean factor scores. Significant relationships were found between suicide ideation/intention with cocaine/crack,  $r = -.08$ ,  $p = .0001$ ; with alcohol  $r = -.16$ ,  $p = .0001$ ; with marijuana,  $r = -.10$ ,  $p = .0001$ ; with needle drugs,  $r = -.08$ ,  $p = .0001$ . Significant relationships were also



found between suicide behavior/severity with cocaine/crack,  $r = .32$ ,  $p = .0001$ ; with alcohol,  $r = .08$ ,  $p = .0001$ ; with marijuana,  $r = .11$ ,  $p = .0001$ ; and with needle drugs,  $r = -.07$ ,  $p = .0003$ . The hypothesis that increased drug use, early onset of drug use, or both is associated with a greater tendency to think about or actually attempt suicide was thus supported.

1990 YRBS data were also analyzed for a sample of 3,764 South Carolina students, grades nine through 12, to estimate the prevalence of suicidal thoughts, plans, attempts requiring no medical care, and attempts requiring medical care. Seventy-five percent of the students reported no suicidal behaviors during the receding 12 months. approximately 11% reported having serious suicidal thoughts, 6.4% reported making a specific plan about how they would attempt suicide, 5.9% reported making an attempt not requiring medical care, and 1.6% reported suicide attempts that required medical treatment. Relationships among suicide ideation items and substance use were explored, and inconsistent results were obtained. For example, alcohol use was significantly associated with plans ( $OR = 2.88$ ) and attempts not requiring medical attention ( $OR = 1.31$ ), but not with thoughts or attempts requiring medical care. Illicit drug use was significantly associated with thoughts, ( $OR = 1.34$ ), attempts without medical care ( $OR = 1.73$ ) and attempts with medical care ( $OR = 2.88$ ), but not with plans. Other types of types of risk-taking behaviors, such as physical recklessness, were not associated with any category of suicidal behavior. Female gender was the most consistent predictor of all

types of suicidal behaviors. The researchers concluded that where certain risk behaviors exist, careful assessment of other coexisting risk behaviors is indicated.

The pervasiveness of suicide ideation/behavior was earlier demonstrated in an Oregon study which found that in 1988, 644 Oregon adolescents aged 10-17 were reported to have attempted suicide. One suicide attempt with injuries severe enough to require emergency treatment thus occurred for every 467 Oregon adolescents. The ratio of attempted to completed suicide rates for these adolescents was 47:1. The annual incidence rate of 214 attempted suicides per 100,000 compared to the pre-1988 average rate of 4.6 per 100,000, demonstrating a dramatic increase in this behavior (Andrus et al., 1991).

Sexual and contraceptive behaviors. Sexual activity among young, unmarried adolescents has increased steadily in recent years. In 1979, 50% of females aged 15-19 and 70% of males aged 17-21 living in the United States reported that they had had sexual intercourse (Zelnick & Shah, 1983). By the close of the 1980's, an estimated 78% of adolescent girls and 86% of adolescent boys had engaged in sexual intercourse by age 20, risking unwanted pregnancy and infection by sexually-transmitted diseases (Department of Health and Human Services, 1990). In 1990, the YRBS found of all students in grades nine through 12, 54.2% reported ever having had sexual intercourse, and 39.4% reported having had sexual intercourse during the three months preceding the survey. Male students were significantly more likely than female students to ever have had sexual

intercourse (60.8% and 48.0%, respectively) and to have had sexual intercourse during the three months preceding the survey (42.5% and 36.4%, respectively). In 1991, the YRBS found that between 33% and 79% (state to state variations, median 50%) of students reported ever having sexual intercourse, and 54% - 78% (median 70%) reported being currently sexually active. Between 8% and 46% (median 20%) reported having had intercourse with four or more partners (Centers for Disease Control and Prevention, 1992a).

These data were supported by Atwood and Donnelly (1993), who reviewed the literature, and concluded from earlier studies (prior to 1987) that approximately 41% of adolescents, aged 13-19, had had sexual intercourse. Hingson, Strunin Berlin and Heeren (1990) conducted a telephone survey of 1773 16 to 19-year-old Massachusetts youths and found that 61% reported having sexual intercourse in the past year. These data indicate that adolescents may be engaging in sexual activity at a rate ranging anywhere from 41% to 82%.

Studies involving single college students and older adolescents reveal early age of first intercourse. Almost five percent of students report having the first sexual intercourse at age 14 or earlier (Brien, Thombs, Mahoney, & Wallnau, 1994); between 15.5% and 21% report initial intercourse at ages 15 or 16 (Murstein & Mercy, 1994; Ku, Sonenstein, & Pleck, 1993); 24% report age 17, 24% report age 18, and 15.5% report age 19 as the initial sexual intercourse (Murstein & Mercy, 1994), with 68.6% reporting

they have had their first sexual intercourse by age 17 (Brien et al., 1994).

These studies also indicate a consistently high rate of sexual activity. A review of literature by Brien, et al. (1994) indicated that previous studies had found between 67% and 84% of this population to be sexually active. Furthermore, in their study 94.5 % of the sample indicated they had previously had sexual intercourse. Other studies indicate that between 76% and 86% of these students report being nonvirgins, sexually active, or having premarital sex (Murstein & Mercy, 1994; Bryan & Freed, 1993; Butcher, Manning, & O'Neal, 1991). These studies also reveal interesting patterns of sexual behavior. Between 25.9% and 27.8% of sexually active college age students report casual intercourse with more than one person, or nonexclusive, nonmonogamous intercourse (Murstein, & Mercy, 1994; Stebleton & Rothenberger, 1993; Dunn, Knight, & Glascoff, 1992). Between 13% and 53.5% of students report having sexual intercourse with more than one person during the past year (Brien et al., 1994; Turner, Korpita, Mohn, & Hill, 1993; Butcher et al., 1991; Carroll, 1991). Specifically, between 5.8% and 10.4% report having more than five sexual partners during the past year (Ku et al., 1993; Turner, Korpita, Mohn, & Hill, 1993).

Conversely, these studies indicate 35.5%-40% of students report having intercourse with the same partner (Brien et al., 1994; Turner et al., 1993; Butcher et al., 1991); 42.1% report intercourse within one meaningful relationship (Dunn, Knight, & Glascoff, 1992); 66% report being in a monogamous relationship (Stebleton &

Rothenberger, 1993; and 68% report their last sexual experience occurred within a steady relationship (Murstein, & Mercy, 1994). Butcher et al. (1991) found that 56% of college students claimed to have sexual intercourse with only one partner during the past month. Since this is a higher percentage than those who claim to have intercourse with only one person in the past year, perhaps a majority of students are engaging in "serial" monogamous relationships. This practice of having several partners in a timespan, but only one partner at a time (serial monogamy) may be the norm on college campuses (Stebbleton & Rothenberger, 1993).

Many sexually active teens do not use contraceptives, or use them irregularly or inefficiently. Zelnick and Kanter (1980) found that perhaps as many as 67% of teenagers did not use contraception consistently and efficiently. 1990 YRBS data revealed among currently sexually-active students, 77.7% of female and 77.8% of male students used contraception (birth control pills, condoms, withdrawal, or another method) during last intercourse, and four percent of all students reported having had a sexually-transmitted disease (Centers for Disease Control and Prevention, 1992). A review of literature by Holmbeck, Crossman, Wandrei, and Gaseiwski (1994) found that 35% of 15 to 17 year-olds delay use of contraceptives for a year or more after initiating sexual intercourse, and that this percentage is higher (42%) among sexually active females younger than 15.

Consequences of indiscriminate sexual activity and the sporadic use of contraception attest to the high risk nature of this behavior. Vincent, Clearie, and

Schluchter (1987) reported that in 1981 there were 700,000 pregnancies to unmarried females aged 19 and younger, and 85% were unintended. By 1990, that number had increased to 1.1 million pregnancies to girls aged 15 through 19, the majority of which were not intended. According to the Center for the Study of Social Policy (1991), in 1980 there were 271,801 babies born to unwed teens, representing 7.5% of all births. By 1988 that number had risen to 322,406, or 8.2% of all births. As these figures would indicate, the United States has an exceedingly high abortion and infant mortality rate (Jones et al., 1985). Furthermore, pregnant teens who give birth are more likely than older mothers not to finish school, to be unemployed, to have low-birth weight babies, and to lack parental skills (Department of Health and Human Services, 1990).

Consequences involving sexually transmitted diseases (STDs) are also readily apparent, particularly among college-aged men. The most frequently-reported STD, gonorrhea, has declined for all age and gender groups except for 15 to 19 year-old men (However, chlamydia trachomatis is generally believed to be more common than gonorrhea on college campuses, with estimated rates of infection ranging from five percent to 20% among both men and women (Estrin & Do, 1988; McCormack, Rosner, McComb, Errard, & Zinner, 1985).

The most frightening consequence of increasing sexual activity among adolescents, infection with HIV, has spawned specific interest in the prevalence of condom use and other risk-reduction behavior. According to the Centers for Disease

Control and Prevention (1988), one fifth of reported AIDS cases in the United States have been 20-29 years of age, indicating that infection probably occurred during adolescence. Hingson, et al. (1990) found that among sexually active 16 to 19 year old subjects, 31% reported always using condoms, 32% sometimes, and 37% never used condoms. Males were more likely than females to report always using condoms (34% versus 26%). Thirty-nine percent of 19-year-olds compared to 29% of 16-year-olds were more likely to always use condoms. Condom use varied by previous numbers of sexual partners, as respondents who reported only one partner in the last year were much more likely to never use condoms than those who had more partners. However, respondents who reported 10 or more partners were the least likely to always use condoms. Ku, et al. (1993) found that the proportion of a sexually active 15-19-year-old cohort using condoms at last intercourse fell by about 12%, from 56% in 1988 to 44% in 1991, as the cohort had aged to 17-22 (although this represents an age-related decrease in protection against disease, it does not represent a net decrease in contraception, since there was an increase in use of female contraceptive methods). Comparison of similar-age cohorts (ages 17.5-19) indicated that 53 % of subjects reported using condoms at last intercourse in 1988, whereas 55.9 reported use in 1991.

Studies involving college-age older adolescents indicate that of those who report being sexually active, between 22.5% and 38% indicate they use condoms "always," "almost always," or "almost every time" (Sawyer & Moss, 1993; Turner et al., 1993;

Butcher et al., 1991; Carroll, 1991), and 28.8% indicate they use condoms "more than half" the time (Turner et al., 1993). Fifty-nine percent report using condoms "occasionally" (Murstein & Mercy, 1994), and 95.9% report using them at least once (Brien et al., 1994). Turner et al. (1993) found that 47.5% of sexually active students reported using condoms at last intercourse. This information would imply that even the most optimistic estimate, that 59% of students use condoms more than half the time, and even though most students (87%) report knowing that condom use is effective in preventing HIV infection (Butcher et al., 1991), condom use is still exceedingly sporadic and inconsistent among college students.

#### Coexistence and Predictors of Risk Behaviors

In order to assess relationships among condom use, beliefs about such use and about AIDS, and substance use, 1,773 Massachusetts 16-19 year olds were randomly surveyed by telephone (Hingson et al., 1990). Sixty-one percent reported being sexually active (having had sexual intercourse in the previous year). Multivariate analysis of the data revealed that adolescents who drank five or more drinks daily (5% of sexually active adolescents) and those who used marijuana in the past month (29% of sexually active adolescents ) were 2.8 and 1.9 times respectively less likely to use condoms. Coray (1991) conducted a secondary data analysis to examine biopsychosocial correlates of adolescent female sexual activity. The nonprobability multicultural sample consisted of 879 female students from two Northern California high schools. Findings indicated that



sexually active females were more likely to use alcohol, cigarettes, and illegal drugs, and to have experienced a larger number of life change events. They also were more likely to have thought about and attempted to harm themselves, to feel less hopeful, to receive lower school grades and have lower educational aspirations, and to have parents who were divorced or separated.

Further evidence of the interrelatedness of high-risk behaviors among adolescents was obtained by Ku et al. (1993) in a longitudinal study of 1880 males aged 15-19. A two-phase multistage probability sampling design was used to collect data in 1988 and again between November, 1990 and March, 1991. The proportion of all respondents who had had intercourse rose from about three fifths in 1988 (age 15-19) to about five sixths in 1991 (age 17-22). In 1991, 26.3% of sexually active young men said that they had been drinking before last having intercourse; 3.5% said they had used drugs; and 2.3% said they had used both alcohol and drugs. Substance use preceding sex was associated with reductions in condom use, both at last intercourse and over the previous 12 months; it was also associated with a larger number of partners and a greater frequency of intercourse. Researchers determined from the data that as the young men aged, they tended to have more sexual activity, to use condoms less, and to engage in riskier sex (substance use prior to sex). The conclusion that the data indicated the trend toward safer behaviors has, at the very least, slowed, is of concern and has implications for further research regarding antecedents of such behavior.

Holtzman et al. (1991) conducted a survey with a probability sample of 8098 students in grades nine through 12 throughout the United States. Purposes of the study were to determine the prevalence of HIV-related drug behaviors and to assess the effects of HIV-related school-based instruction and HIV knowledge on these behaviors. One of the results of interest was obtained in additional analyses was the finding that students who reported injecting drugs and sharing needles were more likely to report multiple sexual partners (defined as two or more) and to report never using condoms when having sex (statistical information pertaining to this specific finding was not included, since this was not the focus of the study).

These trends appear to occur among college-aged older adolescents as well. Studies involving 17-24-year-old college students provide evidence that risky sexual behavior may occur more frequently when drugs or alcohol are involved. Meilman (1993) found that 35% of students reported participating in alcohol-induced risky sexual activities since coming to college. Students attributed several activities to alcohol, including "any sexual activity" (39%), "sexual intercourse" (19.8%) and "abandonment of safe-sex techniques" (16.6%). Amount of alcohol consumed was associated with an increase in unplanned sexual behavior. O'Leary, Goodhart, Jemmott, and Boccher-Lattimore (1992) found 76% of their sample reported engaging in risky behavior, including more frequent and unprotected sex while under the influence of drugs or alcohol. Brien et al. (1994) found significant differences across three condom user

groups (nonusers, sporadic users, and ritualistic users) for use of intoxicants, number of sex partners and intensity of alcohol use. Sporadic users had the greatest number of sexual partners and were also the heaviest drinkers.

In addition to the interrelatedness of sexual behavior, drug use, and alcohol use, sexual behavior has also been associated with other problems during adolescence. Ketterlinus, Lamb, Nitz and Elstes (1992) found that sexually experiences adolescents were one and one-half to four times more likely than virgins to have been involved in four types of nonsexual behavior, including theft, personal violence, drug use, and school problems (defined as suspension or expulsion). Additionally, the literature contains a wealth of information regarding other possible influences on or predictors of sexual behavior among adolescents. Among these are age , since older students have been found to engage in more risky behaviors than younger students (O'Leary, Goodhart, Jemmott, Boccher-Lattimore, 1992); self-efficacy (Brien et al., 1994; O'Leary et al., 1992); perceived negative outcomes of condom use (O'Leary et al., 1992); belief in partner's self-report of safe sexual history (O'Leary et al., 1992); religiosity (Murstein & Mercy, 1994; Ketterlinus et al., 1992; White & DeBlassie, 1992); family communication (Leland & Barth, 1993; White & DeBlassie, 1992); health locus of control and social network (Whatley, 1991); personality and developmental characteristics such as sensation seeking, self-control, ego identity, cognition, and egocentrism (Holmbeck et al., 1993; Green, Johnson, & Kaplan, 1992; Hernandez & DiClemente, 1992; Arnett, 1990). Holmbeck et

al. (1993) found self-esteem to be positively related to tendency to report use of contraception during intercourse ( $F = 7.19$ ;  $p < .01$ ); however, adolescents who reported having initiated intercourse reported significantly higher levels of self-esteem ( $F = 3.99$ ;  $p < .05$ ). Robinson and Frank (1994) studied self-esteem as a dependent variable and found that neither sexual activity nor virginity were related to self-esteem in their sample of 313 subjects who were 13 - 19-years of age. These results do not provide a clear explanation of the role of self-esteem in determining sexual behavior.

### Summary

To summarize, the literature indicates that certain behaviors continue to be problematic among the adolescent population. These behaviors are substance use, including alcohol, illicit drugs, and tobacco; unintentional or violent injury; and indiscriminate or permissive sexual behavior. While smoking behavior is declining among certain subgroups, it is rising among others. Research supports the relationship between smoking and self-esteem. Statistics concerning use of illicit drugs are not clear; use is declining, however, age of initiation is also declining. Use of smokeless tobacco is becoming more popular among adolescents. Unintentional injuries and sexual activity among this age group continue to pose significant threats to adolescents, and ideas of suicide are prevalent among this age group. Strong evidence exists that several risk behaviors often occur in combination, further increasing the risk for serious health

implications.

The literature review has indicated that social interaction has been shown to be important in the development of self-esteem, as the perception of self guides and directs behavior. Behavior relies on self-esteem, and will be used to confirm it. This influence has been demonstrated in the literature, as self-esteem has been shown to have a relationship with several health-related behaviors.

Health-promotion is an active process involving conscious decisions and choices, and involves all aspects of one's being. Health-promoting lifestyle is conceptualized as a major factor influencing health-promotion. Adolescent health-promotion involves adolescent developmental tasks and the complex issues surrounding them. The literature further indicates that the development of adolescent risk behavior is influenced by these issues, and constitutes a major threat to the health and well-being of youth. No clear relationships exist, however, among self-esteem, health-promoting lifestyle, and health-risk behavior among adolescents.

## CHAPTER 3

### PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A predictive correlational research method was utilized to explore the relationships among self-esteem, health-promoting behaviors, and health-risk behaviors among adolescents. Specifically, the design investigated whether the dependent variable, health-risk behavior, can be predicted by the independent variables, self-esteem and health-promoting lifestyle. This design is appropriate when the purpose of the study is to examine possible causal relationships among variables and to predict the value of one variable based on values obtained from another (Burns & Grove, 1993).

#### Setting

Subjects were recruited from the student body of a college in a small, midwestern town (population 13,000). The college is a private, four-year, church-related liberal arts institution. Most of the 750 students enrolled live in residence halls, either on-campus dorms or apartments. Residence halls are co-ed, although female freshmen are housed together in one wing of one of the smaller dorms. Residential life staff includes student resident assistants and an adult resident director in each dorm. These individuals are organized under the direct supervision of the director of student life, who is responsible to the dean of students. Additional staff for this office includes the assistant dean of

students, director of leadership development, college nurse (who is in her office two hours per day), learning center coordinator and staff, and clerical staff. There is no full-time counselor on campus, although the dean of students is a licensed therapist, holding a Ph.D. in psychology, and the director of leadership development has a master's degree in counseling.

Students do not have a curfew, and their privacy is generally respected by campus employees. College policies prohibit alcohol anywhere on campus, even in the possession of students over the legal drinking age of 21. Many students have cars, and although the community in which the college is located has few entertainment attractions for college-age students, frequent on-campus activities are held. For example, the Student Activities Association regularly sponsors dances, parties, movies, athletic activities, and forums. In addition, many students regularly drive to a large city 40 miles away for entertainment.

