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Effects of health locus-of-control and social network on risk taking in adolescents.

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EFFECTS OF HEATLH LOCUS OF CONTROL AND SOCIAL NETWORK ON RISK-TAKING IN ADOLESCENTS

by

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A DISSERTATION

Submitted in partial fulfillment of the requirement for
the degree of Doctor of Science in Nursing in the
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ABSTRACT OF DISSERTATION
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Title Effects of Health Locus of Control and Social Network on Risk-Taking in Adolescents

The purpose of this ex-post facto designed study was to determine if health locus of control and social network were predictive or risk-taking in adolescents. The conceptual framework used to guide this study was derived from the Neuman Health-Care Systems Model.

The sample consisted of 187 males and females between the ages of 14 and 18 in public school grades 9 through 12. Participation in the study was voluntary. The rights of the participants were protected by adherence to institutional review board guidelines.

Four questionnaires were used for data collection: an investigator-developed demographic questionnaire, Multidimensional Health Locus of Control (MHLC) Scales, two questions from the Norbeck Social Support Questionnaire (NSSQ), and the Risk-Taking Questionnaire (RTQ).

Cronbach alpha reliabilities for the subscales of the MHLC, NSSQ, and RTQ were computed. The results were: IHLC, .51%; PHLC, .60%; CHLC, .64%; NSSQ, .86%; and RTQ, .91%.

Descriptive statistics were utilzied to describe the sample. Chi square analysis was significant for smoking by sex and alcohol and seat belt use by age.

Multiple regression was utilized to test the null hypothesis: the proportion of variance in risk-taking accounted for by health locus of control and social network is not significantly different from 0. Analysis demonstrated that an R^2 of 0.1171 indicated that 12% of the variation in RTQ score could be explained by the variation in PHLC, IHLC, and Network. This analysis was significant at the .05 level and resulted in rejection of the null hypothesis.

Implications for education and nursing practice were formulated. Recommendations were also made.

Abstract Approved by: **Committee Chairman** Ann F. Edgil

Program Director [illegible]

Date _____ **Dean of Graduate School** Kenneth J. Roozen

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TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

Introduction

Adolescence is a unique transitional period of time between childhood and adulthood. During this time specific developmental tasks must be accomplished if the adolescent is to progress successfully to the next developmental stage (Adams, 1983). Major changes occur in the four domains of human development during adolescence. These four domains are the biophysical, affective, cognitive, and social.

Characteristics of the biophysical domain involve the contributions of genetic inheritance, physiological, and biological processes, as well as health maintenance and safety. The cognitive domain includes perception, the ability to learn, the processes of memory and thinking, and creative ability. Characteristics of the affective domain involve emotions, feelings, values, internal responses to events, and those things considered as motivators to the individual. The social domain involves relationships and affiliations with others, and outward or external expressions and responses to events that happen (Schuster & Ashburn, 1980).

Adolescence is usually divided into three distinct phases: early adolescence, ages 12 to 14; middle adolescence, ages 15 to 16; and late adolescence, ages 17 to adulthood (Adams, 1983). During early adolescence, developmental changes occur rapidly. The adolescent moves from a familiar setting in grade school to teachers and peers in high school who cause relationships to expand and expectations for behavior to

change. These fast-paced changes most likely contribute to the inner stress that is externally expressed in the adolescent (Whaley & Wong, 1987). Becoming comfortable with the body changes that are occurring in response to the rapid acceleration in growth is also of extreme importance during early adolescence. Independence from parents is being strived for during this time and friends are becoming more important than family to the adolescent. The peer group usually consists of friends of the same sex who are involved in group activities (Adams).

Middle adolescence is the time of prime peer group influence which is demonstrated by trends and fads in dress, music, and language that the teen adopts. The peer group is strongly influential and adolescents are likely to experiment with behaviors and practices that may be hazardous to their health and well-being. Friends of the same and opposite sex develop meaningful relationships during this time (Adams, 1983). Changes in cognitive functioning usually become evident as the adolescent begins to think beyond the present and into the future. However, the adolescent is still inexperienced and has insufficient knowledge to make adequate judgments and to problem solve effectively (Whaley & Wong, 1987).

During late adolescence, cognitive development continues. The adolescent has the ability to think as well as discuss abstract moral concepts such as death, war, and religion. The peer group is no longer of primary importance to the adolescent. During this time the teenager is taking the last step to establish independence. Decisions about school, careers, and professions are being made (Adams, 1983).

The Problem

The decline in adolescent health over the last 20 years has been without similar occurrence in North America, where one has become

accustomed to increasingly more positive health statistics from one decade to the next for all age groups (DuPont, 1987). Poverty, life-style, and risk-taking behaviors are influences on the morbidity of adolescents with associated sequalae of trauma, pregnancy, substance and physical abuse, as well as other major health problems (Blum, 1987).

Risk-taking is a characteristic behavior of adolescents and many adolescents participate in risk-taking behaviors that are harmful to their health and contribute to their less than optimal health status. Risk-taking may be demonstrated in a variety of behaviors. Accidents, suicides, and homicides are the leading causes of death among adolescents in the United States. Teenage drivers contribute significantly to vehicular fatalities, both their own as well as those of others (Brown, Sanders, & Schonberg, 1986). Drug and alcohol use are common among junior high school and high school students. Cigarette smoking, which is currently becoming more prevalent among female than male adolescents, is associated with respiratory symptoms during the teen years. Sexual activity is widespread and contributes significantly to pregnancy and sexually transmitted diseases (Marks & Fisher, 1987).

Risk-taking occurs as a part of living. People are involved in risky situations frequently with little thought or regard given to the risk by the person who is involved in the risk. Of most importance is the amount of risk that a person is consciously willing or unwilling to take in any given situation.

Researchers have proposed a wide range of descriptive terms in their attempt to define the risk-taking construct. Some of the more common identifiers are risk-taking, risky and conservative decision making, chance taking, risk propensity, risk orientation, and impulsivity. Regardless of what descripter is used, the risk-taking construct

has been most frequently conceptualized as a person's orientation toward taking chances in decision-making situations (Plax & Mann, 1980). What causes the person to make the decision to take a risk and how much risk has not been completely answered.

Knowles (1976) studied risk-taking from the perspective of consistent behavior once a person was in a risky situation. Knowles stated that distinguishing between motivation and strategies of risk behavior may help to clarify the questions that should be asked to find the answers to what is risk-taking.

Knowles, Cutter, Walsh, and Casey (1973) conducted a study of risk-taking to determine aspects of risk in which people would behave consistently. Based on the findings of this study, Knowles (1976) developed the Risk-Taking Questionnaire (RTQ). The RTQ was designed to measure consistent behavior in entering and engaging in risky situations. Initial studies using the RTQ demonstrated that individuals "behave consistently and predictably in their willingness to approach risk situations" (Knowles, 1976, p. 302); and personality related motivational aspects endure over time.