### Population and Sample

The original proposal for study addressed a population of middle and high-school students, grades 7 through 12. However, after permission was obtained from the superintendent of the targeted school district (7-12 grade enrollment approximately 900), permission was subsequently withdrawn in response to objections voiced by teachers whose classes from which subjects were to be drawn. The investigator met with the

selected teachers and the school counselor to plan for data collection. During the discussion, they expressed concerns about the possible effects of students' exposure to the YRBS items that addressed sensitive areas, specifically sexual behaviors and suicide, on students' subsequent behavior. The investigator was unsuccessful in alleviating these concerns, even after carefully explaining the process would involve parental permission. Interestingly, all teachers indicated the district "has a big problem" with some of the risk behaviors identified in the study, but were unwilling to assist in securing a sample. A number of other districts were contacted, but permission to conduct the study was denied in each one. Superintendents expressed unwillingness to allow an outside investigator to approach students regarding these sensitive topics. Interestingly, two of the districts had committees which reviewed the study prospectus, including the instruments to be used, and both responded by stating that the benefits were not worth the "risks," particularly since this information was "already available to the districts." The investigator attributed this denial to a movement of conservative parents in the state which, at the time, had become vocal in its criticism of public schools. Specifically, this criticism centered on the schools' usurping of parental rights and focusing on content which did not belong in school but rather should be taught at home (for example, sexuality and drug education curricula). After considering the resistance among the public schools to be involved in risk behavior research, the decision was made to utilize a sample of older adolescents over the age of 18 in an environment that would most likely be receptive to research.



The target population consisted of all full and part-time freshmen and sophomore students between the ages of 18 and 21 who were currently enrolled at the aforementioned college. Total institutional enrollment at the time of data collection was approximately 750 students. The sample included all students who were present in class on the days of data collection, since all consented to participate in the study. All students were unmarried at the time of data collection, and the majority were campus residents. Data collection occurred in the regular classroom setting during the regular class time, and was completed within two class periods. After an explanation of the study (which conformed to all aspects of informed consent), subjects were given packets containing all four instruments, and were instructed to place completed instruments back in the original envelope, seal the envelope, and leave it in a box at the back of the room as they exited the classroom. The investigator supervised all activities pertaining to data collection including informed consent, instructions for completing the instruments, data collection, and collection of completed instruments.

### Protection of Human Subjects

The Texas Woman's University Human Subjects Review Committee (HSRC) guidelines were followed in assuring the protection of the students' rights (see Appendix A). After obtaining HSRC approval to conduct the study, the college's academic dean and the dean of students were approached about obtaining a sample of students for

participation in the study. These individuals were informed about the significance of the problem, the nature of the risk behaviors being investigated, the development of the instruments, particularly the Youth Risk Behavior Survey, plans for data collection, and plans for data analysis. All individuals involved were informed that study results would be reported in aggregate and that no individual data would be identified, and that study results would be made available to them. Since the dean of students was the instructor for the course in which data collection would occur, it was not necessary to approach additional faculty.

Students were approached at the beginning of the semester during the first session of a required Wellness course. Freshmen were approached during their first semester, sophomores during their fourth semester. The third week of class was selected for data collection, at the instructor's request. This was determined to be an appropriate time because classes were well under way and students had settled into their routine. It was well before midterm examinations, and no major assignments were due within several weeks of data collection. All students were informed about the study and the importance of their participation in it. A consent letter including the following information was distributed to all potential subjects (see Appendix B).

Participation in the study was completely voluntary, and students' grades in the current class would not be affected in any way by their participation or nonparticipation. Students were not contacted at any other time, and completion of the instruments

concluded their involvement in the study.

Students could withdraw from the study at any time. This was an important aspect since the health-risk measure involved sensitive material, and hence there could have been potential for students to become uncomfortable and wish to discontinue participating. If this had occurred, the researcher planned to collect the student's uncompleted instrument in an envelope, seal it, and destroy it off campus. However, this was not necessary as no one withdrew from the data collection.

Anonymity was completely assured, as no identifying information was requested. It was stressed that demographic information would only be used to provide additional information about students who completed the instruments, and that the information could not identify individual students. Subjects were provided with the researcher's address and telephone number and encouraged to contact the researcher if they had questions about the study. The names of a designated campus counselor and dean of students were also provided, and students were encouraged to contact either had they felt a need to discuss the contents of the instruments or their responses to them. The student's completion of the instrument constituted his or her permission to participate in the study.

### Instruments

The instruments used in the study were the Rosenberg Self-Esteem Scale

(RSES) developed by Rosenberg (1965), the Health-Promoting Lifestyle Profile (HPLP) developed by Walker, Sechrist, and Pender (1987), and the Youth Risk Behavior Survey (YRBS) developed for use by the Centers for Disease Control. In addition, a sociodemographic questionnaire (SDQ) was developed for use in collecting demographic data for this study (see Appendix C). Written permission to use the RSES and the HPLP was obtained from the authors (see Appendix D); however, as a public-domain document, the YRBS did not require permission for use.

#### Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSES) has been used extensively to measure self-esteem among adolescents. The instrument was developed by Rosenberg (1965) as a ten-item Guttman scale, but may also be used as a Likert scale in which the responses are given numerical values so as to yield data that can be considered interval. The present study utilized the Likert form for the RSES. Negatively-worded items were recoded so that a high score on the scale would indicate high self-esteem and low scores would indicate low self-esteem.

Reliability. The original Guttman scale had a reproducibility index of 93% and a scalability of items of 73% (Rosenberg, 1965). According to Wylie (1974), a coefficient of reproducibility of .90 or more is considered evidence of a satisfactorily reliable, unidimensional scale. Silber and Tipett (1965) found a two-week test-retest coefficient of .85 for the RSES. The instrument has further been shown to yield internal reliability

coefficients of .85 - .88 (Rosenberg, 1979). Recently, studies have demonstrated Cronbach's alpha coefficients of .78 (Greene & Reed, 1992) and .7974 (Robinson & Frank, 1994).

Validity. Rosenberg (1965; 1979) consistently demonstrated construct validity through correlations with other psychological constructs. For example, 88% of subjects reporting "no depressive affect" also reported high RSES scores. Conversely, 80% of subjects who were reportedly "highly depressed" scored low on the RSES. Wylie (1974) emphasized cross-validation of the "theoretically-predicted associations" of the RSES with constructs, including depressive affect, anxiety and psychosomatic symptoms, interpersonal security, participation in activities, and leadership. (p. 186) Silber and Tipett (1965) reported convergent validity (correlation coefficients of .56 - .83) with similar measures of self-esteem and clinical assessments.

#### Health-Promoting Lifestyle Profile

The Health-Promoting Lifestyle Profile (HPLP) is a 48-item summated behavior rating scale which employs a four-point response format to measure the frequency of self-reported health-promoting behaviors. Six dimensions of health-promoting lifestyle were identified through factor analysis and are used as subscales: self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management (Walker, Volkan, Sechrist, & Pender, 1988).

Reliability. The authors of the instrument report a coefficient alpha of .922 for

internal consistency, and a test-retest stability coefficient of .926 (Walker, Sechrist, & Pender, 1987). Further use of the instrument yielded an alpha reliability coefficient of .923 for the total scale, and coefficients of .694 to .898 for the subscales (Walker, Volkan, Sechrist, & Pender, 1988).

Validity. Satisfactory construct validity has been established through factor analysis. All items have loaded on expected factors at a level of .350 or higher, and the six factors have explained 47.1% of the variance in the instrument. Second order factor analysis of the correlations among the six identified factors has extracted a single factor measured by the instrument, which is interpreted by the authors as health-promoting (Walker, Sechrist, & Pender, 1987). James (1988) reported validation of the HPLP with a sample of 509 senior high school adolescents. Using the principal factor analysis with oblique rotation, confirmation of the six factors in the scale was obtained. Furthermore, internal consistency for the instrument was high; the Cronbach's alpha coefficients calculated for the total instrument was .926 (James, 1988).

#### Youth Risk Behavior Survey

The Youth Risk Behavior Survey (YRBS) has been recently developed by the Centers for Disease Control in its attempt to obtain descriptive information regarding the prevalence of risk behaviors nationwide among adolescents. Seventy-five items are categorized into six major areas corresponding to the results of analysis of the leading causes of mortality, morbidity, and social problems among adolescents. Items were

designed by a committee comprised of representatives from federal agencies most responsible for monitoring behavioral risks in each of the six categorical areas. In addition, the committee included representatives from seven other federal agencies and national organizations interested in adolescent health. The instrument has been subjected to testing by the Questionnaire Design Research Laboratory at the National Center for Health Statistics, having been subsequently administered to high-school students during four waves of tests. Actual reliability data are not yet available (L. Kann, personal communication, October 11, 1994).

The reliability of the data collected is dependent, in part, on the reliability of the self-report nature of these instruments. An additional concern is the sensitive nature of the information obtained from the subjects. Oetting and Beauvais (1990) reviewed numerous studies which had collected data addressing sensitive issues using a variety of methods. Those studies that compared self-reported drug usage and collateral methods (i.e., urine and blood testing) found high levels of correspondence. Other studies (Oetting & Beauvais, 1990) found adequate validity for self-report when applied to surveys of sensitive topics such as income, criminal behavior, mental illness, and embarrassing medical conditions. Although adolescents have been found to exaggerate certain behaviors on self-reports, to be inconsistent, and to mark whimsically, at random, or inaccurately, the rate of such behavior is estimated to be well under 10% (Oetting & Beauvais, 1990).

### Pilot

A pilot was conducted to determine the appropriateness of the instruments with students in the target age range. Interviews were conducted with six students, ages 15-20, during which they were asked to carefully read through the instruments, then provide feedback to the investigator regarding readability and clarity of items, and likelihood of students responding honestly and accurately. All students stated they believed the instruments would be taken seriously and that their counterparts would answer honestly. There was some concern about the time needed to complete the instruments, and about the perceived repetition of a number of items (i.e., exercise and nutrition questions on the YRBS and the more general items dealing with exercise and nutrition on the HPLP; demographic items on the SDQ and the YRBS). In response to the concern about time, the investigator made certain the study subjects realized that completion of the instruments would constitute their class activities for the day, and that it would not mean class time would be extended. Importance of their completion of all instruments was also stressed, as was the investigator's appreciation of their assistance.

In response to the concern about repetition, the investigator instructed subjects to omit two items on the YRBS which were also included on the SDQ. However, this proved to be problematic, since two items which were marked "omit" surrounded and



obscured the gender item, which was omitted by a majority of subjects in the study, probably because they overlooked it.

### Treatment of Data

Demographic and health-risk data were analyzed utilizing descriptive statistics. Descriptive data were analyzed for violations of the assumption of normality, and exploratory data analysis was performed on HPLP and RSES data. Variables were transformed to satisfy the assumption of normality. Reliability estimates were performed for the HPLP and the RSES. The postulated relationships between self-esteem and health-promoting lifestyle, between self-esteem and risk behavior, and between health-promoting lifestyle were analyzed using Pearson's product moment correlational technique. Relationships among demographic variables and health-risk behavior were analyzed using chi-square analyses. The predicted influence of self-esteem and health promotion upon health-risk behavior was analyzed using discriminant function analysis.

## CHAPTER 4

### ANALYSIS OF DATA

A predictive correlational research method was utilized to explore the relationships among self-esteem, health-promoting behaviors, and health-risk behaviors among adolescents. Data analysis for this study involved the use of frequency distributions, Pearson product moment correlations, chi-square analyses, and discriminant function analysis. The analytical procedures and results are described in this chapter. Each hypothesis is examined in relation to the research findings, and conclusions, implications for nursing and recommendations for further research are presented.

#### Description of the Sample

The sample for the research study consisted of 120 unmarried male and female college students between the ages of 18 and 21. All subjects were enrolled full or part-time as freshman or sophomore students at a four-year, private, church-related, liberal arts college with a total enrollment of approximately 750. Demographic data about the respondents are presented in Table 1. All subjects were single, and the sample was predominantly Caucasian (80%). Personal characteristics of the respondents are reported in Tables 2 and 3, and included academic self-comparisons with other students, with whom the subject lived prior to college, family information, number of middle and

Table 1

Demographic Characteristics of the Sample

| VARIABLE                             |                 |                   |            |  |
|--------------------------------------|-----------------|-------------------|------------|--|
| Age                                  | Mean 18.8 years | Range 18-21 years | s.d. = .89 |  |
|                                      | FREQUENCY       | PERCENT           | CUM. FREQ. |  |
| Gender                               |                 |                   |            |  |
| Males                                | 20              | 16.7              | 16.7       |  |
| Females                              | 25              | 20.8              | 37.5       |  |
| Not reported                         | 75              | 62.5              | 100.5      |  |
| Ethnicity                            |                 |                   |            |  |
| White-not Hispanic                   | 96              | 80.8              | 80.0       |  |
| Black-not Hispanic                   | 12              | 10.0              | 90.0       |  |
| Hispanic                             | 7               | 5.8               | 95.8       |  |
| Asian or Pacific<br>Islander         | 1               | 0.8               | 96.7       |  |
| Native American<br>or Alaskan Native | 2               | 1.7               | 1.7        |  |
| Other                                | 2               | 1.7               | 100.0      |  |

Table 2

Personal Characteristics of the Sample

| VARIABLE                                 | FREQUENCY | PERCENT | CUM. FREQ. |
|------------------------------------------|-----------|---------|------------|
| With whom did you live prior to college? |           |         |            |
| Both parents                             | 84        | 70.0    | 70.0       |
| One parent                               | 27        | 22.5    | 92.5       |
| Legal guardian                           | 1         | 0.8     | 93.3       |
| Relatives                                | 1         | 0.8     | 94.1       |
| By yourself                              | 5         | 4.2     | 98.3       |
| Other                                    | 2         | 1.7     | 100.0      |

| VARIABLE                                                                       | FREQUENCY | PERCENT | CUM. FREQ. |
|--------------------------------------------------------------------------------|-----------|---------|------------|
| <b>How many brothers and sisters do you have?</b>                              |           |         |            |
| 0                                                                              | 5         | 4.2     | 4.2        |
| 1                                                                              | 51        | 42.5    | 46.7       |
| 2                                                                              | 34        | 28.3    | 75.0       |
| 3                                                                              | 19        | 15.8    | 90.8       |
| More than 3                                                                    | 11        | 9.1     | 100.0      |
| <b>Which family members with which you live work outside the home?*</b>        |           |         |            |
| Father                                                                         | 95        | 79.2    | ---        |
| Mother                                                                         | 86        | 71.7    | ---        |
| Brothers or sisters                                                            | 27        | 22.5    | ---        |
| Relatives who lived with you                                                   | 4         | 3.3     | ---        |
| Other                                                                          | 7         | 5.8     | ---        |
| <b>Does your family rent or own the home in which you most recently lived?</b> |           |         |            |
| Rent                                                                           | 21        | 17.5    | 17.5       |
| Own                                                                            | 87        | 72.5    | 90.0       |
| Not sure                                                                       | 12        | 10.0    | 100.0      |
| <b>How many times did you move during your high-school years?</b>              |           |         |            |
| 0 times                                                                        | 93        | 77.5    | 77.5       |
| 1 time                                                                         | 17        | 14.2    | 91.7       |
| 2 times                                                                        | 3         | 2.5     | 94.2       |
| More than 2 times                                                              | 7         | 5.8     | 100.0      |
| <b>How many schools did you attend between 7th grade and H.S. graduation?</b>  |           |         |            |
| 1 school                                                                       | 45        | 37.5    | 37.5       |
| 2 schools                                                                      | 54        | 45.0    | 82.5       |
| 3 schools                                                                      | 14        | 11.7    | 94.2       |
| More than 3 schools                                                            | 7         | 5.8     | 100.0      |

(table continues)

| VARIABLE                                                                                             | FREQUENCY | PERCENT | CUM. FREQ. |
|------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| In the house where you most recently lived, with how many other family members did you share a room? |           |         |            |
| 0 others                                                                                             | 107       | 89.2    | 89.2       |
| 1 other                                                                                              | 11        | 9.2     | 98.4       |
| 2 others                                                                                             | 2         | 1.7     | 100.0      |
| How often do you attend church?                                                                      |           |         |            |
| 2-3 times per month                                                                                  | 58        | 48.3    | 48.3       |
| Once every 2-3 months                                                                                | 28        | 23.3    | 71.6       |
| Only on special occasions                                                                            | 22        | 18.3    | 89.9       |
| Never                                                                                                | 12        | 10.0    | 100.0      |
| How important are your religious beliefs in helping you make decisions?                              |           |         |            |
| Very important                                                                                       | 55        | 45.8    | 45.8       |
| Somewhat important                                                                                   | 42        | 35.0    | 80.8       |
| Not important                                                                                        | 21        | 17.5    | 98.3       |
| I have no religious beliefs?                                                                         | 2         | 1.7     | 100.0      |
| Has anyone in your household lost their job in the past year?                                        |           |         |            |
| Yes                                                                                                  | 14        | 11.7    | 11.7       |
| No                                                                                                   | 106       | 88.3    | 100.0      |
| If so, whom has lost their job?**                                                                    |           |         |            |
| Mother, father, guardian                                                                             | 9         | 7.5     |            |
| Brother, sister, other                                                                               | 5         | 4.2     |            |

Note. \*Categories not mutually exclusive; cumulative percentages not meaningful.

\*\*Item did not apply to all subjects; cumulative percentages not meaningful.

Table 3

Characteristics Related to Health and Health Knowledge

| VARIABLE                                                   | FREQUENCY | PERCENT | CUM. FREQ. |
|------------------------------------------------------------|-----------|---------|------------|
| From whom did you learn the most about health in general?* |           |         |            |
| Parents/guradians                                          | 68        | 56.7    | ---        |
| School                                                     | 65        | 54.2    | ---        |
| Friends                                                    | 8         | 6.2     | ---        |
| Media                                                      | 3         | 2.5     | ---        |
| Church                                                     | 1         | 0.8     | ---        |
| Other                                                      | 9         | 7.5     | ---        |
| From whom did you learn the most about drugs?*             |           |         |            |
| Parents/guardians                                          | 38        | 31.7    | ---        |
| School                                                     | 80        | 66.7    | ---        |
| Media                                                      | 14        | 11.7    | ---        |
| Friends                                                    | 10        | 8.3     | ---        |
| Church                                                     | 4         | 3.3     | ---        |
| Other                                                      | 6         | 5.0     | ---        |
| From whom did you learn the most about sex?*               |           |         |            |
| Parents/guardians                                          | 51        | 42.5    | ---        |
| School                                                     | 63        | 52.5    | ---        |
| Friends                                                    | 23        | 19.2    | ---        |
| Media                                                      | 10        | 8.3     | ---        |
| Church                                                     | 4         | 3.3     | ---        |
| Other                                                      | 5         | 4.2     | ---        |
| Which of your parents smokes?                              |           |         |            |
| Mother                                                     | 16        | 13.3    | 13.3       |
| Father                                                     | 16        | 13.3    | 26.6       |
| Both are smokers                                           | 8         | 6.7     | 33.3       |
| Both are nonsmokers                                        | 71        | 59.2    | 92.5       |
| Omit                                                       | 9         | 7.5     | 100.0      |

(table continues)

| VARIABLE                                                                                        | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------------------------|-----------|---------|------------|
| Do you have a chronic or disabling condition?                                                   |           |         |            |
| Yes                                                                                             | 7         | 5.8     | 5.8        |
| No                                                                                              | 111       | 92.5    | 98.3       |
| Not reported                                                                                    | 2         | 1.7     | 100.0      |
| How would you rate your overall physical health?                                                |           |         |            |
| Excellent                                                                                       | 36        | 30.0    | 30.0       |
| Good                                                                                            | 73        | 60.8    | 90.8       |
| Fair                                                                                            | 9         | 7.5     | 98.3       |
| Poor                                                                                            | 0         | 0.0     | 98.3       |
| Omit                                                                                            | 2         | 1.7     | 100.0      |
| How would you rate your overall emotional health?                                               |           |         |            |
| Excellent                                                                                       | 41        | 34.2    | 34.2       |
| Good                                                                                            | 66        | 55.0    | 89.2       |
| Fair                                                                                            | 9         | 7.5     | 96.7       |
| Poor                                                                                            | 2         | 1.7     | 98.4       |
| Not reported                                                                                    | 2         | 1.7     | 100.0      |
| Have you ever been taught about AIDS/HIV infection in school?                                   |           |         |            |
| Yes                                                                                             | 117       | 81.7    | 81.7       |
| No                                                                                              | 2         | 15.0    | 96.7       |
| Not sure                                                                                        | 1         | 3.3     | 100.0      |
| Have you ever talked about AIDS/HIV infection with your parents or other adults in your family? |           |         |            |
| Yes                                                                                             | 98        | 81.7    | 81.7       |
| No                                                                                              | 18        | 15.0    | 96.7       |
| Not sure                                                                                        | 4         | 3.3     | 100.0      |

Note. \*Response categories not mutually exclusive; cumulative percentages not meaningful.

high schools attended, information regarding health, drugs, and sex, and self-ratings of physical and emotional health.

The typical subject was 18.8 years old, Caucasian, unmarried, and had recently entered college after having lived with both parents and one or two siblings in a home owned by the family. He/she did not move during high school and attended church at least once every two to three months, sometimes more, stating that religious beliefs were at least somewhat important in decision-making. The family was stable and enjoyed steady employment. The typical subject rated his/her physical and emotional health and good, and described self as an above average student. Nearly 6% of the sample reported a chronic or disabling condition.

#### Youth Risk Behavior Survey Data

The dependent variable (health-risk behavior) was operationalized in this study by the items included in the Youth Risk Behavior Survey (YRBS). This instrument yielded data about behaviors in six areas: sexual behaviors that result in unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and drug use; tobacco use, intentional and unintentional injuries, including careless behavior, violent behavior, and suicide, dietary behaviors, and physical activity. Frequency data related to the behaviors of interest in this study are presented in Tables 4 - 10.



Table 4

Responses to Items Related to Sexual Behavior

| VARIABLE                                                                            | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------------|-----------|---------|------------|
| Have you ever had sexual intercourse?                                               |           |         |            |
| Yes                                                                                 | 77        | 64.2    | 64.2       |
| No                                                                                  | 43        | 35.8    | 100.0      |
| How old were you when you had sexual intercourse for the first time?                |           |         |            |
| Have never had sex                                                                  | 44        | 36.7    | 36.7       |
| 14 or younger                                                                       | 15        | 12.6    | 49.3       |
| 15 or older                                                                         | 61        | 50.8    | 100.0      |
| During your life, with how many people have you had sexual intercourse?             |           |         |            |
| Have never had sex                                                                  | 44        | 36.7    | 36.7       |
| 1 or 2 people                                                                       | 29        | 24.2    | 60.9       |
| 3 - 5 people                                                                        | 21        | 17.5    | 78.4       |
| 6 or more people                                                                    | 26        | 21.6    | 100.0      |
| During the past 3 months, with how many people have you had sexual intercourse?     |           |         |            |
| Have never had sex                                                                  | 44        | 36.7    | 36.7       |
| No sex in past 3 months                                                             | 19        | 15.8    | 52.5       |
| 1 person                                                                            | 40        | 33.3    | 85.8       |
| 2 or more people                                                                    | 17        | 14.2    | 100.0      |
| Did you drink alcohol or use drugs before you had sexual intercourse the last time? |           |         |            |
| Have never had sex                                                                  | 42        | 35.0    | 35.0       |
| Yes                                                                                 | 19        | 15.8    | 50.8       |
| No                                                                                  | 59        | 49.2    | 100.0      |

(table continues)

| VARIABLE                                                                                                    | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| The last time you had sexual intercourse, did you or your partner use a condom?                             |           |         |            |
| Have never had sex                                                                                          | 44        | 36.7    | 36.7       |
| Yes                                                                                                         | 36        | 30.0    | 66.7       |
| No                                                                                                          | 39        | 32.5    | 99.2       |
| Not reported                                                                                                | 1         | 0.8     | 100.0      |
| The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? |           |         |            |
| Have never had sex                                                                                          | 44        | 36.7    | 36.7       |
| No method                                                                                                   | 8         | 6.7     | 43.3       |
| Birth control pills                                                                                         | 27        | 22.5    | 65.8       |
| Condoms                                                                                                     | 32        | 26.7    | 92.5       |
| Withdrawal                                                                                                  | 5         | 4.2     | 96.7       |
| Some other method                                                                                           | 4         | 3.3     | 100.0      |
| How many times have you been pregnant or gotten someone pregnant?                                           |           |         |            |
| 0 times                                                                                                     | 106       | 88.3    | 88.3       |
| 1 or more times                                                                                             | 13        | 10.9    | 99.2       |
| Not reported                                                                                                | 1         | 0.8     | 100.0      |
| Have you ever been told by a doctor or nurse that you have a STD?                                           |           |         |            |
| Yes                                                                                                         | 9         | 7.5     | 7.5        |
| No                                                                                                          | 111       | 92.5    | 100.0      |

The majority of subjects were sexually active, having initiated sexual intercourse at age 15 or older. Most were in a monogamous relationship during the three-months prior to

the study. Most of the sexually-active subjects reported having one or two past sexual partners, although 22% reported having had six or more partners. About one-half of the subjects reported using a condom at last intercourse and condoms were the most frequently-used method of contraception reported. Eleven percent had experienced a pregnancy and 7.5% reported having been diagnosed with a sexually-transmitted disease.

Table 5

Responses to Items Related to Alcohol Use

| VARIABLE                                                                              | FREQUENCY | PERCENT | CUM. FREQ. |
|---------------------------------------------------------------------------------------|-----------|---------|------------|
| How old were you when you had your first drink of alcohol, other than a few sips?     |           |         |            |
| I have never had a drink                                                              | 22        | 18.3    | 18.3       |
| Younger than 15                                                                       | 44        | 36.6    | 54.9       |
| 15 or older                                                                           | 54        | 45.0    | 100.0      |
| During your life, on how many occasions have you had at least one drink?              |           |         |            |
| 0 days                                                                                | 22        | 18.3    | 18.3       |
| 1 - 19 days                                                                           | 36        | 29.9    | 48.2       |
| 20 - 99 days                                                                          | 35        | 29.2    | 77.4       |
| More than 100 days                                                                    | 27        | 22.5    | 100.0      |
| During the past 30 days, on how many days did you have at least one drink of alcohol? |           |         |            |
| 0 days                                                                                | 54        | 45.0    | 45.0       |
| 1 or more days                                                                        | 66        | 55.0    | 100.0      |

(table continues)

| VARIABLE                                                                                                                        | FREQUENCY | PERCENT | CUM. FREQ. |
|---------------------------------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, within a couple of hrs.?           |           |         |            |
| 0 days                                                                                                                          | 75        | 62.5    | 62.5       |
| 1 or more days                                                                                                                  | 46        | 37.5    | 100.0      |
| During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol? |           |         |            |
| 0 days                                                                                                                          | 80        | 66.7    | 66.7       |
| 1 or more days                                                                                                                  | 27        | 33.3    | 100.0      |
| During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking?                        |           |         |            |
| 0 times                                                                                                                         | 93        | 77.5    | 77.5       |
| 1 or more times                                                                                                                 | 27        | 22.6    | 100.0      |

Eighty-two percent of the sample reported lifetime use of alcohol, and over 50% had used alcohol in the past month, while over one-third reported heavy drinking during that time. The majority reported not drinking and driving and not riding with a drinking driver in the past 30 days.

Table 6

Responses to Items Related to Tobacco Use

| VARIABLE                                                                      | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------|-----------|---------|------------|
| Have you ever tried cigarette smoking, even one or two puffs?                 |           |         |            |
| Yes                                                                           | 78        | 65.0    | 65.0       |
| No                                                                            | 42        | 35.0    | 100.0      |
| Do you think you will try cigarette smoking in the next 12 months?            |           |         |            |
| Have already tried it                                                         | 36        | 30.0    | 30.0       |
| Yes                                                                           | 4         | 3.3     | 33.3       |
| No                                                                            | 79        | 65.8    | 99.1       |
| Omit                                                                          | 1         | 0.8     | 100.0      |
| How old were you when you smoked whole cigarette for the first time?          |           |         |            |
| I have never smoked                                                           | 63        | 52.5    | 52.5       |
| Less than 9                                                                   | 3         | 2.5     | 55.0       |
| 9 - 14                                                                        | 21        | 17.5    | 72.5       |
| 15 or older                                                                   | 33        | 27.5    | 100.0      |
| Have you ever smoked regularly, at least one cigarette every day for 30 days? |           |         |            |
| Yes                                                                           | 15        | 12.5    | 12.5       |
| No                                                                            | 105       | 87.5    | 100.0      |
| How old were you when you first started smoking cigarettes regularly?         |           |         |            |
| I have never smoked                                                           | 104       | 86.7    | 86.7       |
| 9 - 13                                                                        | 3         | 2.5     | 89.2       |
| 15 or older                                                                   | 13        | 10.8    | 100.0      |

(table continues)

| VARIABLE                                                                             | FREQUENCY | PERCENT | CUM. FREQ. |
|--------------------------------------------------------------------------------------|-----------|---------|------------|
| During the past 30 days, on how many days did you smoke cigarettes?                  |           |         |            |
| 0 days                                                                               | 98        | 81.7    | 81.7       |
| 1 or more days                                                                       | 22        | 18.4    | 100.0      |
| During the past 30 days, when you smoked, how many cigarettes did you smoke per day? |           |         |            |
| Did not smoke                                                                        | 99        | 82.5    | 82.5       |
| Less than 1                                                                          | 5         | 4.2     | 86.7       |
| 1 - 10                                                                               | 14        | 11.6    | 98.3       |
| 11 - 20                                                                              | 2         | 1.7     | 100.0      |
| During the past 6 months, did you try to quit smoking?                               |           |         |            |
| Did not smoke                                                                        | 96        | 80.0    | 80.0       |
| Yes                                                                                  | 14        | 11.7    | 91.7       |
| No                                                                                   | 10        | 8.3     | 100.0      |
| During the past 30 days, did you use chewing tobacco or snuff?                       |           |         |            |
| No                                                                                   | 111       | 92.5    | 92.5       |
| Yes                                                                                  | 9         | 7.5     | 100.0      |

Two-thirds of the sample had never smoked cigarettes and did not plan to begin to smoke. Twelve percent reported smoking regularly in the past, and 18% had smoked in the past 30 days. Among smokers, the majority were 15 or older when they began smoking. Only 7.2% reported use of smokeless tobacco.

Table 7

Responses to Items Related to Drug Use

| VARIABLE                                                                 | FREQUENCY | PERCENT | CUM. FREQ. |
|--------------------------------------------------------------------------|-----------|---------|------------|
| How old were you when you tried marijuana for the first time?            |           |         |            |
| Have never tried it                                                      | 99        | 82.5    | 82.5       |
| Younger than 15                                                          | 4         | 3.3     | 85.8       |
| 15 or older                                                              | 17        | 14.1    | 100.0      |
| During your life, how many times have you used marijuana?                |           |         |            |
| 0 times                                                                  | 99        | 82.5    | 82.5       |
| 1 - 19 times                                                             | 15        | 12.5    | 95.0       |
| 20 or more times                                                         | 6         | 5.0     | 100.0      |
| During the past 30 days, how many times did you use marijuana?           |           |         |            |
| 0 times                                                                  | 114       | 95.0    | 95.0       |
| 1 or 2 times                                                             | 3         | 2.5     | 97.5       |
| 3 - 39 times                                                             | 2         | 1.7     | 99.2       |
| Not reported                                                             | 1         | 0.8     | 100.0      |
| How old were you when you tried any form of cocaine for the first time?  |           |         |            |
| Have never tried it                                                      | 119       | 99.2    | 99.2       |
| 16 or younger                                                            | 0         | 0.0     | 0.0        |
| 17 or older                                                              | 1         | 0.8     | 100.0      |
| During your life, how many times have you used any form of cocaine?      |           |         |            |
| 0 times                                                                  | 119       | 99.2    | 99.2       |
| 1 or 2 times                                                             | 1         | 0.8     | 100.0      |
| During the past 30 days, how many times did you use any form of cocaine? |           |         |            |
| 0 times                                                                  | 120       | 100.0   | 100.0      |

(table continues)

| VARIABLE                                                                         | FREQUENCY | PERCENT | CUM. FREQ. |
|----------------------------------------------------------------------------------|-----------|---------|------------|
| During your life, how many times did you use crack or freebase forms of cocaine? |           |         |            |
| 0 times                                                                          | 120       | 100.0   | 100.0      |
| During your life, how many times have you used any other type of illegal drug?   |           |         |            |
| 0 times                                                                          | 113       | 94.2    | 94.2       |
| 1 or 2 times                                                                     | 7         | 5.8     | 100.0      |
| During your life, how many times have you taken steroids without a prescription? |           |         |            |
| 0 times                                                                          | 119       | 99.2    | 99.2       |
| 1 or 2 times                                                                     | 1         | 0.8     | 100.0      |
| During your life, have you ever injected any illegal drug?                       |           |         |            |
| Yes                                                                              | 1         | 0.8     | 0.8        |
| No                                                                               | 119       | 99.2    | 99.2       |

Drug use among the sample was low. Only 17% reported lifetime use of marijuana, and 95% had not used it in the past 30 days. Ninety-nine percent had never tried cocaine, and 94% had never used other illegal drugs.



Table 8

Responses to Items Related Careless Behavior

| VARIABLE                                                                             | FREQUENCY | PERCENT | CUM. FREQ. |
|--------------------------------------------------------------------------------------|-----------|---------|------------|
| How often do you wear a seat belt<br>when riding in a car driven by<br>someone else? |           |         |            |
| Never or rarely                                                                      | 19        | 15.8    | 15.8       |
| Sometimes                                                                            | 29        | 24.2    | 40.0       |
| Most of the time/always                                                              | 71        | 59.1    | 99.1       |
| Not reported                                                                         | 1         | 0.8     | 100.0      |
| During the past 12 months, how many<br>times did you ride a motorcycle?              |           |         |            |
| 0 times                                                                              | 87        | 72.5    | 72.5       |
| 1 - 10 times                                                                         | 22        | 18.3    | 90.8       |
| 11 or more times                                                                     | 10        | 8.3     | 99.1       |
| Not reported                                                                         | 1         | 0.8     | 100.0      |
| When you rode a motorcycle, how<br>often did you wear a helmet?                      |           |         |            |
| Did not ride                                                                         | 86        | 71.7    | 71.7       |
| Never/rarely                                                                         | 22        | 18.3    | 90.0       |
| Sometimes/always                                                                     | 10        | 8.3     | 98.3       |
| Not reported                                                                         | 2         | 1.7     | 100.0      |
| During the past 12 months, how<br>many times did you ride a bicycle?                 |           |         |            |
| 0 times                                                                              | 36        | 30.0    | 30.0       |
| 1 - 10 times                                                                         | 44        | 36.7    | 66.7       |
| 11 - 20 times                                                                        | 16        | 13.3    | 80.0       |
| More than 20                                                                         | 23        | 19.2    | 99.2       |
| Not reported                                                                         | 1         | 0.8     | 100.0      |

( table continues)

| VARIABLE                                                                                           | FREQUENCY | PERCENT | CUM. FREQ. |
|----------------------------------------------------------------------------------------------------|-----------|---------|------------|
| When you rode a bicycle, how often did you wear a helmet?                                          |           |         |            |
| Did not ride                                                                                       | 35        | 29.2    | 29.2       |
| Never/rarely                                                                                       | 78        | 65.0    | 94.2       |
| Sometimes/most of time                                                                             | 7         | 5.9     | 100.0      |
| In the past 12 months, when you went swimming, how often was an adult or a lifeguard watching you? |           |         |            |
| Did not go swimming                                                                                | 18        | 15.0    | 15.0       |
| Never/rarely                                                                                       | 49        | 40.8    | 55.8       |
| Sometimes/always                                                                                   | 53        | 44.1    | 100.0      |

Although most subjects reported never or rarely wearing a helmet when bicycling or riding a motorcycle, the majority reported wearing a seat belt at least sometimes. About half of those reporting swimming in the past 12 months did so with a lifeguard watching them at least sometimes.

Table 9

Responses to Items Related to Violent Behavior

| VARIABLE                                                          | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------|-----------|---------|------------|
| During the past 30 days, on how many days did you carry a weapon? |           |         |            |
| 0 days                                                            | 106       | 88.3    | 88.3       |
| 1 or more days                                                    | 14        | 11.8    | 100.0      |

(table continues)

| VARIABLE                                                                                                                                  | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| During the past 30 days, what type of weapon did you carry?                                                                               |           |         |            |
| Did not carry weapon                                                                                                                      | 103       | 85.8    | 85.8       |
| Handgun or other gun                                                                                                                      | 10        | 8.3     | 94.1       |
| Knife, razor club, stick, bat                                                                                                             | 7         | 5.9     | 100.0      |
| During the past 12 months, how many times were you in a physical fight?                                                                   |           |         |            |
| 0 times                                                                                                                                   | 89        | 74.2    | 74.2       |
| 1 - 3 times                                                                                                                               | 27        | 22.5    | 96.7       |
| 4 or more times                                                                                                                           | 4         | 3.3     | 100.0      |
| The last time you were in a fight, with whom did you fight?                                                                               |           |         |            |
| Never in a fight                                                                                                                          | 70        | 58.3    | 58.3       |
| A total stranger                                                                                                                          | 11        | 9.2     | 67.5       |
| Friend/significant other                                                                                                                  | 24        | 20.0    | 87.5       |
| Family member                                                                                                                             | 7         | 5.8     | 93.3       |
| Other/more than one                                                                                                                       | 8         | 6.7     | 100.0      |
| In the past few months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse? |           |         |            |
| 0 times                                                                                                                                   | 117       | 97.5    | 97.5       |
| 1 time                                                                                                                                    | 2         | 1.7     | 99.2       |
| Not reported                                                                                                                              | 1         | 0.8     | 100.0      |

Surprisingly, 12% of the sample had carried a weapon in the past 30 days.

Twenty-six percent reported being in a fight in the past 12 months, most frequently with a friend or significant other.

Table 10

Responses to Items Related to Suicide

| VARIABLE                                                                                              | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| <b>In the past 12 months, did you ever seriously consider attempting suicide?</b>                     |           |         |            |
| Yes                                                                                                   | 14        | 11.7    | 11.7       |
| No                                                                                                    | 106       | 88.3    | 100.0      |
| <b>In the past 12 months, did you make a plan about attempting suicide?</b>                           |           |         |            |
| Yes                                                                                                   | 12        | 10.0    | 10.0       |
| No                                                                                                    | 108       | 90.0    | 100.0      |
| <b>In the past 12 months, how many times did you actually attempt suicide?</b>                        |           |         |            |
| 0 times                                                                                               | 115       | 95.8    | 95.8       |
| 1 time                                                                                                | 2         | 1.7     | 97.5       |
| 2 or more times                                                                                       | 3         | 2.5     | 100.0      |
| <b>If you attempted suicide, did it result in injury that had to be treated by a doctor or nurse?</b> |           |         |            |
| Did not attempt suicide                                                                               | 111       | 92.5    | 92.5       |
| No                                                                                                    | 9         | 7.5     | 100.0      |

Fourteen subjects (12%) reported considering suicide in the past 12 months, 12 (10%) reportedly made a suicide plan, and five (4.2%) actually attempted suicide not resulting in injury.

Analyzing frequency distributions for YRBS items was helpful in determining behavior patterns of the sample. The frequency data were further scrutinized for patterns

of response in order to determine appropriate specific dependent variables for analysis. Most of the items did not generate enough variation of response to warrant further analysis. For example, only 17.4% of the sample stated they had ever tried marijuana (only 6.6% in the past 30 days), only one subject (0.8%) had ever used cocaine, and only 5.8% had ever used other types of illegal drugs. Based on item response patterns, it was determined to use behaviors engaged in by approximately one-third or more of the sample, particularly those occurring within the past 30 days, as the criterion for selecting variables for analysis. As a result, only items addressing behaviors related to alcohol use and sexual behavior were selected for analysis. Of the 75 items on the YRBS, six were chosen for analysis. These variables, as measured by the YRBS, were:

1. Have you ever had sexual intercourse?
2. During the past 3 months, with how many people did you have sexual intercourse?
3. The last time you had sexual intercourse, did you or your partner use a condom?
4. During the past 30 days, on how many days did you have at least one drink of alcohol
5. During the past 30 days, on how many days did you have five or more drinks of alcohol in a row, that is, within a couple of hours?