Although adolescents practice maladaptive, risk-taking health behaviors, they also express concern about personal health matters (Radius, Dielman, Becker, Rosenstock, & Horvath, 1980b). When individuals think that control for their health does not lie beyond their grasp, then they can take responsibility to bring about a desired outcome (Zindler-Wernet & Weiss, 1987). In a study by Radius, Dielman, Becker, Rosenstock, and Horvath (1980a), only about one-third of adolescents across all age groups acknowledged any responsibility or accountability for their personal health. Factors that influence individual responsibility for

health are not understood, although some evidence does exist that points to the benefits of individual health actions in reducing the risk of disease (Breslow, 1977).

An important factor in assuming this individual responsibility for health appears to be whether persons believe that they can actually affect their health (Kaplan & Cowles, 1978). When individuals think that they control or affect their health, they take more responsibility to bring about a desired outcome (Zindler-Wernet & Weiss, 1987). Findings from several studies demonstrated more adaptive functioning for those people who hold internal expectancies of control and responsibility for health as contrasted to those who hold external expectancies (Strickland, 1978).

The internal-external (I-E) control of reinforcement is an expectancy variable which originated from Rotter's Social Learning Theory. I-E refers to the degree to which a person perceives the events that happen are dependent on one's own behavior or are a result of luck, chance, fate, or powers beyond one's own control and understanding (Rotter, 1954).

The I-E dimension is a generalized expectancy that occurs when a person has learned that events are contingent or non-contingent on one's behavior (Strickland, 1978). Researchers have developed I-E measures that are specific to health (Wallston, Wallston, Kaplan, & Maides, 1976). The implication that I-E expectancies are related to health behaviors is also derived from social learning theory. Phares (1976) stated that cognitive and motivational aspects of the I-E dimension cause people who have an internal locus of control to be in a better position to exert power and control over their environment. I-E expectancies may then have significant influence in relation to health maintenance. One

would expect internals, contrary to externals, to be more sensitive to health teaching; to have increased knowledge about health matters; to try to improve their health functioning; and, possibly through their own attempts, to be less susceptible to abnormal physical and emotional functioning (Strickland).

In addition to behavior that may contribute to risk-taking, association with peers who model risk-taking behaviors and adults, who are significant to the adolescent but have little control of or support for the adolescent, may also influence the development of risk-taking behaviors. Erikson (1950) emphasized that during the time of adolescence, parents lose their roles of support and sources of values and are replaced by the peer group.

Research indicates that the support functions that an individual's network provides are associated with an individual's psychological well-being. Networks provide individuals as well as families with ties and relationships that serve basic social needs of intimacy, social integration, nurturance, and reassurance of worth (Pilisuk, 1978).

A person's network can be described in terms of the properties of the network and the structure of the network. Properties of the network should provide answers to questions such as: (a) how long has the relationship been established, and (b) how frequently do these two people have contact? The network of the person can then be described by overall characteristics of structure such as density and stability. Density refers to how well people know each other. Stability refers to the average length of the relationships between the person and the network members (Norbeck, 1982). The stability of the network is a better predictor of outcome than the quality of support that comes from the network (Norbeck, Lindsey, & Carrieri, 1983).

Not all relationships in a person's network are healthy, supportive relationships. Social networks, in addition to the supportive function, may be destructive, insignificant, or simply harmless (Hurd, Pattison, & Llamas, 1981). Wellman (1981) stated that the supportive ties in a network are not separate or distinct from the parts of the network which also contain non-supportive ties. At times network members may exert stress and pressure on the member of the network to behave in a way that is contrary to the internal or external demands that the person is feeling. Also, many times network members are overanxious which can increase disability or negative outcomes for the member (Norbeck, 1982).

Assessment of the adolescent's social network is essential from two perspectives. The structure of the social network may influence how adolescents come to think about their health and the control that they have over their health. In addition, examination of the adolescents' social network may demonstrate what aspects of social relationships influence development during adolescence particularly in regard to risk-taking.

Purpose

The purpose of this study was to determine if health locus of control and social network are predictive of risk-taking in adolescents.

Conceptual Framework

The conceptual framework used to guide and direct this study is derived from the Neuman Health-Care Systems Model (Neuman, 1982). The purpose of this model, the total person approach, is to serve as a guide for bringing about a desired outcome for a variety of nursing problems and for understanding the basic phenomena which is the person and the environment.

Health is related to the person's level of wellness. When a person's total needs are met, the person is in the most desirable state of wellness. When a person's needs are not met, the person experiences a lesser state of wellness.

The person represented by concentric circles is an open system that interacts with the environment. The person, whether sick or well, is composed of the interrelationship of physiological, psychological, developmental, and sociocultural variables. Figure 1 is an adaptation of the Neuman Health Care Systems Model (Neuman, 1982) used in this study and depicts the interrelationship of the variables representing the person and the relationship of the person to the environment.

The environment contains internal and external stressors that influence a person at any point in time. The environment varies according to the needs, drives, perceptions, and goals of the person.

Nursing is a "unique profession concerned with all the variables affecting an individual's response to stressors" (Neuman, 1982, p. 37). The goal of nursing is to help the individual attain the highest level of health through interventions that are purposeful and that strengthen adaptive functioning or decrease stress. To achieve this goal, nurses use the nursing process for primary, secondary, and/or tertiary prevention interventions (Neuman, 1982).

Intervention may begin any time a stressor is suspected or has actually been identified. Intervention may be primary, secondary, or tertiary. The intervention of primary prevention is used when a reaction has not occurred but the risk or hazard is known, present, or suspected. When primary prevention is not possible or is unsuccessful, and a reaction occurs, secondary prevention intervention should be offered based on symptoms that exist in the person. Tertiary prevention