6. During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?

Frequency data from YRBS items which were not under investigation in this study are reported in Appendix D.

### Measures of Health-Promoting Lifestyle and Self-Esteem

In this study, the Health-Promoting Lifestyle Profile (HPLP) (Walker et al., 1987) was used to measure the independent variable of health-promoting lifestyle. Descriptive data regarding the HPLP are presented in Table 11.

Table 11

#### Health Promoting Lifestyle Profile (HPLP) Scores (N = 114)

| HPLP Scale            | <u>M</u> | Range    | <u>SD</u> |
|-----------------------|----------|----------|-----------|
| Self-Actualization    | 41.03    | 13 - 52  | 7.82      |
| Health Responsibility | 19.87    | 5 - 38   | 6.09      |
| Exercise              | 13.20    | 5 - 20   | 4.10      |
| Nutrition             | 14.39    | 6 - 24   | 4.41      |
| Interpersonal Support | 21.64    | 6 - 28   | 4.81      |
| Stress Management     | 17.54    | 5 - 28   | 4.35      |
| Total HPLP            | 127.67   | 48 - 181 | 24.00     |

Reliability analysis was conducted for the HPLP, and Cronbach's alpha coefficients for the total HPLP and subscales ranged from .825 to .932. Reliability results are presented in Table 12.

( $N = 39$ ) reported by Greene and Reed (1992), and Silber and Tipett's (1965) results of between .85 and .88 ( $N = 44$ ).

### Exploratory Data Analysis

Analysis of the frequency data for the HPLP, the six HPLP subscales, and the RSES revealed nonnormality of distribution and the need for exploratory data analysis. Fisher's measures were used to determine degree of skewness and kurtosis, and each distribution was analyzed for violations. These values were then divided, respectively, by the standard error for skewness and the standard error for kurtosis. The resulting values were compared with the criterion range of -1.96 and +1.96 for determining if the variables represented by each scale should undergo transformation (Munro & Page, 1993). Distributions representing five variables, self-esteem, total health promoting lifestyle, self-actualization, exercise, and stress management, violated kurtosis and skewness. The decision was made, therefore, to transform these variables. For three of the variables, health responsibility, nutrition, and interpersonal support, the original distributions did not violate skewness and kurtosis, and these variables consequently were not transformed.

Transformation of variables was explored through application of square root, logarithm, inverse, reflect and square root, reflect and logarithm, and reflect and inverse transformations (Tabachnik & Fidell, 1989). Distributions producing skewness and kurtosis values nearest zero were then selected for each variable, as suggested by

Tabachnik and Fidell. All of the transformed variables met the criterion  $-1.96$  to  $=1.96$ , except for the HPLP subscale of stress management and the HPLP total score. In these cases, the transformation producing the skewness and kurtosis values nearest zero were selected. These transformed variables were used in subsequent data analyses.

### Findings

The purpose of the research study was to investigate a model of health promotion among adolescents, particularly the variables of self-esteem and health-promoting lifestyle as predictors of health-risk behavior. This section presents findings as they pertain to specific hypotheses developed for investigation of the model.

#### Research Hypothesis 1

The first hypothesis predicted a positive relationship between self-esteem and health-promoting lifestyle. Pearson's product moment correlation coefficient was calculated to test this hypothesis, as well as subhypotheses asserting relationships between self-esteem and the subscales of the HPLP; alpha was set at .05 to determine significance. The correlation coefficients for RSES and HPLP scores are presented in Table 14.

A significant positive relationship resulted between RSES and total HPLP scores. Correlation coefficients for four of the six subscales were significant, and all were positive. The only nonsignificant coefficients were between the exercise and nutrition



Table 14

Correlations Between Self-Esteem and Health-Promoting Lifestyle Profile

| HPLP<br>SCALE (N = 114) | <u>CORRELATION WITH SELF-ESTEEM</u> |          |
|-------------------------|-------------------------------------|----------|
|                         | <u>r</u>                            | <u>p</u> |
| Self-actualization      | .4643                               | .001*    |
| Health Responsibility   | .2343                               | .011*    |
| Exercise                | .1671                               | .071     |
| Nutrition               | .0328                               | .724     |
| Interpersonal Support   | .3292                               | .000*    |
| Stress Management       | .2162                               | .019*    |
| Total HPLP Scale        | .3504                               | .001*    |

Note. \* $p \leq .05$ .

subscales. Therefore, this hypothesis was supported, as were subhypotheses asserting positive relationships between self-esteem and HPLP subscales of self-actualization, health responsibility, interpersonal support, and stress management.

Research Hypothesis 2

The second hypothesis, there is a negative relationship between self-esteem and health-risk behavior, was also tested by calculation of the Pearson product moment correlation coefficient. In order to analyze these relationships, the six risk variables were dichotomized, so that responses fell into one of two groups: a "risk" group and a "non-risk" group. Item responses were recoded so that responses to all variables were consistent in that a lower score (a "one") indicated a less positive or less desirable response, and a higher score (a "two") indicated a more positive, or the preferred, response in terms of ideal behavior. Correlation coefficients were then calculated

between self-esteem and the six risk behaviors selected for analysis ( $\alpha = .05$ ). These coefficients appear in Table 15.

Table 15

Correlations Between Self-Esteem and Risk Behaviors

| RISK VARIABLE                                           | CORRELATION WITH SELF-ESTEEM |       |
|---------------------------------------------------------|------------------------------|-------|
|                                                         | r                            | p     |
| Ever had sexual intercourse                             | -.1145                       | .213  |
| Number of sexual partners in past 3 months              | -.1368                       | .136  |
| Condom use at last intercourse                          | -.2058                       | .024* |
| Number of days used alcohol, past 30 days               | -.2121                       | .020* |
| Amount of alcohol consumed per occasion<br>past 30 days | -.1963                       | .032* |
| Riding in a car with drinking driver, past 30 days      | -.1105                       | .220  |

Note. \* $p \leq .05$ .

Three significant relationships emerged: those between self-esteem and "condom use at last intercourse" and two measures of alcohol use, specifically those items which asked "during the past 30 days, on how many days did you have at least one drink of alcohol?" and during the past 30 days, on how many days did you have five or more drinks of alcohol in a row, that is, within a couple of hours?" Although the coefficients were negative, the actual relationships between self-esteem and involvement in these three risk behaviors were positive, since a higher score on the RSES was correlated with a lower (riskier) score on the YRBS. Therefore, these relationships were not in the predicted direction; they were positive rather than negative, indicating that subjects with higher

self-esteem scores had also engaged in drinking alcohol to a greater degree, and did not use condoms at last intercourse. The second hypothesis, as a result, was not supported.

### Research Hypothesis 3

The third hypothesis predicted a negative relationship between health-promoting lifestyle and health-risk behaviors. Numerous subhypotheses were also investigated between the various risk behaviors and subscales of the HPLP. Again, the Pearson product moment correlation coefficient was calculated to determine relationships between the recoded health-risk variables and the scales of the health-promoting lifestyle profile, and an alpha level of .05 was used to determine significance. Results are presented in Table 16.

Examination of the results revealed several significant relationships. Significant positive relationships resulted between the HPLP total score and four of the six risk behaviors: "ever had sexual intercourse;" "number of sexual partners, past three months;" condom use at last intercourse;" and riding in car with drinking driver." Because of these relationships, this hypothesis was partially supported.

Numerous subhypotheses were investigated between the risk behaviors and HPLP subscales. Relationships between the nutrition subscale and four risk variables were significant: "ever had intercourse," "number of sexual partners in the past three months," "condom use at last intercourse," "and riding in a car with a drinking driver in past 30 days." Stress management was significantly correlated with three risk variables, "ever had

Table 16

Correlations Between Health-Promoting Lifestyle (N = 114) and Health-Risk Behavior

| RISK VARIABLE                                    | HPLP SCALE |       |       |          |       |        |         |
|--------------------------------------------------|------------|-------|-------|----------|-------|--------|---------|
|                                                  | 1          | 2     | 3     | 4        | 5     | 6      | 7       |
| Ever had intercourse                             | .1513      | .1320 | .0313 | .3094*** | .1018 | .2221* | .2057*  |
| Number of sexual partners, past 3 mo.****        | .2393**    | .1670 | .0684 | .3540*** | .1688 | .2384* | .2750*  |
| Condom use at last intercourse****               | .1058      | .1679 | .0491 | .3490*** | .0902 | -.1761 | -.1865* |
| # of days used alcohol, past 30 days             | .1565      | .1287 | .1167 | .1662    | .0877 | .0303  | .1572   |
| Amt. alcohol consumed per occasion, past 30 days | .1495      | .0538 | .0679 | .1393    | .0270 | -.0596 | .0941   |
| Riding in car with drinking driver, past 30 days | .2003**    | .0783 | .0876 | .2014*   | .1597 | .0653  | .1809*  |

Note. Scales: 1 = Self-Actualization; 2 = Health Responsibility; 3 = Exercise; 4 = Nutrition; 5 = Interpersonal Support; 6 = Stress Management; 7 = Total HPLP

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ . \*\*\*\* $N = 76$ .

intercourse," "number of sexual partners in past three months," and "condom use at last intercourse." Two risk behaviors, "number of sexual partners, past 3 months," and riding with a drinking driver in past 30 days" were significantly correlated with the self-actualization subscale. Correlation coefficients were positive; however because the risk variables were recoded so that engaging in risk behavior yielded a lower score, the actual relationships were negative, indicating that higher HPLP scores were correlated with higher (non-risk, or more desirable behavior) YRBS scores. There were no significant relationships between the health responsibility, exercise, or interpersonal

support subscales and any of the risk variables. No risk variable was significantly correlated with all seven HPLP scales.

When examining the risk variables separately, the "number of sexual partners, past 30 days" variable was significantly correlated with three subscales, "ever had sexual intercourse" and "riding in car with drinking driver" were significantly correlated with two subscales, and "condom use at last intercourse" was significantly correlated with one subscale.

#### Research Hypothesis 4

The fourth hypothesis, there are relationships among demographic variables and health-risk behaviors, was tested by calculation of the chi square statistic. Because of the homogeneity of the sample, there were few true demographic variables resulting in enough variability for analysis with risk variables. Therefore, some of the personal characteristic items were used for analysis. Chi-square values were calculated to explore relationships between the six risk variables and the following demographic and personal characteristics: age, gender, academic self assessment ("compared to other students in your class, what kind of student would you say you are?"), importance of religious beliefs in decision making, frequency of church attendance, and self-assessment of physical and emotional health. Again, the .05 level of significance was used. Ethnicity was excluded from the analysis of demographic variables due to the homogeneity of the sample (80 % Caucasian). Additional analyses of the relationships between items related to sexual

behavior and the demographic/personal characteristics were performed on a subsample excluding subjects who responded that they had never had sexual intercourse when appropriate.

There were no significant relationships between age and any risk variable, which is not a surprising finding given the narrow range of ages represented in the sample. Furthermore, no significant relationships were found between gender and any of the risk variables. However, because of the possibility that the high number of subjects not responding to the gender item may have affected these results, a second analysis was performed on a subsample of those subjects responding to gender. Again, no significant relationships emerged. Chi-square values for variables yielding significant results are presented in Table 17.

Table 17

Chi-Square Values for Risk Behaviors and Significant Personal Characteristics

| PERSONAL<br>CHARACTERISTICS                     | 1         | 2       | 3        | 4        | 5      | 6         |
|-------------------------------------------------|-----------|---------|----------|----------|--------|-----------|
| Academic Self-Assessment                        | 3.793     | 15.727* | 6.520    | 1.503    | 2.881  | 2.997     |
| Importance of Religious<br>Beliefs to Decisions | 21.715*** | 6.598   | 20.741** | 11.255** | 6.595  | 3.088     |
| Frequency Attend Church                         | 4.237     | 7.533   | 5.807    | 4.999    | 6.774  | 16.269*** |
| Physical Health Self-Assmt.                     | 2.217     | 8.947   | 2.967    | 8.369*   | 7.891* | 6.104     |

Note. Risk Behaviors: 1 = Ever had sexual intercourse; 2 = Number of sexual partners, past 3 months; 3 = Condom use at last intercourse; 4 = Number of days used alcohol, past 30 days; 5 = Amt. of alcohol consumed per occasion, past 30 days; 6 = Riding in a car with drinking driver, past 30 days.

\* $p \leq .05$  \*\*  $p \leq .01$  \*\*\* $p \leq .001$

Results of the analysis of academic self-assessment and its relationship to the risk variables revealed a significant relationship between this variable and "number of sexual partners, past 3 months"  $X^2(8, N = 76) = 15.727, p = .046$ . However, the results between academic self-assessment and these variables may not be meaningful, since very few students reported themselves "in the middle" and only one student reported himself/herself to be "below the middle." No subject self-reported to be "far below the middle" or "near the bottom."

Interesting patterns emerged in the examination of relationships between risk behaviors and religiosity. Significant differences were found in the importance of religious beliefs to decision making between subjects who report having had sexual intercourse and those who have not  $X^2(3, N = 120) = 21.715, p = .000$ . Of the sexually active subjects, the majority (61) stated that religious beliefs were important to decision-making, while only 14 stated they were not important. Of sexually active subjects who reported religious beliefs were important to decision-making, the majority had only one, as opposed to multiple, sexual partner in the past 3 months, although this difference was not significant. Of the 64 subjects reporting that religious beliefs were important to decision-making, 37 did not use condoms at last intercourse while 27 of these subjects reported using condoms. This was a significant difference  $X^2(6, N = 81) = 20.741, p = .002$ . Another significant relationship emerged between drinking alcohol in the past 30 days and importance of religious beliefs  $X^2(3, N = 120) = 11.255, p = .010$ .

Of those reporting not drinking in the past 30 days, 49 stated religious beliefs were important while only five stated these beliefs were not important, a significant difference. Of those subjects reporting that religious beliefs were important, the majority reported not drinking heavily and not riding in a car with a drinking driver. These differences, however, were not significant. With regard to frequency of church attendance, the only significant relationship was that subjects who chose not to ride with a drinking driver in the past 30 days also attended church regularly  $X^2(3, N = 120) = 16.270, p = .001$ . No other significant relationships emerged between frequency of church attendance and risk behavior.

Almost twice as many subjects rating their health as excellent or good reported having had sexual intercourse than did those reporting not having sex. However, more than twice the number of those currently sexually active reporting excellent or good health also reported only having one sexual partner as had multiple partners in the past 30 days. Fewer subjects reporting good or excellent health reported using a condom than those not using a condom. However, none of these differences were significant. Significant differences were found between subjects' self-assessment of physical health and alcohol use in the past 30 days  $X^2(3, N = 120) = 8.370, p = .039$ . More subjects reporting excellent or good health also reported drinking; this relationship was reversed for heavy drinking, where significantly more subjects reporting excellent or good physical health also reported not drinking heavily than those reporting drinking heavily. More



students reporting good or excellent health also reported not riding with a drinking driver than those reporting riding with a drinking driver in the past 30 days.

Although no significant relationships emerged between self-assessment of emotional health and any risk variable, some interesting patterns emerged. More than twice those with excellent or good emotional health reported not drinking heavily or riding with a drinking driver than those who did engage in these activities. Finally, more of those reporting excellent or good emotional health did not use a condom at last intercourse.

Again, the fourth hypothesis predicted relationships among demographic variables and health-risk behaviors. Because of the significant relationships which emerged between religious beliefs, church attendance, physical health self-assessment, and academic self-assessment and some of the risk behaviors, this hypothesis was partially supported.

#### Research Hypothesis 5

The fifth hypothesis, self-esteem and health-promoting lifestyle are predictive of health-risk behaviors, was tested through discriminant function analysis. This procedure is appropriate when the research objective is to explain and predict (Munro & Page, 1993). More specifically, the purpose is to identify characteristics associated with membership in a particular group, and to ultimately predict group membership (Burns & Grove, 1994). The outcome of the analysis provides percentages of cases that are

classified correctly and percentages classified incorrectly (Munro & Page, 1993). This procedure was chosen because of its similarity to multiple regression and treatment of the dependent variable as being measured at the nominal level (Klecka, 1980). In this study, the dependent variable, risk behavior, was dummy coded for analysis into two groups: participation in risk behavior and non-participation in risk behavior. The procedure involved using interval data obtained from the HPLP and the RSES to predict membership into these dichotomous groups. The question to be answered was: "Are HPLP and RSES scores significant predictors of risk behavior and can they be used to correctly classify subjects into either the risk-behavior or non-risk-behavior group?"

Discriminant function analysis, then, was performed to determine the effectiveness of the predictor (discriminating ) variables, health-promoting lifestyle and self-esteem, in predicting classification of subjects into dichotomous "risk" (group one) or "non-risk" (group two) groups for each of the risk variables. The risk, or classification, variables were referred to as "grouping" variables, since correct grouping of subjects was the major objective of the analysis (Tabachnick & Fidell, 1989). Since only two predictor variables were used, only one discriminant function was computed for each outcome variable. Means for both groups when using each of the predictor variables (HPLP and RSES) were calculated. Wilks' Lambda and the univariate F ratio was used to determine the differences between group means. These results, and their significance are presented in Tables 18-24. The results reveal several significant differences in means between the

risk and non-risk groups when health-promoting lifestyle and self-esteem are used as discriminating variables for grouping. With alpha set at .05, significant differences resulted between means in HPLP scores for the following grouping variables: "ever had sexual intercourse," "number of sexual partners, past 3 months," and "riding in car with drinking driver, past 30 days." Significant differences in RSES scores resulted in only one grouping variable, "number of sexual partners, past 3 months."

The results of the discriminant function analysis for each grouping variable are discussed separately.

Grouping variable 1. For the risk variable "ever had sexual intercourse," group one included subjects who had had sexual intercourse and group two included those who had not. Subjects having had sexual intercourse differed significantly from those never having had sexual intercourse on HPLP scores but not on RSES scores, as shown in Table 18.

Table 18

Differences Between Discriminant Group Means

| RISK<br>VAR | DISC<br>VAR | RISK GROUP |           | NON-RISK GROUP |           | WILKS'<br>LAMBDA | F<br>RATIO | p    |
|-------------|-------------|------------|-----------|----------------|-----------|------------------|------------|------|
|             |             | <u>M</u>   | <u>SD</u> | <u>M</u>       | <u>SD</u> |                  |            |      |
| 1           | HPLP        | 123.95     | 21.95     | 134.16         | 26.24     | .958             | 5.13       | .025 |
|             | RSES        | 33.53      | 4.79      | 32.23          | 4.74      | .983             | 2.03       | .157 |

Note. Risk var (grouping variable) 1= Ever had sexual intercourse; Disc var = Discriminating variables.

The canonical discriminant function was calculated, with a chi-square value as follows:

$X^2(2, N = 118) = 10.764, p = .0046$ . This canonical discriminant function, therefore, has significant discriminating power.

Through the classification procedure for the total sample of 118 subjects, 66.95% of the cases were classified correctly into each of the two risk groups. Specifically, of the 75 subjects in group one, 90.7% were correctly predicted to be in group one, while only 9.3% were predicted to be in group two. However, of the 43 subjects in group two, only 25.6% were predicted to be in group one, while 74.4% were predicted for group two. Therefore, the discriminating variables accurately predicted group membership for the subjects having had sexual intercourse, but not as accurately for those not having had sexual intercourse. Classification results are presented in Table 24.

Grouping variable 2. For the risk variable "number of sexual partners in the past three months," group one included subjects who had had multiple partners in the past three months, while group two included those who had had only one partner during that time. For this analysis, subjects reporting never having had sex or not having sex in the past three months were excluded. Subjects having multiple sex partners differed significantly from subjects only having one partner on both HPLP and RSES scores, as shown in Table 19.