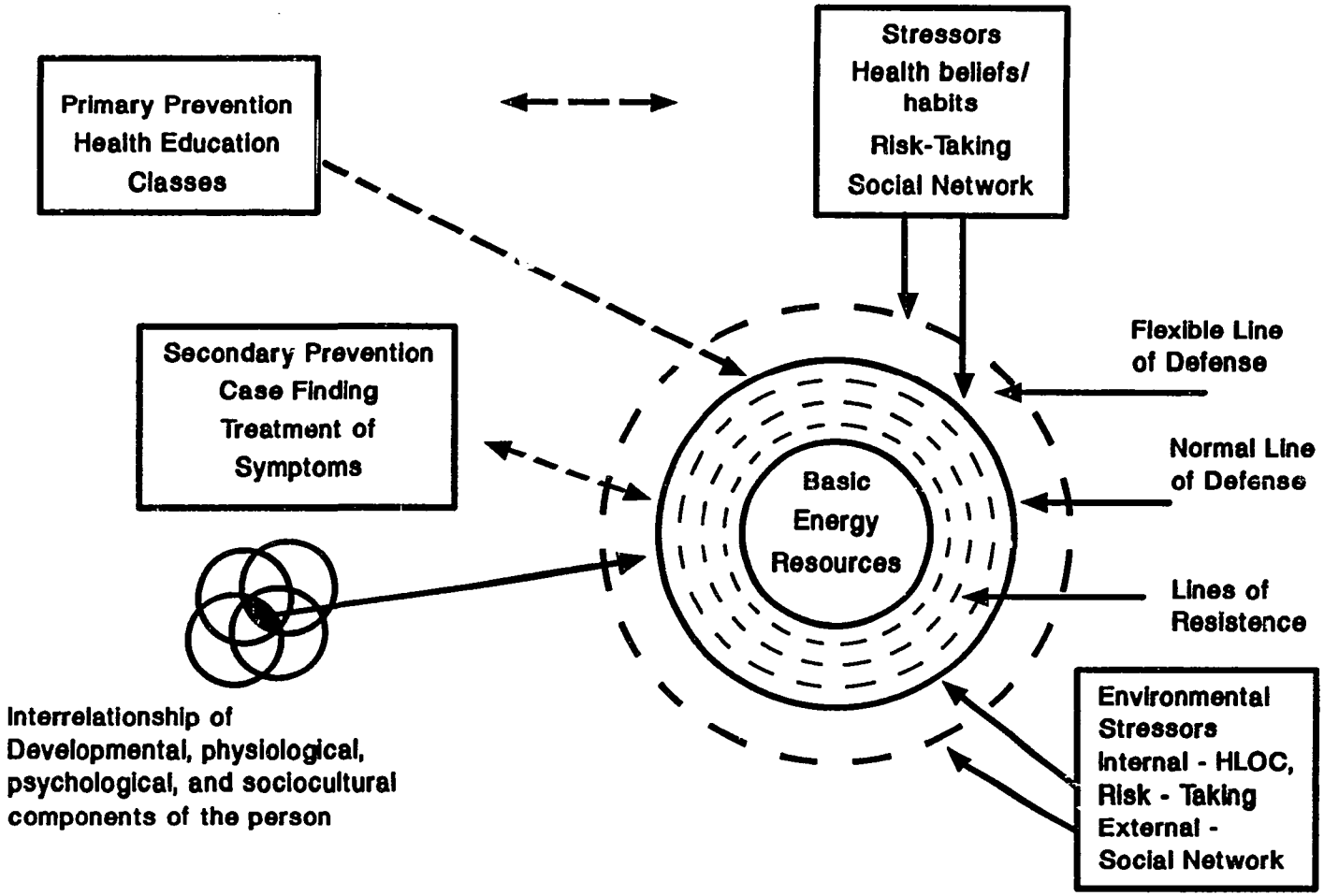

Figure 1. Neuman Model: The Interrelationship of the Variables Representing the Person and the Relationship of the Person to the Environment (Neuman, 1982).

is intervention that occurs after active treatment or secondary prevention. Interventions in tertiary prevention strive to maintain reasonable adaptation (Neuman, 1982).

Interrelationship of Concepts

Person and environment are presented as a reciprocal relationship. By interacting with the environment, the person adjusts to the environment or adjusts the environment to one's self. Nursing is concerned with all the variables affecting a person's response to stressors. Therefore, nursing and person are interrelated. Environment contains stressors which link nursing and environment. Health is a balance between person and environment. A person is considered well when there is a balance between the person and the environment. Illness occurs when there is a lack of balance and harmony between the person and the environment.

For the purpose of this study, the adolescent was viewed as a person composed of the interrelationship of physiological, psychological, developmental, and sociocultural variables. In this study, the physiological variable was represented by the gender of the adolescent. The psychological variables were the adolescents' identification of their risk-taking and health locus of control. The developmental variable was controlled for since only the developmental stage of adolescence is being considered in this study. However, findings were discussed in terms of the adolescents' identified year in high school, whether freshmen, sophomores, juniors, or seniors. The gender of the adolescent, the health locus of control, and the risk-taking identified by the adolescent also represent the internal environment of the adolescent and serve as stressors during this stage of development. The sociocultural variable was accounted for in the adolescent's identified

social network and race. The social network variable represented the external environment. The race of the adolescent was reflected in the internal and the external environment.

In summary, the Neuman model has been discussed as the framework for this study by utilizing the various components that comprise the person. The components of the model incorporated in the study were the person (adolescent) and the interrelationship of the physiological (gender), psychological (health locus of control and risk-taking), developmental (freshman, sophomore, junior, or senior), and sociocultural (social network and race) variables of the person (adolescent). The internal environment of the person was represented by the gender, race, health locus of control, and risk-taking. The external environment was represented by the social network. The adolescent and the environment form a reciprocal relationship. The adolescent, by interacting with the environment, adjusts the environment or adjusts to the environment (Neuman, 1982).

Research Question

For the purpose of this research, the following research question was generated: What percent of the variance in risk-taking behavior can be accounted for by health locus of control and social network?

Null Hypothesis

The following null hypothesis was used for statistical testing: The proportion of variance in risk-taking accounted for by health locus of control and social network is not significantly different from 0.

Definition of Terms

For the purpose of this research, the following terms have been defined:

Adolescents - males or females between 14 and 18 years of age who were attending public school. Adolescents were operationally defined by description of the sample from the demographic data.

Health Locus of Control - the adolescents' specific beliefs regarding their control over their health (Wallston, Wallston, & DeVellis, 1978). Operationally, health locus of control was defined as the scores obtained on the Multidimensional Health Locus of Control Scales (MHLC) (Appendix A).

Social Network - the size, stability (duration of relationships), and accessibility (frequency of contact) of those persons identified by the adolescent as significant in his or her life. Operationally, social network was defined as the combined score on the two questions relating to social network. This score was then added to the total person network identified by the adolescent on the Norbeck Social Support Questionnaire (NSSQ) (Norbeck, 1984) (Appendix B).

Risk-taking - a person's motivational tendency to risk approach/avoidance as a characteristic that conforms over time and situations. Operationally risk taking was defined as the score on the Risk-Taking Questionnaire (RTQ) (Knowles, 1976) (Appendix C).

Limitations

The following limitations were applicable to the study:

1. Many variables affect how people behave but this study dealt only with health locus of control, social network, and risk-taking.

2. Although the variables identified in this study were being utilized to represent the variables identified by Neuman (1982) which compose the adolescent, there was an overlap with health locus of control and risk-taking. Each of these variables could represent the

psychological and sociocultural variables. No attempt was made to control for the overlap in the psychological and sociocultural components.