Table 19

Differences Between Discriminant Group Means

| RISK<br>VAR | DISC<br>VAR | RISK GROUP<br><u>M</u> | RISK GROUP<br><u>SD</u> | NON-RISK GROUP<br><u>M</u> | NON-RISK GROUP<br><u>SD</u> | WILKS'<br>LAMBDA | F<br>RATIO | p    |
|-------------|-------------|------------------------|-------------------------|----------------------------|-----------------------------|------------------|------------|------|
| 2           | HPLP        | 108.71                 | 16.65                   | 128.55                     | 23.97                       | .847             | 9.54       | .003 |
|             | RSES        | 31.70                  | 5.03                    | 34.89                      | 4.67                        | .910             | 5.21       | .026 |

Note. Risk var (grouping variable) 2 = Number of sexual partners, past 3 months; Disc var = Discriminating variables.

The canonical discriminant function revealed:  $X^2(2, N = 118) = 10.379, p = .006$ , indicating significant discriminating power of the predictor variables.

The classification procedure correctly classified 76.36% of 118 subjects into the appropriate risk groups. For the 17 subjects in group one, 47.1% were correctly predicted, while 52.9% were predicted for group two. Of the 38 subjects in group two, 89.5% were predicted for group 2, while 10.5% were predicted for group one. See classification results, Table 24.

Grouping variable 3. For the risk variable "condom use last time," group one included subjects who had not used a condom at sexual intercourse and group two included those who had. For this analysis, subjects reporting never having sexual intercourse were excluded. Subjects not using a condom did not differ significantly from those using a condom on either HPLP or RSES scores, as shown in Table 20.

Table 20

Differences Between Discriminant Group Means

| RISK<br>VAR | DISC<br>VAR | RISK GROUP |           | NON-RISK GROUP |           | WILKS'<br>LAMBDA | F<br>RATIO | p    |
|-------------|-------------|------------|-----------|----------------|-----------|------------------|------------|------|
|             |             | <u>M</u>   | <u>SD</u> | <u>M</u>       | <u>SD</u> |                  |            |      |
| 3           | HPLP        | 134.30     | 25.95     | 124.80         | 17.38     | .957             | 3.45       | .067 |
|             | RSES        | 32.38      | 4.79      | 32.03          | 4.14      | .998             | 0.12       | .728 |

Note. Risk (grouping) variable 3 = Condom use at last intercourse; Disc Var = Discriminating Variables.

The canonical discriminant function was calculated, with a chi-square value as follows:

$X^2(2, N = 118) = 3.6153, p = .1640$ . This result indicated nonsignificant discriminating power.

Through the classification procedure for the total sample of 118 subjects, only 59.49% of the cases were classified correctly into each of the two risk groups. Specifically, of the 44 subjects in group one, 77.3% were correctly predicted to be in group one, while 22.7% were predicted to be in group two. However, of the 43 subjects in group two, only 37.1% were predicted to be in group two, while 62.9% were predicted for group one. Therefore, the predictor variables accurately predicted group membership for the subjects not using a condom, but not as accurately for those who used a condom at last intercourse. See classification results, Table 24.

Grouping variable 4. For the risk variable "number of days used alcohol, past 30 days," group one included subjects who reported drinking alcohol during the past 30 days, while group two included those who reported no drinking during that time.

Subjects using alcohol did not significantly differ from subjects not using alcohol on either HPLP or RSES scores, as shown in Table 21.

Table 21

Differences Between Discriminant Group Means

| RISK<br>VAR | DISC<br>VAR | RISK GROUP |           | NON-RISK GROUP |           | WILKS'<br>LAMBDA | F<br>RATIO | p    |
|-------------|-------------|------------|-----------|----------------|-----------|------------------|------------|------|
|             |             | <u>M</u>   | <u>SD</u> | <u>M</u>       | <u>SD</u> |                  |            |      |
| 4           | HPLP        | 124.22     | 25.09     | 131.76         | 22.18     | .975             | 2.94       | .089 |
|             | RSES        | 33.22      | 4.60      | 32.87          | 5.06      | .959             | 4.88       | .070 |

Note. Risk var (grouping variable) 4 = Number of days used alcohol, past 30 days; Disc var = Discriminating variables.

The canonical discriminant function revealed:  $X^2(2, N = 118) = 4.0051, p = .135$ , indicating nonsignificant discriminating power.

The classification procedure correctly classified 63.56% of the subjects ( $N = 118$ ) into the appropriate risk groups. For the 64 subjects in group one, 78.1% were correctly predicted, while 21.9% were predicted for group two. Of the 38 subjects in group two, 46.3% were predicted for group 2, while 53.7% were incorrectly predicted for group one. Therefore, the procedure was able to classify subjects into the drinking group, but not into the non-drinking group (see Table 24).

Grouping variable 5. For the risk variable "amount of alcohol consumed per occasion," group one included subjects who drank five or more drinks in a row at least once during the past 30 days, and group two included those who did not drink during that

time. Differences between these groups were not significant for either HPLP scores or RSES scores, as shown in Table 22.

Table 22

Differences Between Discriminant Group Means

| RISK<br>VAR | DISC<br>VAR | RISK GROUP |           | NON-RISK GROUP |           | WILKS'<br>LAMBDA | F<br>RATIO | p    |
|-------------|-------------|------------|-----------|----------------|-----------|------------------|------------|------|
|             |             | <u>M</u>   | <u>SD</u> | <u>M</u>       | <u>SD</u> |                  |            |      |
| 5           | HPLP        | 124.70     | 23.32     | 129.37         | 24.38     | .991             | 1.04       | .311 |
|             | RSES        | 33.11      | 4.58      | 33.02          | 4.95      | .964             | 4.36       | .092 |

Note. Risk var (grouping variable) 5 = Amount of alcohol consumed per occasion, past 30 days; Disc var = Discriminating variables.

The canonical discriminant function was calculated, with a chi-square value as follows:

$X^2(2, N = 118) = 1.258, p = .533$ , revealing nonsignificant discriminating power.

Through the classification procedure for the total sample of 118 subjects, 61.86% of the cases were classified correctly into each of the two risk groups. Specifically, of the 43 subjects in group one, all were incorrectly predicted to be in group two. However, of the 75 subjects in group two, 97.3% were correctly predicted to be in group two, while only 2.7% were incorrectly predicted for group one. Therefore, the predictor variables accurately predicted group membership for the subjects who did not drink, but were totally incorrect in classifying those subjects drinking heavily. See classification results, Table 24.



Grouping variable 6. For the risk variable "rode with drinking driver, past 30 days," group one included subjects who reported riding with a drinking driver, while group two included those who reported not doing so. Subjects using alcohol did not differ from subjects not using alcohol on either HPLP or RSES scores, as shown in Table 23.

Table 23

Differences Between Discriminant Group Means

| RISK<br>VAR | DISC<br>VAR | RISK GROUP<br><u>M</u> | RISK GROUP<br><u>SD</u> | NON-RISK GROUP<br><u>M</u> | NON-RISK GROUP<br><u>SD</u> | WILKS'<br>LAMBDA | F<br>RATIO | p    |
|-------------|-------------|------------------------|-------------------------|----------------------------|-----------------------------|------------------|------------|------|
| 6           | HPLP        | 121.39                 | 21.18                   | 130.65                     | 24.81                       | .967             | 3.93       | .049 |
|             | RSES        | 32.13                  | 5.37                    | 33.50                      | 4.47                        | .988             | 1.39       | .148 |

Note. Risk var (grouping variable) 6 = Riding in car with drinking driver, past 30 days;  
Disc var = Discriminating variables.

The canonical discriminant function revealed:  $X^2(N = 118) = 4.0051$ ,  $p = .135$ , indicating nonsignificant discriminating power.

The classification procedure correctly classified 64.41% of the subjects ( $N = 118$ ) into the appropriate risk groups. For the 38 subjects in group one, only 2.6% were correctly predicted, while 97.4% were predicted for group two. Of the 80 subjects in group two, 93.8% were correctly predicted for group 2, while 6.3% were incorrectly predicted for group one. Therefore, the procedure was able to classify subjects into the drinking group, but not into the non-drinking group (see Table 24).

To summarize the discriminant classification of subjects into the risk groups, these classification results are presented in Table 24.

Table 24

Discriminant Classification of Subjects into Groups Predicted by HPLP and RSES

| GROUPING<br>VARIABLE              | ACTUAL<br>GROUP | %<br>PREDICTED<br><u>GROUP MEMBERSHIP</u> |       | TOTAL<br>%<br>CLASSIFIED<br>CORRECTLY |
|-----------------------------------|-----------------|-------------------------------------------|-------|---------------------------------------|
|                                   |                 | 1                                         | 2     |                                       |
| Has had intercourse               | 1               | 90.7                                      | 9.3   | 66.95                                 |
| Has never had intercourse         | 2               | 74.4                                      | 25.6  |                                       |
| Multiple sexual partners          | 1               | 47.1                                      | 52.9  | 76.36                                 |
| One sexual partner                | 2               | 10.5                                      | 89.5  |                                       |
| Did not use condom                | 1               | 77.3                                      | 22.7  | 59.49                                 |
| Used condom                       | 2               | 62.9                                      | 37.1  |                                       |
| Drank one or more days            | 1               | 78.1                                      | 21.9  | 63.56                                 |
| Did not drink                     | 2               | 53.7                                      | 46.3  |                                       |
| Drank 5 or more drinks in a row   | 1               | 0.0                                       | 100.0 | 61.86                                 |
| Did not drink                     | 2               | 2.7                                       | 97.3  |                                       |
| Rode with drinking driver         | 1               | 2.6                                       | 97.4  | 64.41                                 |
| Did not ride with drinking driver | 2               | 6.3                                       | 93.8  |                                       |

After the discriminant function analysis was completed with both HPLP and RSE as predictor variables, a second analysis was conducted using only HPLP as a predictor. Interestingly, removal of self-esteem as a predictor improved the discriminating power of all canonical functions, except when predicting for the "ever had sexual intercourse" grouping. For one variable, "rode with drinking driver," the discriminating power reached significance. Correct classification of subjects into the two groups was lower for all the grouping variables except "number of sexual partners" and "rode with drinking driver," and for these two variables, the classification was improved by less than one percent. Canonical discriminant functions for the HPLP only as predictor variable are presented in Table 25.

Table 25

Canonical Discriminant Functions for HPLP as Only Predictor

| VARIABLE                                            | WILKS'<br>LAMBDA | X <sup>2</sup> | <u>r</u> |
|-----------------------------------------------------|------------------|----------------|----------|
| Ever had sexual intercourse                         | .9577            | 4.993          | .025*    |
| Number of sexual partners, past 3 mo.               | .8474            | 8.691          | .003*    |
| Condom use at last intercourse                      | .9571            | 3.354          | .067     |
| # days used alcohol use, past 30 days               | .9753            | 2.889          | .089     |
| Amt. alcohol consumed per occasion,<br>past 30 days | .9911            | 1.028          | .311     |
| Riding in car with drinking driver,<br>past 30 days | .9673            | 3.844          | .050*    |

Note. \* $p \leq .05$ .

Classification of subjects by HPLP only appears in Table 26.

Table 26

Discriminant Classification of Subjects into Groups Predicted by HPLP Only

| GROUPING<br>VARIABLE              | ACTUAL<br>GROUP | PREDICTED<br>GROUP MEMBERSHIP |       | TOTAL<br>%<br>CLASSIFIED<br>CORRECTLY |
|-----------------------------------|-----------------|-------------------------------|-------|---------------------------------------|
|                                   |                 | 1                             | 2     |                                       |
| Has had intercourse               | 1               | 96.0                          | 4.0   | 67.80                                 |
| Has never had intercourse         | 2               | 81.4                          | 18.6  |                                       |
| Multiple sexual partners          | 1               | 17.6                          | 82.4  | 70.91                                 |
| One sexual partner                | 2               | 5.3                           | 94.7  |                                       |
| Did not use condom                | 1               | 77.3                          | 22.7  | 58.23                                 |
| Used condom                       | 2               | 65.7                          | 34.3  |                                       |
| Drank one or more days            | 1               | 75.0                          | 25.0  | 57.63                                 |
| Did not drink                     | 2               | 63.0                          | 37.0  |                                       |
| Drank 5 or more drinks in a row   | 1               | 0.0                           | 100.0 | 61.86                                 |
| Did not drink                     | 2               | 2.7                           | 97.3  |                                       |
| Rode with drinking driver         | 1               | 2.6                           | 97.4  | 65.25                                 |
| Did not ride with drinking driver | 2               | 5.0                           | 95.0  |                                       |

Again, the fifth hypothesis stated that self-esteem and health-promoting lifestyle are predictors of health-risk behaviors. As a result of the significant discriminant functions resulting from the first two grouping variables, this hypothesis was partially

supported. Self-esteem and health-promoting lifestyle profile successfully predicted membership for the "ever had sexual intercourse" and the "number of sexual partners" variables. Health-promoting lifestyle alone successfully predicted membership into the "rode with a drinking driver, past 30 days" variable. Although correct prediction of group membership for the other four variables was greater than 50%, the discriminant functions for the predictor variables into these groups were not significant.

### Additional Findings

In an effort to explore relationships between risk behaviors and sources of information about sex and drugs, crosstabulations were run between all of the risk variables and the following items: "From whom did you learn the most about sex?" and "From whom did you learn the most about drugs?" Subjects selected from: parents/guardians, other relatives, school, church, friends, TV/radio/music, movies, other. The responses were recoded "yes" (a "one") or "no" (a "two") for each source of information.

Only two significant relationships emerged. Chi-square analysis between "learned about drugs from parents/guardians" and "amount of alcohol consumed per occasion" resulted in:  $X^2(1, N = 120) = 4.53, p = .033$ . Significantly more of the subjects who reported not drinking heavily in the past 30 days also did not learn about drugs from parents/guardians. Conversely, of the subjects who reportedly drank heavily, four times more stated not learning about drugs from parents/guardians.

Chi-square analysis between "learned about drugs from parents/guardians" and "riding with drinking driver, past 30 days" resulted in:  $X^2 (1, N = 120) = 3.77, p = .05$ . Of the subjects reporting riding with a drinking driver, four times more stated not learning about drugs from parents/guardian as reported learning from this source. Of the subjects not riding with a drinking driver, two-thirds more stated not learning from parents as stated they had learned from this source.

In order to explore relationships between the risk variables themselves, crosstabulations were run between "number of sexual partners, past 30 days" and "number of days used alcohol, past 30 days" and "amount of alcohol consumed, past 30 days". Crosstabulations were also run between "condom use at last intercourse" and the same two alcohol variables. Only one significant relationship emerged: that between "condom use at last intercourse" and "amount of alcohol consumed per occasion, past 30 days,"  $X^2 (2, N = 80) = 6.99, p = .030$ . The result, which was interesting, was that of the 54 subjects reporting no alcohol use in the past 30 days, 35 reported not using a condom, while 19 did. Of the 26 subjects reporting drinking heavily, nine reported not using a condom, while 17 reported condom use.

The relationship between "condom use at last intercourse" and "ever been diagnosed with a STD" was also explored. However, the chi-square analysis revealed a nonsignificant relationship. Interestingly, of the three students reporting having been diagnosed with STD, two reported using a condom at last intercourse, while one did not.

A significant correlation resulted between recent smoking behavior and parental smoking  $X^2(4, N = 111) = 2.73, p = .013$ . The majority of the sample reported not smoking in the past 30 days. Of these subjects 68% reported that neither parent smokes.

### Summary

The data analysis of the research produced interesting results. Examination of the frequency distributions for the YRBS items resulted in the selection of six specific risk behaviors for analysis. Exploratory data analysis of the frequency distributions for the independent variables, health-promoting lifestyle (HPLP) and self-esteem (RSES), revealed nonnormality. Transformation produced distributions that, for a majority of variables, met the criterion for normality. Reliability analyses of the independent measures confirmed alphas of .945 for the HPLP and .802 for the RSES.

Hypotheses were tested through Pearson's product moment correlation, chi-square, and discriminant function analysis. Hypothesis one was supported, as were its various subhypotheses, while hypotheses three, four, and five were partially supported. Hypothesis two was not supported.

## CHAPTER 5

### SUMMARY OF THE STUDY

The problem under study involved the relationships among self-esteem, health-promoting lifestyle, and health-risk behavior and proposed that self-esteem and health-promoting lifestyle are predictive of health-risk behavior. The purpose of the study was to investigate a model of health promotion among adolescents, and sought to examine health promotion and health-risk behaviors in this population. Five hypotheses were asserted, and were analyzed by Pearson's product moment correlation, chi-square analysis, and discriminant function analysis. The first hypothesis, predicting a positive relationship between self-esteem and health-promoting behavior, was supported. The second hypothesis, which predicted a negative relationship between self-esteem and health-risk behaviors, was not supported. The third hypothesis predicting a negative relationship between health-promoting lifestyle and health-risk behavior, and the fourth hypothesis predicting relationships among demographic variables and health-risk behavior were partially supported. The fifth hypothesis, proposing that self-esteem and health-promoting lifestyle are predictive of health-risk behaviors was partially supported through discriminant function analysis. This chapter summarizes and discusses the findings of the study. Conclusions, implications, and recommendations for further study are presented.



### Summary of Findings

A predictive correlational design was used to study the relationships among self-esteem, health-promoting lifestyle, demographic variables, and health-risk behaviors. The conceptual framework for the study was based on the concepts identified in the self and symbolic interactionism theories, as well as those in health promotion, adolescent, and problem behavior theories. The Rosenberg Self-Esteem Scale (1965), the Health-Promoting Lifestyle Profile (Walker, Sechrist, & Pender, 1987) and the Youth Risk Behavior Survey, developed by the Centers for Disease Control, were used for data collection.

One-hundred-twenty students participated in the study, and data collection occurred twice during regularly-scheduled classes for a period of one hour each. All students asked to participate did so after being fully informed both verbally and in writing of the purpose and voluntary nature of the study. No subject declined to participate or withdrew during data collection.

Subjects were students at a private liberal arts college in the midwest. The typical subject was 18.8 years old, Caucasian, unmarried, and had recently entered college after having lived with both parents and one or two siblings in a dwelling owned by the family. He/she did not move during high school, and attended church at least once every two to three months, sometimes more. The family was stable and enjoyed steady employment. The typical subject rated his/her physical and emotional health as good and described self

as an above average student.

The instruments were coded, entered into a data file and statistically analyzed using SPSS-X computer programs for frequencies, correlations, crosstabulations, and discriminant function analysis. Reliability analyses yielded alpha correlation coefficients of .945 for the Health-Promoting Lifestyle Profile (HPLP) and .882 for the Rosenberg Self-Esteem Scale (RSES).

The first hypothesis was supported, while the second hypothesis was not supported. Hypotheses three, four, and five were partially supported.

### Discussion of the Findings

The findings are discussed relative to each hypothesis. Additional findings are also discussed.

#### Hypothesis 1

Hypothesis one predicted a positive relationship between self-esteem and health-promoting lifestyle, and was supported as a result of the significant correlation between RSES scores and total HPLP scores. Several relationships between the RSES and subscales of the HPLP were significant and all were positive; therefore, three subhypotheses were also supported. The data revealed significant correlations (at the .001 level) between self-esteem and self-actualization, and between self-esteem and interpersonal support. These findings are not surprising, however, since these concepts

are conceptually closely related. The remaining significant correlation (at the .05 level) was between self-esteem and stress management. Nonsignificant correlations resulted between self-esteem and the exercise and nutrition subscales. These results indicated that subjects with high scores on the RSES also had high scores on the HPLP, and this positive relationship was significant for the total HPLP, as well as for four of six subscales.