3. Due to lack of randomization of the sample, findings cannot be generalized beyond the sample in the study.

4. Reliabilities for the three subscales of the MHLC were low.

Assumptions

For the purpose of this study, the following assumptions were made:

1. Risk-taking behavior in adolescents is a prevalent behavior.

2. Nurses need knowledge about the heatlh of adolescents in order to plan care that is effective for this age group.

Significance

The health of adolescents has declined over the last 20 years in the United States (DuPont, 1987). Both adolescent health problems as well as adolescent deaths differ to a great extent from adults and children, primarily because risk-taking is so characteristic of the adolescent age (Bearinger & Gephart, 1987). The decline in adolescent health and the inclination to take risks are reflected in the following statistics.

Before graduation from high school, 92% of adolescents in the United States have used alcohol, which is the most popular drug of adolescents (Macdonald, 1987); 55% have used marijuana; 62% have used other illicit drugs; and 30% use cigarettes (Zarek, Hawkins, & Rogers, 1987). Motor vehicle collisions contribute to about half of the deaths for 16- to 19-year-olds (Brown et al., 1986). Eleven percent of all adolescent females become pregnant each year. Approximately 62% of pregnancies result from lack of birth control usage. Inconsistent use birth control accounts for 30% of adolescent pregnancies (Holmes &

Magiera, 1987). Although they make up only 20% of the total United States population, adolescents experience one of the highest rates for sexually transmitted diseases (Whaley & Wong, 1987).

A conference in 1986 sponsored by the Division of Maternal and Child Health of the U.S. Department of Health and Human Services in association with the Society for Adolescent Medicine and the Institute for Continuing Education in Adolescent Health at the University of Minnesota's Adolescent Health Program resulted in five recommendations to improve adolescent health.

1. Expand the knowledge of adolescence as a developmental stage that occurs within the context of the whole life-span, but that is distinct from the stages of childhood and adulthood in order to promote adolescent health. This top priority recommendation stated that adolescents must have a sustained, steady, supportive environment that allows them to move toward autonomy and independence. It was also recommended that research continue that would identify the kinds of protective environments that contribute to optimal psychosocial development.

2. Explore ways to improve adolescents' health within the social contexts that are so critical for this age group. Groups that lack a supportive social environment and access to health care such as runaways, teen prostitutes, and street youth are particularly susceptible to health problems and little is known about how to handle the health problems of this high risk group.

3. Explain the type and number of ways to evaluate the health status of adolescents at the state and national level so that planning and evaluation of existing services can occur. The lack of uniform, available data to assess the status of adolescent health and health services is a major obstacle to planning and evaluating health care.

The conference recommended that each state name an interagency task force to collect data on adolescent health, to monitor existing programs, and to make recommendations for policies and services based on current trends.

4. Respond to the unique needs of the adolescent and to the changes in the organization and financing of the present health care system. Third party reimbursement for ambulatory services and increases in Medicaid payments for primary health care providers who work with adolescents was recommended. These funds are necessary to counterbalance the time needed to provide counseling services to youth.

5. Educate health professionals who work with adolescents by using an interdisciplinary core curriculum, formal training in their specialty area, and continuing education in adolescent health. In a national survey of 3,066 nurses, more than a third of the nurses who participated in the survey felt they had not received adequate training in the behavioral problems of teens (Bearinger & Gephart, 1987).

Determining the effects of the health locus of control, the psychological variable, and social network, the sociocultural variable on risk-taking in adolescents who represent the developmental and physiological variables, should help health care providers and teachers plan activities to decrease maladaptive health behaviors and to reduce the risk-taking inclination that occurs with adolescents. Comprehensive health education programs developed and implemented by health care providers, specifically nurses, are essential in order to improve the health status of adolescents. These comprehensive health education programs will serve as primary prevention interventions when begun early in the K through 6 years of school. Primary prevention interventions should be continued and secondary prevention interventions should

be developed for the junior and senior high student. Secondary prevention interventions would be based on existing symptomology. In planning these educational programs, health professionals should take into account not only one's behavior but also the person and the environment. Considering the person, the environment, and the behavior, behavior change programs can be developed. These programs are not intended to be a one-time effort but should be based on a comprehensive approach (K-12) to educate and to reeducate when necessary to the benefits of health promotion behaviors and the dangers of health risk behaviors (Lowe, 1986). Schools should provide programs that utilize both health promotion and health education concepts, school nursing, counseling, and social service (Bearinger & Gephart, 1987).

When planning interventions to meet the health needs of the adolescent, the adolescent as a composite of all the variables, physiological, psychological, sociocultural, and developmental, must be taken into consideration. In addition, importance of the interrelationship of the internal and external environment to the health of the adolescent should also be considered.

CHAPTER II

Review of Related Research

Discussion of related research is presented in four major sections. The first area of discussion relates to locus of control. The second area of discussion relates to health locus of control. The third area of discussion relates to social network. A discussion of risk-taking is presented in the fourth section.

In reviewing the literature concerning health locus of control, several studies were found that dealt with general locus of control and health issues in adolescents. Two studies were concerned with diabetes in children and adolescents. Three studies dealt with pregnancy in adolescents. A review of the research dealing with the general I-E expectancy is presented, followed by a review of the specific health locus of control research, social network, and risk-taking research.

Locus of Control

Harrigan, Faro, VanPutte, and Stoler (1987) studied locus of control to prefict the type of educational program that could be most successfully utilized to teach diabetic children about their disease. A descriptive correlational study was conducted to determine the relationship between locus of control and knowledge of disease in school-aged children with diabetes. Results of the study suggested that internal locus of control is positively associated with greater knowledge of disease.

Hamburg and Inoff (1982) studied 211 insulin dependent diabetics who were between the ages of 5 and 9 years. Boys who were in poor

diabetic control tended to be more internal in their locus of control. Girls who were in poor diabetic control tended to be more external in their locus of control. This sex difference in the relationship between diabetic control and locus of control was interpreted to reflect sex differences as a response to stress.

Blum and Resnick (1982) studied 206 sexually active females who were 15 to 18 years of age. The purpose of the study was to determine, for those who were sexually active, what developmental factors distinguish those who successfully use contraception and those who become pregnant. For the teens who became pregnant, the study explored differences among the girls who chose abortion, those who chose to maintain the pregnancy and were currently pregnant, and teen mothers. Findings showed that those who chose abortion had the lowest demand for external approval as well as the lowest dependency needs. Teen mothers had the most external locus of control. Those who effectively used contraception had the most internal locus of control.

Pass (1986) examined the sex role orientation, self-esteem, and locus of control of 74 pregnant and nonpregnant black adolescents. No differences were found between the groups in locus of control or self-esteem. Findings supported prior research that found that pregnant adolescents have a more traditional sex role orientation than nonpregnant adolescents.

Walters, Walters, and McKenry (1986) studied two psychological characteristics, locus of control, and purpose in life in groups of never-pregnant and currently pregnant adolescents. The currently pregnant girls were not different from the general population of adolescents nor the matched sample of never-pregnant girls on the two psychological variables.

Health Locus of Control

Wallston, Maides, and Wallston (1976) conducted two studies testing the hypothesis that seeking information about health matters is both a function of a person's health locus of control beliefs as well as the value that the person places on health. The samples consisted of 44 male and 44 female undergraduate college students in the first study. The sample consisted of 52 male and 45 female undergraduate students in the second study. Students were given the unidimensional Health Locus of Control (HLC) scale and a Value Survey. Results of the studies demonstrated that those people with an internal health locus of control belief and a high health value were more likely than other persons to collect information about disease and health maintenance when aware of possible risks such as hypertension.

Jamison, Lewis, and Burish (1986a) conducted a study comparing 203 healthy adolescents with 31 adolescents who had cancer. The purpose of the study was to determine the psychological impact of cancer on the adolescents' self-image, health locus of control, perception of illness, and knowledge of cancer. Health locus of control was determined using the Multidimensional Health Locus of Control Scales (MHLC). Adolescents with cancer had significantly lower internal health locus of control scores and higher external health locus of control scores. The adolescent patients also perceived cancer to be significantly less severe and better understood by doctors. The patients also believed that cancer patients had a better probability of recovery than did normal subjects.

Jamison, Lewis, and Burish (1986b) also conducted a study with 27 cancer patients whose ages ranged from 12 to 18 years. These patients were rated by two pediatric oncology nurses who used a cooperation

questionnaire and were compared with ratings of the patient's self-image, perception of cancer, health locus of control, and knowledge of cancer. A negative relationship existed between cooperation and an external health locus of control orientation.

Social Network

The concepts of social support and social network are often used interchangeably in the literature. Review of research regarding the social network of the adolescent is frequently spoken to in the context of social support. The purpose of this study was to describe the social network of adolescents, not the social support which comes from the network. Contrasted to the social support construct, the social network construct is more overarching (Mitchell & Trickett, 1980), does not presume that all relationships are supportive, and allows for a greater understanding of the complexity of social ties (Wellman, 1981).

Jorgensen, King, and Torrey (1980), in a study with 147 females who were 12 to 18 years of age, hypothesized that qualities of adolescent couples' relationships, peer relationships, and family relationships would influence the degree of exposure to pregnancy related to frequency of intercourse and regularity of contraceptive use. Three major findings emerged as a result of the study. First, qualities of the interpersonal relationship between the adolescent couple, such as power and satisfaction, were stronger and more consistent relationships than either peer or family relationships. Second, certain variables appeared to have counterbalancing influences in participation in sexual activity. At the same time that they appear to increase pregnancy risk by encouraging more frequent sexual activity, dyadic relationship satisfaction and peer contraceptive use seem to decrease pregnancy risk by encouraging more regular and effective contraceptive use. The authors encouraged

more research to determine the degree to which these variables actually decrease or increase pregnancy rates as opposed to having a counterbalancing or neutral effect. The third finding of the study suggested that the variables influencing adolescent sexual activity and eventual pregnancy are numerous and the interrelationships among the variables are highly complex.

Young (1981) studied the possible existence and functions of informal peer support groups on two adolescent units in two mental health centers. The age range was 9 to 17 years. The results indicated that some form of peer support network existed on the wards as well as outside the institution. Two types of networks emerged with some overlap. One type of network was action-oriented and the other type network was dialogue-oriented. An action-oriented network was one in which the actor would do things with his friends such as watch television, go to a ball game, strip cars, go for joy rides, and participate in some kind of game or sport.

The dialogue-oriented group involved discussion. The actor and friends talked about what was bothering them. The actor and the friends then offered alternatives and suggestions and/or personally helped each other. Young (1981) stated that the conclusions were suggestive rather than conclusive. A recommendation was made that much more extensive research be undertaken to decisively refute or support the significance of peer groups among institutionalized adolescents.

Held (1981) conducted a study concerned with self-esteem and social networks of 62 females who were 17 years of age and younger and who were in their third trimester of pregnancy. Social network information was obtained by asking the adolescent to rate her perceptions of reactions to the pregnancy by significant others. She was then asked to rank

these people in order of importance to her. Results of the study showed that the mother of the adolescent was the most disapproving of the pregnancy. The father of the baby was the most approving.

The adolescents ranked their mothers as being more important to them than they themselves were. Mothers were ranked 92% of the time while the adolescent ranked themselves as most important 60% of the time. Fathers placed first (62%) and sisters ranked higher than brothers. Professionals, physicians, nurses, and teachers were not listed often among the top ranks.

The findings of this study were interesting. The adolescent is more dependent on her mother, whom she ranks more highly than herself. The grandmother is the most disapproving, yet the adolescent turns to her for support.

The purpose of a study by Galbo (1983) was to determine adolescents' perceptions of the significant adults with whom the youths voluntarily associate. Findings were reported that males tended to choose male significant adults and females chose females but at a lower rate. Parents were the adults most frequently chosen as significant, but some adolescents selected no parents at all. Nonrelated adults were chosen over relatives almost two to one. Males preferred adults outside the immediate family, and females preferred adults in the immediate family such as older sisters. The most frequently mentioned nonrelated adults were ministers. Teachers were more often chosen by males than females but were seldom chosen by either.

Risk-Taking

No studies with an adolescent sample were found that dealt with the concept of risk-taking as a personality trait. Research that is

available with an adolescent population addresses risk-taking behaviors that affect health. Therefore, review of research regarding risk-taking includes studies available which are not restricted by age of the sample. Three studies were found that discussed risk-taking and health.

Cecil (1972) studied 234 male and female college students to determine what variables influence risk-taking attitudes. Seven variables were included in the study: class standing, major, family income, rural home environment, sex, occupation of head of household, and birth order. Class standing, major, family income, and rural home environment were found to provide significant differences in individual risk-taking attitudes. There were no significant differences regarding sex, occupation of head of household, and birth order.

The purpose of an investigation by Plax and Rosenfeld (1976) was to develop a personality pattern that could be used to explain and predict risky behavior in a variety of decision-making situations. Results of the study demonstrated that a risk-taking personality pattern may be conceptualized which allows for explaining risky decision-making behavior. Persons who exhibit riskiness in decision-making were persistent, effective communicators, confident and outgoing, clever and imaginative, aggressive, efficient, clear thinking, manipulative, and opportunistic in dealing with others.

Risk-Taking and Health

The purpose of a study by Radius et al. (1980b) was to establish a community information base on health attitudes, behaviors, and status in order to assess the effectiveness of future health interventions. The sample contained 249 children ranging in age from 6 to 17 years. Data showed that health was a meaningful concern for the majority of youths regardless of age or sex. Although a majority of youths reported that

they worried about their health, this concern was not evident in their levels of prevention health orientation. A majority of males, as well as females, reported doing things that they personally regarded as "bad for health." These reports increased with age in females. This trend did not exist with males.