These findings lend support to past research which has examined the relationship between self-esteem and health-promoting behaviors. The literature suggested the importance of self-esteem to mental and physical health and health practices (Vines & Williams-Burgess, 1994; Conn, Taylor, & Casey, 1992; Bonheur & Young, 1991; Wood, 1991; Muhlenkamp & Sayles, 1986; Reasoner, 1983; Antonucci & Jackson, 1983; Hallal, 1982), and suggested the importance of self-esteem as a contributor to healthy lifestyle (Rew, 1990). Most of these studies were conducted with adult subjects. However, among adolescents, Herold, Goodwin, and Lero (1979) found a positive correlation between self-esteem and positive attitudes toward contraception, and a positive relationship has also been found between self-esteem and involvement in health practices and health-seeking behaviors (McCaleb, 1991; McKaig, 1989). These studies strongly suggest a correlation between self-esteem and health promoting behavior generally; however, there is a lack of substantial evidence among adolescents.

These findings lend partial support for Perry and Murray's (1982) model which

suggested that adolescents with positive personality structure factors (one of which is self-esteem) may engage in health-promoting activities to a greater extent than will adolescents lacking a positive self-esteem.

### Hypothesis 2

The second hypothesis predicted a negative relationship between self-esteem and health-risk behaviors, but was not supported. Results of the analysis were unusual, since the relationship between these variables was positive, and were thus opposite the predicted direction. Subjects with higher scores on the RSES also had higher risk behavior scores, indicating they engaged in risk behaviors more frequently than subjects whose RSES scores were lower; therefore, these relationships were positive. Correlations with self-esteem were significant for three of the risk variables: condom use at last intercourse, number of days used alcohol, past 30 days, and amount of alcohol consumed per occasion, past 30 days.

These results contradict earlier studies in which subjects with higher levels of self-esteem also reported higher levels of contraceptive knowledge and use (Green, Johnson, & Kaplan, 1992; Holmbeck et al., 1994; Herold et al., 1979); studies indicating that subjects with lower self-esteem also reported higher levels of alcohol and tobacco use (McDermott et al., 1992; Murphy & Price, 1988; Bonaguro & Bonaguro, 1987; Tucker, 1985; Chassin et al., 1985; Sunseri et al, 1983), and a specific study which found lower self-esteem among a group of gay men engaging in high-risk behavior (Paul, Stall,

& Davis, 1993). However, while these studies suggest negative relationships between self-esteem and risk behavior, other studies do not support this relationship. While Holmbeck, et al. found self-esteem to be positively related to reported use of contraception, this study also found a significant positive relationship between self-esteem and initiation of sexual intercourse. This is consistent with Robinson and Frank's (1994) finding of no differences in self-esteem based on virginity, sexual activity, or pregnancy. In addition, while specific research has shown positive correlations between smoking and drinking behavior and positive health behavior, these relationships were no longer significant when self-esteem and other variables were controlled (D'Elio, Mundt, Bush, & Iannotti, 1993). Thus, self-esteem may have a spurious effect on risk behavior. The results of the present study lend support to this idea.

These contradictions raise specific questions about risk behavior among adolescents. First, if self-esteem and certain risk behaviors are positively correlated, does the self-esteem serve as a motivator? Second, does high self-esteem provide a "healthy dose" of self confidence for adolescents to engage in risky behavior they perceive as "fun," exciting," and "expected?" Third, does high self-esteem provide adolescents with the ability to resist or ignore repeated warnings to abstain from risky behavior? While it has been hypothesized that positive self-esteem may mediate peer influence and lessen the desirability of perceived "adult behaviors," (Perry & Murray, 1982) the opposite may be true as well. Positive self-esteem may strengthen the development of adolescent

independence and give them confidence to engage in new experiences, positive or negative.

Pender's Health-Promotion Behavior model originally postulated a relationship between self-esteem and self-awareness, and health decision making. However, the model was later revised by Pender (1987) to exclude self-esteem as a cognitive-perceptual factor in decision making. Perhaps the results of this study lend support to the idea that the direction of the relationship between self-esteem and health behavior, particularly among adolescents, lacks clarity and has not been determined (Hilton, 1986).

Furthermore, the importance of self-esteem as a determinant of either health-promoting behavior or health-risk behavior may lie in its influence on any of a variety of personal or cognitive mediating factors rather than in a direct relationship on behavior. The concepts of sensation seeking and vulnerability may be two such possible mediating factors. Sensation seeking reflects a greater interest in sex and in taking risks, since it is characterized by a large appetite for experience and a tendency to seek out intense, varied, and novel activities (Hernandez & DiClemente, 1992; Arnett, 1990). Adolescent egocentrism and its dimension of personal fable have also been hypothesized to influence decision-making. Personal fable (a concept which describes the tendency for adolescents to believe themselves unique) may encourage increased risk behavior by acting as a shield from vulnerability and promoting a disregard for consequences (Arnett,

1990). Relationships between personal fable, vulnerability, and self-esteem have been hypothesized, but research has failed to support these relationships. However, the results of the current study may give support for re-examining these concepts in relationship to self-esteem.

### Hypothesis 3

The third hypothesis predicted a negative relationship between health-promoting lifestyle and health-risk behavior, and was partially supported. Again, because of the recoding of the risk variables, so that the most desirable (or "least involvement in risk behavior") response was given a higher score, most of the correlation coefficients were positive. Subjects scoring higher on the HPLP also reported engaging in less risk behavior, and those subjects scoring lower on HPLP also reported engaging in more risk behavior. Therefore, most of the actual relationships between health-promoting lifestyle and participation in risk behavior were negative.

Two HPLP scales (total HPLP and stress management) were positively correlated with "condom use at last intercourse," but these were the only correlations in this direction. The meaning of these positive relationships is unclear, and not supported in the literature. It may be possible that because the majority of sexually active subjects reported being in a monogamous relationship, use of a condom is viewed as unnecessary; therefore, not using one is not perceived as a health-risk. Another interesting finding was the highly significant correlations between the nutrition subscale and all three of the

sexual risk behavior variables. Nutrition may be indicative of a tendency toward other health-promoting behavior.

Again, the results are consistent with Perry and Murray's (1982) conceptualization of adolescent health behavior. Their model suggested that a positive regard for the value of health may contribute to an adolescent's participation in health-promoting activities and avoidance of problem behavior. Assuming valid and reliable measurement of adolescent health-promoting lifestyle by the HPLP, these results indicate that those subjects who had more positive regard for health promotion also avoided risky behavior, thus supporting Perry and Murray's model.

These findings also provide support for Pender's (1987) Health Promotion Model, which proposed that health promotion involves deliberate actions to move toward higher levels of health. This model, applied to adolescence, could explain an individual's reluctance to jeopardize good health by engaging in risk behavior.

#### Hypothesis 4

The fourth hypothesis, partially supported, predicted relationships among demographic variables and health-risk behavior. There were no significant relationships between age, gender or emotional health self-assessment. Homogeneity of the sample with regard to age, and the low response rate to the gender item must be considered when interpreting these results. However, relationships were significant between physical health self-assessment and the two risk variables involving alcohol, and between academic



self assessment and "number of sexual partners, past 30 days."

Several significant relationships emerged between "importance of religious beliefs to decision making" and several risk variables. It seemed that for the majority of sexually-active subjects, religious beliefs were important to their decision-making processes, and most of these subjects did not use condoms at last intercourse. These results are interesting but do not support past research, which has found that virgins are more likely than non-virgins to be church attenders (Murstein & Mercy, 1994; Ketterlinus et al., 1992).

Furthermore, a majority of subjects responding that religious beliefs are important to decisions reported drinking in the past 30 days, though not heavily. Conversely, the relationship between frequency of church attendance and riding with a drinking driver was also significant, but the majority of students attending church frequently did not ride with a drinking driver.

Religious teachings usually include guidelines for various types of behavior. It is interesting that the majority of subjects who reported their religious beliefs are important also engaged in sexual activity and did not use condoms. Perhaps young people are able to justify their sexual activity more easily if they do not consider it a "planned" activity. By not using condoms, it may become easier to convince oneself that it has not been planned or anticipated, and therefore more justifiable.

The literature is lacking in research regarding adolescents' religious beliefs in

relation to drinking. In this study, religion may have had a moderating effect on drinking, as while students with strong religious beliefs reported drinking, the majority did not drink heavily nor ride in a car with a drinking driver.

#### Hypothesis 5

The fifth hypothesis, self-esteem and health-promoting lifestyle are predictive of health-risk behavior, was partially supported through use of discriminant function analysis. Through this process, between 59% and 76% of subjects were correctly classified into "risk" or "non-risk" behavior categories for each of the six grouping variables, based on HPLP and RSES scores. For two of the outcome variables the differences between the "risk" and "non-risk" group were significant and indicated significant discriminating power of the variables, health-promoting lifestyle and self-esteem, to predict group membership.

These findings would appear to indicate that the two discriminating variables may be useful in predicting which adolescents are likely to engage in risky behavior. However, in most cases the classification was only successful in predicting membership into one group, while unsuccessful in predicting membership in the other group. For example, for the "ever had sexual intercourse" variable, the predictor variables were successful in classifying 91% of subjects into group one (risk), while successfully classifying only 26% into group two (non-risk). Furthermore, the results are not consistent among the six groups as to which group subjects were more successfully

assigned. Therefore, the usefulness of these two variables when analyzed as a discriminant function may be limited.

In addition, because of the positive relationship which resulted between self-esteem and health-risk behavior, and because of the significant differences in HPLP scores for three of the six outcome variables, it appears that the majority of the discriminating power of the discriminant function (health-promoting lifestyle and self-esteem) was derived from health-promoting lifestyle. Although limited, these results lend additional information for research focusing on models of adolescent health promotion.

#### Additional Findings

Exploration of the data revealed interesting patterns in regard to source of information regarding drugs and risk behaviors. Parental communication about drugs apparently did not have an effect on subjects' decisions to drink or to ride with a drinking driver. However, since only 38% of the sample reported "learning the most about drugs" from parents, the implication is that students learned about drugs from some other source which was ineffective in preventing drinking behavior.

The relationships among risk variables were also explored. One significant relationship emerged between condom use and amount of alcohol consumed, past 30 days. Literature documents a correlation between risky sexual behavior and alcohol use in that the more an adolescent drinks, the more likely he/she is to engage in risky sexual

behaviors (Brien et al., 1994; Meilman, 1993; O'Leary et al., 1992; Coray, 1991; Hingston et al., 1990). However, this study indicated that alcohol use did not deter subjects' use of condoms; this was simply not part of their behavior pattern. The majority of subjects reporting no drinking also did not use condoms; conversely, those subjects reporting drinking heavily had a higher rate of using condoms. Again, serial monogamy may play more of a role in subjects' condom use behavior than any other variable. These results, again, contradict the literature

Another significant relationship emerged between recent smoking behavior and parental smoking. Of the subjects reporting no smoking in the past 30 days, the majority reported that neither parent smokes; of the subjects reporting smoking, 57% reported at least one parent who smokes. These results support previous research which has found a correlation between parental and adolescent smoking behavior (Sunseri et al., 1983), and may be one area in which parental role modeling can have a powerful effect.

### Revision of the Model

The results of the study necessitated a revision of the proposed model of adolescent health promotion. Relationships between self-esteem and health-promoting lifestyle and between health-promoting lifestyle and risk behavior were retained in the model. The relationship between self-esteem and risk behavior, while retained, changed direction. Demographic variables were not significantly related to any risk variable;

however, various personal and family characteristics showed differences between the risk and non-risk groups for each risk variable.

Self-esteem and health-promoting behavior were predictive of two specific risk behaviors: ever having had intercourse and number of sexual partners, past 30 days. Therefore, the term "risk behavior" was more specifically defined through this study. The revised model is shown schematically in Figure 2.

### Conclusions

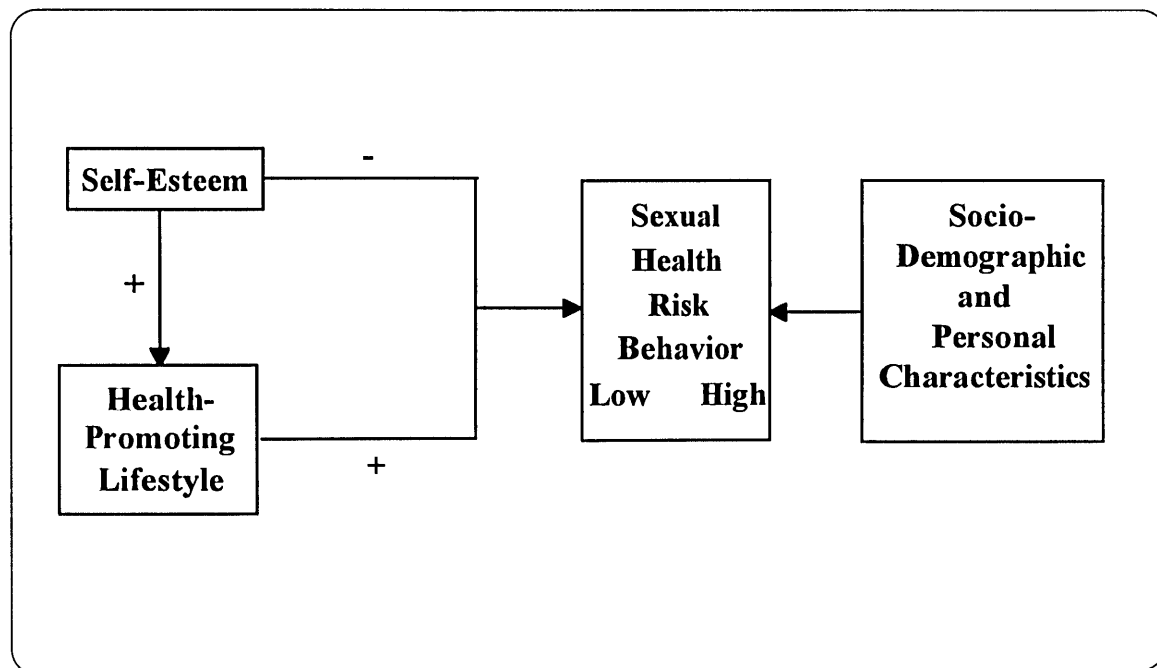
Based on the results of the study, the following conclusions were developed. First, the incidence of sexual activity and alcohol use among students at this small, private, liberal arts college was consistent with national averages. This finding does not support the myth that these environments are somehow insulated from the "perils" of university settings in large urban areas, but may support the belief that problem behavior is a function of adolescent developmental processes.

Second, the relationship between self-esteem and health-promoting lifestyle, which has been widely tested among a variety of populations, was confirmed with this sample of college freshmen and sophomores. This study gives additional support to the idea that self-esteem may be an important contributor to participation in a healthy lifestyle.

Third, while relationships between self-esteem and some risk behaviors (smoking,

Figure 2

## Revised Adolescent Health-Risk Behavior Model



contraceptive use) are documented in the literature, research regarding the influence of self-esteem on specific risk behaviors, particularly sexual activity and use of alcohol is lacking. There is a lack of clear explanation about the relationship between self-esteem and risk behavior in general, and of the direction of influence. Based on the results of this study, positive self-esteem may actually serve as an impetus for engaging in certain risk behavior. Therefore, the assumption cannot be made that since positive self-esteem is correlated with positive health practices, negative self-esteem may then be correlated with negative health practices or behaviors. In this study, positive self-esteem was associated

with negative health behaviors.

Fourth, health-promoting lifestyle among adolescents appears to have a positive effect on behavior, and may be predictive of risk behavior. Adolescents who are struggling with establishment of independence may choose to act on the environment to move toward higher levels of health and that by making deliberate decisions to promote health. If this occurs, they may be less likely to sabotage their effort by engaging in risk behavior. This study provided support for models of adolescent health which emphasize active involvement in health and to a step beyond emphasis on health-protective activities.

Fifth, among sexually-active subjects, 51% did not use condoms at last intercourse, and this was the only variable that was positively correlated with health-promoting lifestyle. This is probably related to the fact that the majority of sexually-active students had only one partner in the past three months and believed they were practicing serial monogamy. The implication might be that if one has only one sexual partner at a time, one is "safe" from the risk of disease.

Sixth, drug and tobacco use behavior was low. The frequency was so low that neither smoking nor drug use were selected as risk variables for analysis. This may have been a result of the homogeneity of the sample. The majority of subjects reported that neither parent smoked; parental smoking behavior, therefore, may have had a significant positive impact on subjects' smoking behavior.

Seventh, religious beliefs and activities did not appear to have a major deterring

effect on risky sexual behavior, although they may have had a moderating effect on drinking behavior .

### Implications for Nursing

If adolescents are capable of engaging in health-promoting behaviors, they must be encouraged to do so. Schools have a major responsibility in promoting adolescent health, since this is often the adolescent's only contact with a health professional. However, if access to health care is to be provided through local schools, this concept must have community and parental support. Communities must be educated about the need to increase adolescent access to health care. At the college level, student life officials and college administration must recognize the need for student counseling and health-care services.

Furthermore, if health promotion has an impact on participation in health-risk behavior, schools should adopt curricula which introduce health concepts early, in the primary grades, and include substantial health promotion teachings throughout elementary, middle, and high school. Again, if schools are to successfully function as providers of health education, this concept must be endorsed by local communities.

Formal activities must go beyond education and include preventive efforts that use comprehensive approaches and address multiple issues, not just increase knowledge. Teachers and other school personnel can impact the importance of health promotion



through positive role modeling, and school nurses can take the lead in encouraging this behavior. According to Dryfoos (1991) an important intervention for preventing high-risk behaviors is the relationship formed with an adult in a supportive context. High-schools and colleges can develop support group models which could allow both peer and professional counseling for students struggling with decisions about problem behavior. Truly effective means of communication regarding the consequences of risk behavior must be developed. Students must understand health concepts, particularly the concept of serial monogamy in order to really understand the impact of their behavior.

According to Dougherty et al. (1992), improvement in approaches to adolescent health will necessitate overcoming traditional and prevalent beliefs about adolescence. Adolescence must be valued as developmental stage on its own terms rather than merely as a transitional stage, and as more than just a problem period about which nothing can be done. Community health nurses, school nurses and pediatric and family nurse practitioners can impact these views about young people. Formal preparation of nurses to focus on adolescent health as a nursing specialty must include curricula and resources which address growth and development and the unique social and psychological issues adolescents face. Addressing adolescent health rather than focusing on specific problem behavior could positively impact the delivery of health care to adolescents.

### Recommendations for Further Research

The following recommendations for further study were identified:

1. Because of the homogeneity of the sample, this study should be replicated with a larger, more representative sample with regard to ethnicity and socioeconomic variables. In addition, data should be analyzed with gender responses from the entire sample.

2. A causal research design targeting a larger variety of health-risk variables would allow examination of the antecedents to adolescent problem behavior. Furthermore, a design specifying hypotheses which identify specific health-risk variables would facilitate data analysis and interpretation.

3. Empirical study is needed to test models of adolescent health developed by Perry and Murray (1982) and Jessor and Jessor (1977). Furthermore, Pender's (1987) model of health-promoting lifestyle offers possibilities to investigate relationships among a variety of cognitive-perceptual variables and risk behavior.

4. Variables which could possibly act as mediating variables for self-esteem should be explored.

5. Because the relationship between self-esteem and health-risk behavior was not in the predicted direction, several questions need to be answered. For example, is it possible that health self-esteem gives students the confidence to engage in risky behavior they perceive as "fun" and "exciting", particularly if they perceive it to be expected?"

These questions may be addressed through empirical study.

6. Empirical evidence to document the need to support adolescent health as an area of health-care specialization and for the need for public policy development addressing the health of adolescents should be collected.

7. There is an urgency in the need to examine the meaning of health for adolescents. Given that adolescents may be the most medically underserved segment of society, and that by the year 2000, the number of adolescents in the United States will reach over 24 million, many of them from impoverished conditions (Bearinger et al., 1992), there is an acute need to redefine adolescent health empirically.