Implications from this study suggested a need for renewed emphasis on health education. This view was based on the assumption that positive health habits and beliefs should be more easily accomplished in children than adults. In addition, health educators need to stress the relationships between certain behaviors and the outcomes of these behaviors.

In a study which included 771 children in grades 5 through 8, Lewis and Lewis (1984) investigated dares or challenges the students received from other children. Peer pressure was reported most frequently by eighth grade students. Approximately half of the dares encouraged problem behaviors that placed the children and others at risk for injury or potential development of habits hazardous to their health. With increasing age, more dares occurred in the school environment but fewer dares involved risks of personal injury. In seventh and eighth graders, more boys were dared to perform acts of violence and more girls were challenged to be sexually active.

Killeen (1985) studied 326 adults who voluntarily participated in a health fair. The purpose of this study was to determine whether a relationship existed between individuals' general inclination to take risks and the extent of their participation in selected behaviors that pur their health at risk.

Six health-threatening behaviors were measured: use of alcohol, use of tobacco, use of mood-altering drugs, exposure to hazardous

situations, being overweight, and failure to wear seat belts. Results of the study showed no health behavior to be significantly correlated with willingness to approach risk. This study demonstrated that a general inclination to take risks has minimal impact on those behaviors pertinent to health.

CHAPTER III

Methodology

The purpose of this descriptive, ex-post facto designed study was to determine if health locus of control and social network were predictive of risk-taking in adolescents. The research question addressed was: What percent of the variance in risk-taking behavior can be accounted for by health locus of control and social network?

Null Hypothesis

The following null hypothesis was used for statistical testing. The proportion of variance in risk-taking accounted for by health locus of control and social network is not significantly different from 0.

Setting

One major high school in a suburb of a large metropolitan area in the Southeast was selected for data collection. To provide data about adolescents from a range of income levels, a school that served low to high income families was utilized.

Sample

The sample consisted of 187 adolescents who agreed to participate in the study. The sample included both males and females who were between the ages of 14 and 18 years, attended public school, and were in grades 9 through 12.

The rights and welfare of all subjects were protected by adherence to the University of Alabama at Birmingham's protocol for human research. The expedited review form was submitted and approved (Appendix D). There

was no known risk to the participants, and there was no way to identify subjects. Additionally, permission was requested and verbally obtained from the principal of the selected high school.

All subjects were anonymous. Directions in the explanation of the study stressed that the participants' names should not be provided on any of the forms. Subjects were free to withdraw at any time prior to completion of data collection. Following an explanation of the study (Appendix E), completion of the questionnaires indicated agreement to participate.

Instrumentation

Four instruments were utilized to collect the data. Demographic data were collected by using a researcher-developed instrument (Appendix G). The Multidimensional Health Locus of Control Scales (MHLC) (Appendix A), social network questions from the Norbeck Social Support Questionnaire (NSSQ) (Appendix B), and the Risk Taking Questionnaire (RTQ) (Appendix C) were also administered. Demographic data were collected first, followed by the NSSQ, the MHLC, and the RTQ.

Multidimensional Health Locus of Control Scales

Wallston et al. (1976) developed the original unidimensional Health Locus of Control Scale (HLC) which was derived from Rotter's Social Learning Theory. Based on research findings of other researchers concerning health locus of control, Wallston et al. (1978) revised the original HLC instrument to be multidimensional. The MHLC measures HLC through the use of three subscales: internal health locus of control (IHLC), chance health locus of control (CHLC), and powerful others health locus of control (PHLC). A higher score on the IHLC subscale indicates that the individual believes that one becomes healthy or sick as a result of one's own behavior. A higher score on the CHLC subscale indicates

that a person believes that one's health is unpredictable and is not determined by one's behavior. These people believe that fate, luck, or chance determine their health. A higher score on the PHLC subscale means that a person believes that health professionals are responsible for their health. Alpha reliabilities reported on adults ranged from .61 to .80 on the IHLC subscale, .55 to .87 on the CHLC, and .56 to .83 on the PHLC (Wallston et al., 1978).

The MHLC consists of a 6-point Likert scale ranging from "strongly disagree" (scored as 1) to "strongly agree" (scored as 6). Six questions for each of the three subscales are included for a total of 18 items (Wallston et al., 1978). Questions 1, 6, 8, 12, 13, and 17 refer to IHLC. Questions 2, 4, 9, 11, 15, and 16 refer to CHLC. Questions 3, 5, 7, 10, 14, and 18 refer to PHLC. The responses pertaining to each respective subscale are summed so that three separate scores are obtained; one for IHLC, one for CHLC, and one for PHLC. All items were generally developed for an eighth-grade reading level. The actual item pool reading level, calculated using the Dale-Chall formula, was fifth- to sixth-grade reading level (Wallston et al., 1978).

Norbeck Social Support Questionnaire

The Norbeck Social Support Questionnaire (NSSQ) was utilized to measure the personal network of the adolescent (Appendix B). The NSSQ was designed to measure multiple dimensions of social support but it can be adapted to determine situation-specific patterns of social support (Norbeck, Lindsey, & Carrieri, 1981). The personal network variable of the NSSQ is derived by adding the number of persons listed in the personal network to the sum of the scores of the two Likert-scale questions.

The questions concerned the length of time each person in the network has been known and the frequency of contact the person has with the people listed in the network.

Reliability and validity of the NSSQ have been reported (Norbeck et al., 1981). Concurrent validity was found to be significantly correlated with the Emotional Subscale of the Cohen and Lazarus Social Support Questionnaire (r = .47 p .01). Test-retest reliability was reported from scores given by students who were administered the NSSQ and then retested 1 week later. The correlation for number in the network, duration of relationships, and frequency of contact have been reported as high (r = .92, p .001 for each). The reading level of the NSSQ was calculated by this writer using the Fry (1972) method. Results of this method indicated that the NSSQ was fourth-grade reading level.

Risk-Taking Questionnaire

The Risk-Taking Questionnaire was developed by Knowles (1976) to measure an individual's consistency in entering and engaging in risky situations. Reliability and validity of the scale have been reported. The internal consistency of the scale has been measured at r = .85 for a sample of 146 undergraduate students and was found to be comparable for males and females. Various studies also indicate a degree of concurrent validity. The scores highly correlate with subjects' self ratings of being risk-takers (r = .67, n = 47; r = .71, n = 134) (Knowles, 1976). The questionnaire consists of a total of 20 statements with a 5-point Likert scale ranging from 1, "agree very much," to 5, "disagree very much." The scoring of items 2, 3, 5, 11, 14, 15, 17, 19, and 20 are reversed so that a high score indicates risk approach

motivation (Knowles). The reading level calculated by this writer using the Fry (1972) method was found to be at the fourth-grade level.

Pilot Study

Prior to data collection, a pilot study was conducted with six adolescents from a local community group. No attempt was made to eliminate the pilot study subjects from the study sample should an overlap occur.