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## APPENDIX A

TEXAS WOMAN'S UNIVERSITY  
DENTON DALLAS HOUSTONOFFICE OF RESEARCH AND GRANTS ADMINISTRATION  
P.O. Box 22939, Denton, Texas 76204-0939 817/898-3375

## HUMAN SUBJECTS REVIEW COMMITTEE

September 16, 1992

Martha R. Butler  
#7 Terrace Drive  
Winfield, KS 67156

Social Security #: 509-58-0393

Dear Martha R. Butler:

Your study entitled "Self-Esteem and Health-Promoting Lifestyle As Predictors of Health-Risk Behavior Among Adolescents" has been reviewed by a committee of the Human Subjects Review Committee and appears to meet our requirements in regard to protection of individuals' rights.

Be reminded that both the University and the Department of Health and Human Services (HHS) regulations typically require that signatures indicating informed consent be obtained from all human subjects in your study. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. Furthermore, according to HHS regulations, another review by the Committee is required if your project changes.

Special provisions pertaining to your study are noted below:

- ☐ The filing of signatures of subjects with the Human Subjects Review Committee is not required.
- ☐ Other:
- ☒ No special provisions apply.

Sincerely,

A handwritten signature in cursive script, appearing to read "Patti Hammit".

Chairman  
Human Subjects Review Committeecc: Graduate School  
Dr. Maisie Kashka, Nursing  
Dr. Carolyn Gunning, Nursing

## APPENDIX B

January 13, 1994

Dear Student:

As part of my doctoral study at Texas Woman's University, I am seeking information from students taking Wellness 4 classes this spring. You are being asked to participate in this study, and your involvement will consist of completing questionnaires which are designed to obtain the following information:

1. demographics, such as age, family information, etc.;
2. how students feel about themselves;
3. attitudes about health-related behaviors, such as diet, exercise, rest, relaxation, relationships, etc.; and
4. risky behaviors young people may engage in.

In this packet are four questionnaires which you are being asked to complete today. Your participation in this study is voluntary, and you should be aware of the following information.

1. You are not to put your name on the questionnaires; therefore, your answers will be completely anonymous. Demographic data will only be used to provide additional information about students as a group; information cannot identify individual students.
2. You will not receive any compensation as a result of your participation in this study, nor will your grade in this class be affected.
3. Your completion of the questionnaires will constitute your permission to participate in the study.
4. If you have questions or concerns about any of the items on the questionnaires, please feel free to contact me at 221-8306 or ext. 306 on campus. In addition, the following individuals will be available to discuss any concerns you may have:

Dr. Steve Wilke, Dean of Students, ext. 277

Cheryl Rude, Director of Leadership Development, ext. 381

Jo Mason, College Nurse, ext. 250

Completion of the questionnaires will take the remainder of the class period today. When you are finished, please return the questionnaires to the envelope, fasten it, and place the envelope in the box at the back of the room.

Thank you for your participation!

Sincerely,  
Martha Butler, MN, RN

---

I have read the above information and have received an oral description of the study, including a fair explanation of the procedures and their purpose, and any associated discomforts or risks, and a description of the possible benefits. An offer has been made to me to answer all questions about the study. I understand that my name will not be used in any release of the data and that I am free to withdraw at any time. In the event of physical injury resulting from this research, Texas Woman's University is not able to offer financial compensation nor to absorb the costs of medical treatment. However, emergency treatment will be provided as necessary. I agree to participate in this research study.

Signed \_\_\_\_\_

Witness \_\_\_\_\_

This is to certify that I have fully informed and explained to the above named person a description of the listed elements of informed consent.

Signed \_\_\_\_\_

Witness \_\_\_\_\_

## APPENDIX C

# SOCIODEMOGRAPHIC QUESTIONNAIRE

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Please complete the following items by circling the letter of the correct response or filling in the blanks.

1. What is your age?
  - a. 18
  - b. 19
  - c. 20
  - d. 21
  - e. 22
2. Before coming to college, with whom did you live?
  - a. Both parents
  - b. One parent
  - c. Legal guardian
  - d. Spouse
  - e. Relatives
  - f. By yourself
  - g. Other
3. How many brothers and/or sisters do you have? (Fill in as many blanks as apply)
  - a. \_\_\_\_\_ Brothers
  - b. \_\_\_\_\_ Sisters
  - c. \_\_\_\_\_ Half/step brothers
  - d. \_\_\_\_\_ Half/step sisters
4. Which family members with which you live work outside the home? (Circle all that apply)
  - a. Father
  - b. Mother
  - c. Brother(s) or Sister(s)
  - d. Spouse
  - e. Relative(s) living with you
  - f. Other
5. Does your family rent or own the home in which you most recently lived?
  - a. Rent
  - b. Own
  - c. Not sure
6. How many times did you move during your high-school years?
  - a. 0 times
  - b. 1 time
  - c. 2 times
  - d. 3 times
  - e. 4 times
  - f. more than 4 times
7. How many schools did you attend between seventh grade and graduation from high school?
  - a. 1 school
  - b. 2 schools
  - c. 3 schools
  - d. 4 schools
  - e. 5 schools
  - f. 6 schools
  - g. more than 6 schools
8. In the house where you most recently lived, with how many other family members did you share a room?
  - a. 0 others; I had my own room
  - b. 1 other
  - c. 2 others
  - d. 3 others
  - e. more than 3 others
9. How often do you attend a church?
  - a. Regularly; at least two or three times a month
  - b. Once in a while; once every two or three months
  - c. Very infrequently; only on special occasions
  - d. Never
10. How often did you attend a church while you were in junior high and high school?
  - a. Regularly; at least two or three times a month
  - b. Once in a while; once every two or three months
  - c. Very infrequently; only on special occasions
  - d. Never
11. If you did attend a church, during junior high and high school, in what activities did you participate?
  - a. Sunday school
  - b. Worship service
  - c. Youth group
  - d. Social activities
  - e. Other
12. How important are your religious beliefs in helping you make decisions?
  - a. Very important
  - b. Somewhat important
  - c. Not important
  - d. I do not have any religious beliefs

13. When you were in junior high and high school, how important were your religious beliefs in helping you make decisions?
- Very important
  - somewhat important
  - Not important
  - I did not have any religious beliefs.
14. Has anyone in your household lost their job within the last year?
- Yes
  - No
  - Not sure
15. If so, whom? (Circle all that apply)  
(Do not answer if you answered "No" to #14)
- Father
  - Mother
  - Guardian
  - Spouse
  - Brother/Sister
  - Other relative/friend
16. From whom did you learn the most information about health in general?
- Parents/guardians
  - Other relatives
  - School
  - Church
  - Friends
  - TV/Radio/Music
  - Movies
  - Other
17. From whom did you learn the most information about drugs?
- Parents/Guardians
  - Other relatives
  - School
  - Church
  - Friends
  - TV/Radio/Music
  - Movies
  - Other
18. From whom did you learn the most information about health sex?
- Parents/Guardians
  - Other relatives
  - School
  - Church
  - Friends
  - TV/Radio/Music
  - Movies
  - Other
19. Which of your parents smokes?
- Father
  - Mother
  - Both my father and mother are smokers
  - Both my father and mother are nonsmokers
20. Do you have a chronic illness or disabling condition?
- Yes
  - No
- If yes, please specify: \_\_\_\_\_
21. How would you rate your overall physical health?
- Excellent
  - Good
  - Fair
  - Poor
22. How would you rate your overall emotional health?
- Excellent
  - Good
  - Fair
  - Poor

**ROSENBERG SELF-ESTEEM SCALE**

Please complete the following items by circling the letter of the response which best describes how you feel.

1. I feel that I'm a person of worth, at least on myself.  
an equal plane with others.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
2. I feel that I have a number of good qualities.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
3. All in all, I am inclined to feel that I am a failure.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
4. I am able to do things as well as most other people.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
5. I feel I do not have much to be proud of.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
6. I take a positive attitude toward myself.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
7. On the whole, I am satisfied with myself.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
8. I wish I could have more respect for
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
9. I certainly feel useless at times.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree
10. At times I think I am no good at all.
  - a. Strongly agree
  - b. Agree
  - c. Disagree
  - d. Strongly disagree



**YOUTH RISK-BEHAVIOR SURVEY**

Instructions: Read each question carefully. Circle the letter of the answer that best matches your answer. CHOOSE THE ONE BEST ANSWER FOR EACH QUESTION.

1. What is your sex?
  - a. Female
  - b. Male
2. How do you describe yourself?
  - a. White - not Hispanic
  - b. Black - not Hispanic
  - c. Hispanic
  - d. Asian or Pacific Islander
  - e. Native American or Alaskan Native
3. Compared to other students in your class, what kind of student would you say you are?
  - a. One of the best
  - b. Far above the middle
  - c. A little above the middle
  - d. In the middle
  - e. A little below the middle
  - f. Far below the middle
  - g. Near the bottom
4. How often do you wear a seat belt when riding in a car driven by someone else?
  - a. Never
  - b. Rarely
  - c. Sometimes
  - d. Most of the time
  - e. Always
5. During the past 12 months, how many times did you ride a motorcycle?
  - a. 0 times
  - b. 1 to 10 times
  - c. 11 to 21 times
  - d. 21 to 39 times
  - e. 40 or more times
6. When you rode a motorcycle during the past 12 months, how often did you wear a helmet?
  - a. I did not ride a motorcycle during the past 12 months.
  - b. Never wore a helmet
  - c. Rarely wore a helmet
  - d. Sometimes wore a helmet
  - e. Most of the time wore a helmet
7. During the past 12 months, how many times did you ride a bicycle?
  - a. 0 times
  - b. 1 to 10 times
  - c. 11 to 20 times
  - d. 21 to 39 times
  - e. 40 or more times
8. When you rode a bicycle during the past 12 months, how often did you wear a helmet?
  - a. I did not ride a bicycle during the past 12 months
  - b. Never wore a helmet
  - c. Rarely wore a helmet
  - d. Sometimes wore a helmet
  - e. Most of the time wore a helmet
  - f. Always wore a helmet.
9. During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?
  - a. 0 times
  - b. 1 time
  - c. 2 or 3 times
  - d. 4 or 5 times
  - e. 6 or more times
10. During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking?
  - a. 0 times
  - b. 1 time
  - c. 2 or 3 times
  - d. 4 or 5 times
  - e. 6 or more times

# YOUTH RISK-BEHAVIOR SURVEY

1. During the past 12 months, when you went swimming in places such as a pool, lake, or ocean, how often was an adult or lifeguard watching you?
    - a. I did not go swimming during the past 12 months
    - b. Never
    - c. Rarely
    - d. Sometimes
    - e. Most of the time
    - f. Always
  2. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?
    - a. 0 days
    - b. 1 day
    - c. 2 or 3 days
    - d. 4 or 5 days
    - e. 6 or more days
  3. During the past 30 days, what one kind of weapon did you carry most often?
    - a. I did not carry a weapon during the past 30 days
    - b. A handgun
    - c. Other guns, such as a rifle or shotgun
    - d. A knife or razor
    - e. A club, stick, bat, or pipe
    - f. Some other weapon
  4. During the past 12 months, how many times were you in a physical fight?
    - a. 0 times
    - b. 1 time
    - c. 2 or 3 times
    - d. 4 or 5 times
    - e. 6 or 7 times
    - f. 8 or 9 times
    - g. 10 or 11 times
    - h. 12 or more times
  15. The last time you were in physical fight, with whom did you fight?
    - a. I have never been in a physical fight
    - b. A total stranger
    - c. A friend or someone I know
    - d. A boyfriend, girlfriend, or date
    - e. A parent, brother, sister, or other family member
    - f. Someone not listed above
    - g. More than one of the persons listed above
  16. During the past 12 months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?
    - a. 0 times
    - b. 1 time
    - c. 2 or 3 times
    - d. 4 or 5 times
    - e. 6 or more times
- Sometimes people feel so depressed and hopeless about the future that they may consider attempting suicide, that is, taking some action to end their own life.
17. During the past 12 months, did you ever seriously consider attempting suicide?
    - a. Yes
    - b. No
  18. During the past 12 months, did you make a plan about how you would attempt suicide?
    - a. Yes
    - b. No
  19. During the past 12 months, how many times did you actually attempt suicide?
    - a. 0 times
    - b. 1 time
    - c. 2 or 3 times
    - d. 4 or 5 times
    - e. 6 or more times

## YOUTH RISK-BEHAVIOR SURVEY

20. If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?
- a. I did not attempt suicide during the past 12 months
  - b. Yes
  - c. No
25. How old were you when you first started smoking cigarettes regularly? (at least one cigarette every day for 30 days)
- a. I have never smoked cigarettes regularly
  - b. Less than 9 years old
  - c. 9 or 10 years old
  - d. 11 or 12 years old
  - e. 13 or 14 years old
  - f. 15 or 16 years old
  - g. 17 or more years old

The next eight questions are about cigarette smoking.

21. Have you ever tried cigarette smoking, even one or two puffs?
- a. Yes
  - b. No
22. Do you think you will try cigarette smoking during the next 12 months?
- a. I have already tried cigarette smoking
  - b. Yes I think I will try cigarette smoking during the next 12 months
  - c. No, I think I will not try cigarette smoking during the next 12 months
23. How old were you when you smoked a whole cigarette for the first time?
- a. I have never smoked a whole cigarette
  - b. Less than 9 years old
  - c. 9 or 10 years old
  - d. 11 or 12 years old
  - e. 13 or 14 years old
  - f. 15 or 16 years old
  - g. 17 or more years old
24. Have you ever smoked cigarettes regularly, that is, at least one cigarette every day for 30 days?
- a. Yes
  - b. No
26. During the past 30 days, on how many days did you smoke cigarettes?
- a. 0 days
  - b. 1 or 2 days
  - c. 3 to 5 days
  - d. 6 to 9 days
  - e. 10 to 19 days
  - f. 20 to 29 days
  - g. All 30 days
27. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?
- a. I did not smoke cigarettes during the past 30 days
  - b. Less than 1 cigarette per day
  - c. 1 cigarette per day
  - d. 2 to 5 cigarettes per day
  - e. 6 to 10 cigarettes per day
  - f. 11 to 20 cigarettes per day
  - g. More than 20 cigarettes per day
28. During the past 6 months, did you try to quit smoking cigarettes?
- a. I did not smoke cigarettes during the past 6 months
  - b. Yes
  - c. No

## YOUTH RISK-BEHAVIOR SURVEY

29. During the past 30 days, did you use **chewing tobacco**, such as Redman, Levi Garrett, or Beechnut, or **snuff** such as Skoal, Skoal Bandits, or Copenhagen?
- No, I did use chewing tobacco or snuff during the past 30 days
  - Yes, **chewing tobacco** only
  - Yes, **snuff** only
  - Yes, **both chewing tobacco and snuff**
33. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?
- 0 days
  - 1 day
  - 2 days
  - 3 to 5 days
  - 6 to 9 days
  - 10 to 19 days
  - 20 or more days

The next few questions ask about drinking alcohol. This includes drinking beer, wine, wine coolers, and liquor such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include a few sips of wine for religious purposes.

The next three questions ask about the use of marijuana, which is also called grass or pot.

30. How old were you when you had your first drink of alcohol other than a few sips?
- I have never had a drink of alcohol other than a few sips
  - Less than 9 years old
  - 9 or 10 years old
  - 11 or 12 years old
  - 13 or 14 years old
  - 15 or 16 years old
  - 17 or more years old
31. During your life, on how many days have you had at least one drink of alcohol?
- 0 days
  - 1 or 2 days
  - 3 to 9 days
  - 10 to 19 days
  - 20 to 39 days
  - 40 to 99 days
  - 100 or more days
32. During the past 30 days, on how many days did you have at least one drink of alcohol?
- 0 days
  - 1 or 2 days
  - 3 to 5 days
  - 6 to 9 days
  - 10 to 19 days
  - 20 to 29 days
  - All 30 days
34. How old were you when you tried marijuana for the first time?
- I have never tried marijuana
  - Less than 9 years old
  - 9 or 10 years old
  - 11 or 12 years old
  - 13 or 14 years old
  - 15 or 16 years old
  - 17 or more years old
35. During your life, how many times have you used marijuana?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 to 99 times
  - 100 or more times
36. During the past 30 days, how many times did you use marijuana?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 or more times

## YOUTH RISK-BEHAVIOR SURVEY

38. How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time?
- I have never tried cocaine
  - Less than 9 years old
  - 9 or 10 years old
  - 11 or 12 years old
  - 13 or 14 years old
  - 15 or 16 years old
  - 17 or more years old
39. During your life, how many times have you used any form of cocaine, including powder, crack, or freebase?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 or more times
40. During the past 30 days, how many times did you use any form of cocaine, including powder, crack, or freebase?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 or more times
41. During your life, how many times have you used the crack or freebase forms of cocaine?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 or more times
41. During your life, how many times have you used any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills without a doctor's prescription?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 or more times
42. During your life, how many times have you taken steroid pills or shots without a doctor's prescription?
- 0 times
  - 1 or 2 times
  - 3 to 9 times
  - 10 to 19 times
  - 20 to 39 times
  - 40 or more times
43. During your life, have you ever injected (shot up) any illegal drug?
- Yes
  - No
44. Have you ever been taught about AIDS/HIV infection in school?
- Yes
  - No
  - Not sure
45. Have you ever talked about AIDS/HIV infection with your parents or other adults on your family?
- Yes
  - No
  - Not sure
46. Have you ever had sexual intercourse?
- Yes
  - No

## YOUTH RISK-BEHAVIOR SURVEY

47. How old were you when you first had sexual intercourse?
- I have never had sexual intercourse
  - Less than 12 years old
  - 12 years old
  - 13 years old
  - 14 years old
  - 15 years old
  - 16 years old
  - 17 or more years old
48. During your life, with how many people have you had sexual intercourse?
- I have never had sexual intercourse
  - 1 person
  - 2 people
  - 3 people
  - 4 people
  - 5 people
  - 6 or more people
49. During the past 3 months, with how many people did you have sexual intercourse?
- I have never had sexual intercourse
  - I have had sexual intercourse, but not in the past 3 months
  - 1 person
  - 2 people
  - 3 people
  - 4 people
  - 5 people
  - 6 or more people
50. Did you drink alcohol or use drugs before you had sexual intercourse the last time?
- I have never had sexual intercourse
  - Yes
  - No
51. The last time you had sexual intercourse, did you or your partner use a condom?
- I have never had sexual intercourse
  - Yes
  - No
52. The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.)
- I have never had sexual intercourse
  - No method was used to prevent pregnancy.
  - Birth control pills
  - Condoms
  - Withdrawal
  - Some other method
  - Not sure
53. How many times have you been pregnant or gotten someone pregnant?
- 0 times
  - 1 time
  - 2 or more times
  - Not sure
54. Have you ever been told by a doctor or nurse that you had a sexually transmitted disease such as genital herpes, genital warts, chlamydia, syphilis, gonorrhea, AIDS, or HIV infection?
- Yes
  - No
55. How do you think of yourself?
- Very underweight
  - Slightly underweight
  - About the right weight
  - Slightly overweight
  - Very overweight
56. Which of the following are you trying to do?
- Lose weight
  - Gain weight
  - Stay the same weight
  - I am not trying to do anything about my weight