The purposes of the pilot study were to identify any procedural problems and to determine if the adolescents could complete the questionnaire without difficulty. In addition, the amount of time required to complete the questionnaires was also determined. Based on the results of the pilot study, more instructions were added to the NSSQ to make the directions more clear. The time needed to complete all the questionnaires was the same as had been anticipated, 20 to 30 minutes.

Data Collection Procedure

Telephone contact was made with the local high school selected for data collection in order to set up an appointment to meet with the principal. During the meeting with the principal, the purpose of the study and the approximate time needed for each student to complete the questionnaires were discussed. In addition, the time of day for data collection that would be the least disruptive to the students' schedules was determined. Verbal agreement to conduct the study at the school was given by the principal.

All data were collected with the help of the school's teachers who volunteered to give the necessary time for their classes. Four sections each of senior, junior, sophomore, and freshman students were used for data collection. The investigator took all the questionnaires to the school.

The principal distributed the individual grade level packets to the teachers who had volunteered to participate. Students were given a packet of questionnaires while they were in lunch-study nonacademic class that was maintained by grade levels. The purpose and explanation of the study was provided in the packet. Students could agree to participate or not participate. Completion of the four questionnaires signified agreement to participate. The data collection packets were arranged in the following order and were completed in that order: explanation of the study, demographic data, NSSQ, MHLC, and RTQ. The questionnaires were color-coded for ease in data collection and analysis. Freshmen received pink; sophomores, yellow; juniors, lilac, and seniors, green paper. An individual questionnaire packet was placed in a large manilla envelope.

Twenty questionnaire envelopes were provided for each teacher since there were approximately 20 students per class. The 20 envelopes were placed in one larger envelope to facilitate transport of the packets as well as to help in eliminating confusion as to which grade should receive the envelopes. The outside envelope was labeled with the grade to which the packet should be distributed. Secured to the outside envelope with a rubber band were instructions and an explanation of the study for the teacher (Appendix F). Teachers were instructed to read the explanation of the study aloud as the students read it silently. The teachers were also instructed to remind the students to omit their names, to answer all questions, and to answer them honestly and thoroughly.

Following completion of the questionnaires, the teacher was instructed to give each student who participated a small, white envelope containing coupons for food at local fast-food restaurants as a small

thank you for their efforts. The completed questionnaires, as well as the unused questionnaires were collected from the principal's office by the investigator.

Data Analysis Procedure

Data were analyzed with multiple regression statistics to test the null hypothesis. In addition, descriptive statistics were also utilized to describe the sample. Chi square was also obtained to determine if differences existed between sexes and by ages on the demographic questionnaire. The Crunch Interactive Statistical Package (1986) was utilized at the 0.05 level of significance.

CHAPTER IV

Findings

This chapter consists of descriptive information about the sample studied, analysis of the data addressed by the research question, and discussion of the reliability of the MHLC, RTQ, and the Personal Network questions in the NSSQ. Findings are presented utilizing the four components of the person as identified by Neuman (1982) in the conceptual framework that was used to guide this study. Analysis of the data was accomplished by using the Crunch Interactive Statistical Software Package (1986).

Sample

Questionnaires were distributed to 331 students. A total of 187 adolescents volunteered to participate in this descriptive ex-post facto designed study for an overall return rate of 56%. Table 1 reflects a summary of the number of returned questionnaires by grade level.

Physiological Description of Sample

The physiological component of the person was identified in the conceptual framework as the gender of the adolescent. The sample consisted of male and female high school students in a suburb of a large metropolitan southeastern city. The number of males who volunteered to participate was 101, or 54.01% of the sample. The number of females participating was 86, or 45.99% of the sample.

Table 1

Percentage of Questionnaires Completed by Grade Level

Grade Level	Distributed	Completed	Percentage
Freshman	82	47	57
Sophomore	83	46	55
Junior	83	45	54
Senior	83	49	59

n = 187

Developmental Description of Sample

The developmental component of the person was controlled for since only the adolescent was included in the sample. The ages of the adolescents participating in the sample ranged from 14 (8.6%) to 18 (19.2%) years of age with a mean age of 16.2 years. The largest group was the 17-year-olds (28.3%). However, there was an almost equal distribution of adolescents by grade level. Table 2 summarizes the developmental component of the adolescents participating in the study.

Sociocultural Description of Sample

The social network and the race of the adolescent were identified as representing the sociocultural component of the person. These variables also represented the external environment of the adolescent. Race was also identified as representing the internal environment.

The mean of the number of people identified by the adolescents as important in their lives on the NSSQ was 10.6. The people most frequently listed were parents, first, followed by siblings, grandparents, and friends. Other family members, such as cousins, were occasionally

Table 2

Percentages of Sample by Age and Grade Level

Variables	Number	Percentage
Age		
14	16	8.6
15	43	22.9
16	39	20.8
17	53	28.3
18	36	19.2
Grade Level		
Freshman	47	25.1
Sophomore	46	24.6
Junior	45	24.0
Senior	49	26.2

mentioned. Family members were rated as most important to freshmen and seniors at 71% and 75%, respectively. Peers were rated as most important by 28% of freshmen, 30% of sophomores, 46% of juniors, and 23% of seniors. Approximately 3% of the students included God and themselves as most significant. None of the students listed a high school teacher or counselor as important. No health care professionals were included.

The mean score for the NSSQ was 101. This score was obtained by adding the total number of people identified as important to the sum of two questions concerning length and frequency of contact. The mean score for length of contact was 44.7. The mean score for frequency of contact was 45.6. Table 3 depicts a summary of the NSSQ information.

Table 3

Mean Scores on NSSQ

Variable	Mean
Important others	10.6
Length of contact	44.7
Frequency of contact	45.6
Total NSSQ	101.0

Of the 187 students participating in the study, 159 (85.0%) of the students were Caucasian; 26 (13.9%) were black. Two students (1.07%) were Asian. A description of the sociocultural variables is found in Table 4.

The mean of number of people living in the home of the adolescent was 2.74 people. Data supported that the majority of homes (60%) consisted of a nuclear family with the students living with both parents. Siblings were present in 61.5% of the homes. A small percentage of the homes (9.09%) were composed of extended families with one or more grandparents living in the home. Aunts and/or uncles represented an even small percentage at 4.81%. Two of the homes included friends.

Additional information to describe the sample consisted of sources of income, participation in specific activities or programs, and involvement in behaviors that affect health. When asked if they received an allowance, less than half of the adolescents responded positively, while more than half did not receive any allowance. Sixty percent of

Table 4

Percentage of the Sample by Sociocultural Variables

Variable	Percentage
Members in Home (mean 2.7)	
Both parents	59.8
Single parent	46.0
Siblings	62.0
Grantparents	10.0
Aunts, Uncles, Friends	6.0
Race	
Caucasian	85.0
Black	13.9
Asian	1.1
Income	
Allowance	47.0
No allowance	54.0
Other source	60.0
Programs	
Sports	49.0
Weight control	8.3
Extra-curricular	66.0
Church	51.0
Exercise	53.0

the sample had additional sources of income such as part-time jobs, babysitting, mowing lawns, and working for their families in family-owned businesses.