# YOUTH RISK-BEHAVIOR SURVEY

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57. During the past 7 days, which one of the following did you do to lose weight or to keep from gaining weight?
  - a. I did not try to lose weight or keep from gaining weight
  - b. I dieted
  - c. I exercised
  - d. I exercised and dieted
  - e. I used some other method, but I did not exercise or diet
58. During the past 7 days, which one of the following did you do to lose weight or to keep from gaining weight?
  - a. I did not try to lose weight or keep from gaining weight
  - b. I made myself vomit
  - c. I took diet pills
  - d. I made myself vomit and took diet pills
  - e. I used some other method, but I did not vomit or take diet pills
59. Yesterday, did you eat fruit?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
60. Yesterday, did you drink fruit juice?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
61. Yesterday, did you eat green salad?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
62. Yesterday, did you eat cooked vegetables?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
63. Yesterday, did you eat hamburger, hot dogs, or sausage?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
64. Yesterday, did you eat french fries or potato chips?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
65. Yesterday, did you eat cookies, doughnuts, pie, or cake?
  - a. No
  - b. Yes, once only
  - c. Yes, twice or more
66. On how many of the past 7 days did you exercise or participate in sports activities that made you sweat and breathe hard, such as basketball, jogging, fast dancing, swimming laps, tennis, fast bicycling, or similar aerobic activities?
  - a. 0 days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
  - g. 6 days
  - h. 7 days
67. On how many of the past 7 days did you do stretching exercises, such as toe touching, knee bending, or leg stretching?
  - a. 0 days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
  - g. 6 days
  - h. 7 days

The next seven questions ask about food you ate yesterday. Think about all meals and snacks you ate yesterday from the time you got up until you went to bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

**YOUTH RISK-BEHAVIOR SURVEY**

68. On how many of the past 7 days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting?
- a. 0 days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
  - g. 6 days
  - h. 7 days
69. Yesterday did you walk or bicycle for at least 30 minutes at a time (Include walking or bicycling to or from school.)
- a. Yes
  - b. No
70. In an average week when you are in school, on how many days do you go to physical education (PE) classes?
- a. 0 days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
71. During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports?
- a. I do not take PE
  - b. Less than 10 minutes
  - c. 10 to 20 minutes
  - d. 21 to 30 minutes
  - e. More than 30 minutes
72. During the past 12 months, on how many sports teams run by your school, did you play? (Do not include PE classes.)
- a. None
  - b. 1 team
  - c. 2 teams
  - d. 3 or more teams
73. During the past 12 months, on how many sports teams run by organizations outside or your school, did you play?
- a. None
  - b. 1 team
  - c. 2 teams
  - d. 3 or more teams



### LIFESTYLE PROFILE

**DIRECTIONS:** This questionnaire contains statements regarding your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the regularity with which you engage in each behavior by circling:

N for never, S for sometimes, O for often, or R for routinely.

|                                                                                              | NEVER | SOMETIMES | OFTEN | ROUTINELY |
|----------------------------------------------------------------------------------------------|-------|-----------|-------|-----------|
| 1. Eat breakfast.                                                                            | N     | S         | O     | R         |
| 2. Report any unusual signs or symptoms to a physician.                                      | N     | S         | O     | R         |
| 3. Like myself.                                                                              | N     | S         | O     | R         |
| 4. Perform stretching exercises at least 3 times per week.                                   | N     | S         | O     | R         |
| 5. Choose foods without preservatives or other additives.                                    | N     | S         | O     | R         |
| 6. Take some time for relaxation each day.                                                   | N     | S         | O     | R         |
| 7. Have my cholesterol level checked and know the result.                                    | N     | S         | O     | R         |
| 8. Am enthusiastic and optimistic about life.                                                | N     | S         | O     | R         |
| 9. Feel I am growing and changing personally in positive directions.                         | N     | S         | O     | R         |
| 10. Discuss personal problems and concerns with persons close to me.                         | N     | S         | O     | R         |
| 11. Am aware of the sources of stress in my life.                                            | N     | S         | O     | R         |
| 12. Feel happy and content.                                                                  | N     | S         | O     | R         |
| 13. Exercise vigorously for 20-30 minutes at least 3 times per week.                         | N     | S         | O     | R         |
| 14. Eat 3 regular meals a day.                                                               | N     | S         | O     | R         |
| 15. Read articles or books about promoting health.                                           | N     | S         | O     | R         |
| 16. Am aware of my personal strengths and weaknesses.                                        | N     | S         | O     | R         |
| 17. Work toward long-term goals in my life.                                                  | N     | S         | O     | R         |
| 18. Praise other people easily for their accomplishments.                                    | N     | S         | O     | R         |
| 19. Read labels to identify the nutrients in packaged food.                                  | N     | S         | O     | R         |
| 20. Question my physician or seek a second opinion when I do not agree with recommendations. | N     | S         | O     | R         |
| 21. Look forward to the future.                                                              | N     | S         | O     | R         |
| 22. Participate in supervised exercise programs or activities.                               | N     | S         | O     | R         |
| 23. Am aware of what is important to me in life.                                             | N     | S         | O     | R         |

|                                                                                                | NEVER | SOMETIMES | OFTEN | ROUTINELY |
|------------------------------------------------------------------------------------------------|-------|-----------|-------|-----------|
| 24. Enjoy touching and being touched by people close to me.                                    | N     | S         | O     | R         |
| 25. Maintain meaningful and fulfilling interpersonal relationships.                            | N     | S         | O     | R         |
| 26. Include roughage/fiber (whole grains, raw fruits, raw vegetables) in my diet.              | N     | S         | O     | R         |
| 27. Practice relaxation or meditation for 15-20 minutes daily.                                 | N     | S         | O     | R         |
| 28. Discuss my health care concerns with qualified professionals.                              | N     | S         | O     | R         |
| 29. Respect my own accomplishments.                                                            | N     | S         | O     | R         |
| 30. Check my pulse rate when exercising.                                                       | N     | S         | O     | R         |
| 31. Spend time with close friends.                                                             | N     | S         | O     | R         |
| 32. Have my blood pressure checked and know what it is.                                        | N     | S         | O     | R         |
| 33. Attend educational programs on improving the environment in which we live.                 | N     | S         | O     | R         |
| 34. Find each day interesting and challenging.                                                 | N     | S         | O     | R         |
| 35. Plan or select meals to include the "basic four" food groups each day.                     | N     | S         | O     | R         |
| 36. Consciously relax muscles before sleep.                                                    | N     | S         | O     | R         |
| 37. Find my living environment pleasant and satisfying.                                        | N     | S         | O     | R         |
| 38. Engage in recreational physical activities (such as walking, swimming, soccer, bicycling). | N     | S         | O     | R         |
| 39. Find it easy to express concern, love and warmth to others.                                | N     | S         | O     | R         |
| 40. Concentrate on pleasant thoughts at bedtime.                                               | N     | S         | O     | R         |
| 41. Find constructive ways to express my feelings.                                             | N     | S         | O     | R         |
| 42. Seek information from health professionals about how to take good care of myself.          | N     | S         | O     | R         |
| 43. Observe my body at least monthly for physical changes/danger signs.                        | N     | S         | O     | R         |
| 44. Am realistic about the goals that I set.                                                   | N     | S         | O     | R         |
| 45. Use specific methods to control my stress.                                                 | N     | S         | O     | R         |
| 46. Attend educational programs on personal health care.                                       | N     | S         | O     | R         |
| 47. Touch and am touched by people I care about.                                               | N     | S         | O     | R         |
| 48. Believe that my life has purpose.                                                          | N     | S         | O     | R         |

## APPENDIX D

THE UNIVERSITY OF MICHIGAN  
SCHOOL OF  
**NURSING**

August 12, 1992

Martha R. Butler, MN, RN  
#7 Terrace Drive  
Winfield, Kansas 67156

Dear Martha:

You have my permission to use the Health-Promoting Lifestyle Profile (HPLP) for your dissertation research. I am enclosing a packet of information in case you are missing any of this information.

Please excuse the delay in responding to your request as Dr. Walker and I have not been at Northern Illinois University for two years. They only forward mail to me every 3-4 months when a large amount accumulates.

I wish you success in your research. Please send an abstract describing your findings to me here at the University of Michigan when your work is completed.

Sincerely,

*Nola Pender*

Nola J. Pender, PhD, RN, FAAN  
Professor and Director  
Center for Nursing Research

**UMCNR**

CENTER FOR NURSING RESEARCH

400 North Ingalls Bldg. • Ann Arbor, Michigan 48109-0482  
(313) 764-9554 FAX: (313) 936-3644

October 10, 1990

Princeton University Press  
Princeton, New Jersey 08540

Dear Sirs:

I am a doctoral student in the School of Nursing at Texas Woman's University and am beginning to conducting research in the area of adolescent self-esteem. I am requesting permission to reprint and utilize Morris Rosenberg's Self-Esteem Scale published in Society and the Adolescent Self Image (Princeton University Press, 1965). This scale will be valuable in my study of the relationships among self-esteem, health-promoting lifestyle, and health-risk behaviors among adolescents.

I would also like to request any pertinent information you can provide concerning administration and scoring. I am enclosing a stamped, self-addressed envelope for your use.

I appreciate your time and effort in providing permission and information for this endeavor. Thank you.

Sincerely,

*Martha Butler*

Martha R. Butler, MN, RN  
#7 Terrace Drive  
Winfield, Kansas 67156

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*Brigitte van Riekenberg*  
10/15/90

## APPENDIX E



July 23, 1993

Martha R. Butler  
#7 Terrace Drive  
Winfield, KS 67156

You are authorized to conduct your research study, "Self-Esteem and Health-Promoting Lifestyle as Predictors of Health-Risk Behavior Among Adolescents" on the Southwestern College campus. It is understood that research safeguards will be employed such as voluntary participation and anonymity of responses as stated in your proposal.

Sincerely,

A handwritten signature in cursive script that reads "David A. Nichols".

Dr. David A. Nichols  
Dean of Faculty

## APPENDIX F



Table A1

Responses to Items Related to Body Weight

| VARIABLE                                                                                             | FREQUENCY | PERCENT | CUM. FREQ. |
|------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| How do you think of yourself?                                                                        |           |         |            |
| Very underweight                                                                                     | 3         | 2.5     | 2.5        |
| Slightly underweight                                                                                 | 17        | 14.2    | 16.7       |
| About the right weight                                                                               | 61        | 50.8    | 67.5       |
| Slightly overweight                                                                                  | 34        | 28.3    | 95.8       |
| Very overweight                                                                                      | 5         | 4.2     | 100.0      |
| Which of the following are you trying to do?                                                         |           |         |            |
| Lose weight                                                                                          | 53        | 44.2    | 44.2       |
| Gain weight                                                                                          | 28        | 23.3    | 67.5       |
| Stay the same weight                                                                                 | 20        | 16.7    | 84.2       |
| I am not trying to do anything about my weight                                                       | 19        | 15.8    | 100.0      |
| During past 7 days, which of the following did you do to lose weight or to keep from gaining weight? |           |         |            |
| Nothing                                                                                              | 72        | 60.0    | 60.0       |
| Dieted                                                                                               | 2         | 1.7     | 61.7       |
| Used method other than diet or exercise                                                              | 43        | 35.8    | 97.5       |
| Not reported                                                                                         | 3         | 2.5     | 100.0      |
| During past 7 days, which of the following did you do to lose weight or to keep from gaining weight? |           |         |            |
| Nothing                                                                                              | 72        | 60.0    | 60.0       |
| Made myself vomit                                                                                    | 2         | 1.7     | 61.7       |
| Used method other than vomiting or taking pills                                                      | 43        | 35.8    | 97.5       |
| Not reported                                                                                         | 3         | 2.5     | 100.0      |

Table A2

Responses to Items Related to Diet

| VARIABLE                                                | FREQUENCY | PERCENT | CUM. FREQ |
|---------------------------------------------------------|-----------|---------|-----------|
| Yesterday, did you eat fruit?                           |           |         |           |
| No                                                      | 47        | 39.2    | 39.2      |
| Yes, once only                                          | 47        | 39.2    | 78.4      |
| Yes, twice or more                                      | 24        | 20.0    | 98.4      |
| Not reported                                            | 2         | 1.7     | 100.0     |
| Yesterday, did you drink fruit juice?                   |           |         |           |
| No                                                      | 46        | 38.3    | 38.3      |
| Yes, once only                                          | 29        | 24.2    | 62.5      |
| Yes, twice or more                                      | 43        | 35.8    | 98.3      |
| Not reported                                            | 3         | 1.7     | 100.0     |
| Yesterday, did you eat green salad?                     |           |         |           |
| No                                                      | 65        | 54.2    | 54.2      |
| Yes, once only                                          | 36        | 30.0    | 84.2      |
| Yes, twice or more                                      | 17        | 14.2    | 98.4      |
| Not reported                                            | 2         | 1.7     | 100.0     |
| Yesterday, did you eat cooked vegetables?               |           |         |           |
| No                                                      | 52        | 43.3    | 43.3      |
| Yes, once only                                          | 39        | 32.5    | 75.8      |
| Yes, twice or more                                      | 27        | 22.5    | 98.3      |
| Not reported                                            | 2         | 1.7     | 100.0     |
| Yesterday, did you eat hamburger, hot dogs, or sausage? |           |         |           |
| No                                                      | 55        | 45.8    | 45.8      |
| Yes, once only                                          | 48        | 40.0    | 85.8      |
| Yes, twice or more                                      | 14        | 11.7    | 97.5      |
| Not reported                                            | 3         | 2.5     | 100.0     |

(table continues)

| VARIABLE                                                    | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------|-----------|---------|------------|
| Yesterday, did you eat french fries,<br>or potato chips?    |           |         |            |
| No                                                          | 43        | 35.8    | 35.8       |
| Yes, once only                                              | 61        | 50.8    | 86.6       |
| Yes, twice or more                                          | 14        | 11.7    | 98.3       |
| Not reported                                                | 2         | 1.7     | 100.0      |
| Yesterday, did you eat cookies,<br>doughnuts, pie, or cake? |           |         |            |
| No                                                          | 47        | 39.2    | 39.2       |
| Yes, once only                                              | 49        | 40.8    | 80.0       |
| Yes, twice or more                                          | 22        | 18.3    | 98.3       |
| Not reported                                                | 2         | 1.7     | 100.0      |

Table A3

Responses to Items Related to Exercise

| VARIABLE                                                                                                                | FREQUENCY | PERCENT | CUM. FREQ. |
|-------------------------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| On how many of the past 7 days<br>did you exercise or participate in<br>sports that made you sweat and<br>breathe hard? |           |         |            |
| 0 days                                                                                                                  | 18        | 15.0    | 15.0       |
| 1 day                                                                                                                   | 8         | 6.7     | 21.7       |
| 2 days                                                                                                                  | 14        | 11.7    | 33.4       |
| 3 days                                                                                                                  | 15        | 12.5    | 45.9       |
| 4 days                                                                                                                  | 7         | 5.8     | 51.7       |
| 5 days                                                                                                                  | 15        | 12.5    | 64.2       |
| 6 days                                                                                                                  | 13        | 10.8    | 75.0       |
| 7 days                                                                                                                  | 28        | 23.3    | 98.3       |
| Not reported                                                                                                            | 2         | 1.7     | 100.0      |

(table continues)

| VARIABLE                                                                                               | FREQUENCY | PERCENT | CUM. FREQ. |
|--------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| <b>On how many of the past 7 days<br/>did you do stretching exercises?</b>                             |           |         |            |
| 0 days                                                                                                 | 25        | 20.8    | 20.8       |
| 1 day                                                                                                  | 8         | 6.7     | 27.5       |
| 2 days                                                                                                 | 16        | 13.3    | 40.8       |
| 3 days                                                                                                 | 10        | 8.3     | 49.1       |
| 4 days                                                                                                 | 9         | 7.5     | 56.6       |
| 5 days                                                                                                 | 12        | 10.0    | 66.6       |
| 6 days                                                                                                 | 15        | 12.5    | 79.1       |
| 7 days                                                                                                 | 22        | 18.3    | 97.4       |
| Not reported                                                                                           | 3         | 2.5     | 100.0      |
| <b>On how many of the past 7 days<br/>did you do exercises to strengthen<br/>or tone your muscles?</b> |           |         |            |
| 0 days                                                                                                 | 39        | 32.5    | 32.5       |
| 1 day                                                                                                  | 13        | 10.8    | 43.3       |
| 2 days                                                                                                 | 16        | 13.3    | 56.6       |
| 3 days                                                                                                 | 9         | 7.5     | 64.1       |
| 4 days                                                                                                 | 11        | 9.2     | 73.3       |
| 5 days                                                                                                 | 10        | 8.3     | 81.6       |
| 6 days                                                                                                 | 8         | 6.7     | 88.3       |
| 7 days                                                                                                 | 11        | 9.2     | 97.5       |
| Not reported                                                                                           | 3         | 2.5     | 100.0      |
| <b>Yesterday, did you walk or bicycle<br/>for at least 30 minutes at a time?</b>                       |           |         |            |
| Yes                                                                                                    | 54        | 45.0    | 45.0       |
| No                                                                                                     | 63        | 52.5    | 97.5       |
| Not reported                                                                                           | 3         | 2.5     | 100.0      |

(table continues)

| VARIABLE                                                                                                | FREQUENCY | PERCENT | CUM. FREQ. |
|---------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| <b>In an average week when you are in school, on how many days do you go to PE classes?</b>             |           |         |            |
| 0 days                                                                                                  | 94        | 78.3    | 78.3       |
| 1 day                                                                                                   | 6         | 5.0     | 83.3       |
| 2 days                                                                                                  | 5         | 4.2     | 87.5       |
| 3 days                                                                                                  | 2         | 1.7     | 89.2       |
| 4 days                                                                                                  | 0         | 0.0     | 89.2       |
| 5 days                                                                                                  | 11        | 9.2     | 98.4       |
| Not reported                                                                                            | 2         | 1.7     | 100.0      |
| <b>During an average PE class, how many minutes do you spend actually exercising or playing sports?</b> |           |         |            |
| Do not take PE                                                                                          | 87        | 72.5    | 72.5       |
| Less than 10 minutes                                                                                    | 7         | 5.8     | 78.3       |
| 10 to 20 minutes                                                                                        | 1         | .8      | 79.1       |
| 21 to 30 minutes                                                                                        | 4         | 3.3     | 82.4       |
| More than 30 minutes                                                                                    | 19        | 15.8    | 98.2       |
| Not reported                                                                                            | 2         | 1.7     | 100.0      |
| <b>During past 12 months, on how many sports teams run by your school did you play?</b>                 |           |         |            |
| None                                                                                                    | 47        | 39.2    | 39.2       |
| 1 team                                                                                                  | 32        | 26.7    | 65.9       |
| 2 teams                                                                                                 | 26        | 21.7    | 87.6       |
| 3 or more teams                                                                                         | 13        | 10.8    | 98.4       |
| Not reported                                                                                            | 2         | 1.7     | 100.0      |

(table continues)

| VARIABLE                                                                                             | FREQUENCY | PERCENT | CUM. FREQ. |
|------------------------------------------------------------------------------------------------------|-----------|---------|------------|
| During past 12 mos., on how many sports teams run by organizations outside your school did you play? |           |         |            |
| None                                                                                                 | 76        | 63.3    | 63.3       |
| 1 team                                                                                               | 28        | 23.3    | 86.6       |
| 2 teams                                                                                              | 12        | 10.0    | 96.6       |
| 3 teams                                                                                              | 2         | 1.7     | 98.3       |
| Not reported                                                                                         | 2         | 1.7     | 100.0      |

## APPENDIX G

## TEXAS WOMAN'S UNIVERSITY

DENTON DALLAS HOUSTON

THE GRADUATE SCHOOL

P.O. Box 22479, Denton, Texas 76204-0479 817/898-3400



September 29, 1992

Ms. Martha Butler  
#7 Terrace Drive  
Winfield, KS 67156

Dear Ms. Butler:

Thank you for providing the materials necessary for the final approval of your prospectus in the Graduate Office. I am pleased to approve the prospectus, and I look forward to seeing the results of your study.

If I can be of further assistance, please let me know.

Sincerely yours,

A handwritten signature in cursive script that reads "Leslie M. Thompson".

Leslie M. Thompson  
Associate Vice President for  
Research and Dean of the  
Graduate School

dl

cc Dr. Maisie Kashka  
Dr. Carolyn Gunning