Students were asked to identify whether or not they participated in any of the following activities or programs: school sports, weight control, extra-curricular school activities, church, and exercise. Forty-nine percent of the students participated in school sports. A total of 18% reported themselves as being overweight, while only 8.3%

participated in a weight control program. Those who participated in church, exercise, and extra-curricular activities represented over half of the sample.

Psychological Description of Sample

In the conceptual framework, the RTQ, and the MHLC were identified as representing the psychological component of the person. The RTQ and the MHLC also composed the internal environment of the adolescent. The total possible score on the RTQ is 100. There are 20 items with a 5-point Likert scale. The mean score for the RTQ was 52.7.

The MHLC is composed of three subscales: the PHLC, IHLC, and CHLC. There are six questions for each subscale for a total of 18 items. The MHLC utilizes a 6-point Likert scale so that each subscale has the potential for a possible score of 36. The mean IHLC score was 26. The mean PHLC score was 17.9, and the mean CHLC was 17.2. Table 5 reflects a summary of the MHLC scores and the RTQ scores.

Table 5

Mean Scores on MHLC and RTQ

Questionnaire	Mean
MHLC	
IHLC	26.0
PHLC	17.9
CHLC	17.2
RTQ	52.7

The last section of demographic data included questions about whether or not the student participated in behaviors that could both positively and negatively affect their health. The questions related to

being overweight, consuming alcohol, having dental and physical examinations, use of a seat belt, moving violation traffic tickets, use of cigarettes, sexual activity, patterns of eating, and the use of drugs. In addition, students were asked to identify their participation in dangerous activities and to rate their health status. The following information was obtained. The majority of students reported that they used alcohol, had regular dental and physical examinations, used a seat belt, were sexually active, and ate from the four food groups as well as junk food on a daily basis. Most students reported their health as good to excellent.

Although 49% of the students reported participating in risky or dangerous activities, only 15% reported that they had received a moving violation traffic ticket. In addition, less than half reported use of drugs or cigarettes. Table 6 reflects a summary of the health-risk behaviors.

Additional Demographic Information

A Chi square test was performed to determine if differences existed between males and females in response to variables on the demographic questionnaire. The obtained $\chi^2 = 6.97$, df = 1, was significant at the .0083 level, $p < 0.05$, for smoking. Thirty females or 35% of the sample smoked as compared to 17 or 17% of males who smoked.

Chi square analysis was also performed to determine if differences existed on the demographic questionnaire according to the age of the adolescents. The χ^2 for alcohol use was significant at the .014 level, $\chi^2 = 12.4$, df = 4, $p = .05$. The use of alcohol increased with increasing age.

Table 6

Percentages of Sample by Health-Risk Behavior

Behavior	Percentage
Overweight	18
Alcohol use	61
Dental exam/year	81
Seat belt use	64
Moving traffic violation	15
Smoking	26
Physical exam/year	59
Sexually active	53
Eating from four food groups	70
Eating junk food	75
Drug use	32
Dangerous activities	49
Overall health	
Excellent	25
Good	61
Fair	14

Chi square analysis was also significant at the .008 level for seat belt use by age. The $\chi^2 = 13.5$, df = 4, $p = .05$. The use of seat belts decreased with age after a temporary increase from age 14 to age 15. Table 7 reflects a summary of the Chi square results by age and sex.

Table 7

Chi Square Analysis of Significant Risk-Taking Behaviors

Risk-Taking Behavior	Age		Sex	
	χ^2	p	χ^2	p
Smoking	2.63	.6224	6.9700	.0083*
Alcohol	12.42	.0145*	.8538	.3555
Seat belt use	13.55	.0089*	.7153	.3977

*p = .008

Instrument Reliability

The Cronbach alpha reliability coefficient was computed for the RTQ, the three subscales of the MHLC, and the NSSQ. The reliability coefficient for the RTQ was .91. The reliability of the three subscales of the MHLC were as follows: IHLC, .51; CHLC, .64; and the PHLC, .60. The reliability coefficient for the NSSQ was .86.

Research Question

The following research question was addressed by data obtained from 187 subjects: What percent of the variance in risk-taking behavior can be accounted for by health locus of control and social network? Correlations were performed on the five study variables, one dependent variable (risk-taking), and four independent variables (the three subscales of the MHLC and the social network variable) prior to analysis of the research question. Table 8 presents the correlation matrix. Lower levels of IHLC and PHLC related to higher levels of RTQ, indicating that

Table 8

Correlation Matrix by Variable of RTQ Score, IHLC, CHLC, and Network Score

Variable	RTQ Score	IHLC	PHLC	CHLC	Network Score	r/p
RTQ Score	1.000	-0.1740	-0.3034	-0.0585	-0.1214	r
	0.000	0.0172*	0.0000*	0.4264	0.0978	p
IHLC		1.0000	0.1477	-0.0014	0.0290	
		0.0000	0.0437*	0.9850	0.6932	
PHLC			1.0000	0.3067	0.1005	
			0.0000	0.0000*	0.1709	
CHLC				1.0000	-0.1312	
				0.0000	0.0736	
Network Score					1.0000	
					0.0000	

* $p < .05$

as RTQ increased, IHLC and PHLC decreased. Additionally, there was a positive correlation between IHLC and PHLC as well as PHLC and CHLC.

To test the null hypothesis, multiple regression was performed between the variables of risk-taking, the three subscales of the MHLC, the IHLC, PHLC, and the CHLC and network or the total score on the NSSQ. The null hypothesis was: The proportion of variance in risk-taking accounted for by health locus of control and social network is not significantly different from 0. The full model was:

$$Y^1 = a + b_1 X_1 + b_2 X_2 + b_3 X_3$$

Y^1 : Risk taking

X^1 : PHLC

X^2 : IHLC

X^3 : Network

Analysis of the multiple regression showed that the multiple R of 0.3423 and an R^2 of 0.1171 indicated that 12% of the variation in RTQ scores could be explained by the variation in PHLC, IHLC, and network ($\underline{f}$ = 8.094, df = 3, 183, $\underline{p} < .001$). This value was significant at the 0.05 level. The regression coefficients for the three variables were: PHLC, -0.79832; IHLC, -0.43963, and Network, -0.02601. The regression summary table appears in Table 9.

Using forward, stepwise regression, PHLC entered the model first. The multiple R was 0.3034 and the R^2 was 0.0921. The F was 18.76, df were 1, 185, and the $p < .0001$. This indicated that 9% of the variation in risk-taking could be accounted for by the variation in PHLC.

IHLC entered next. The multiple R was 0.3303, R^2 was 0.1091, indicating that 11% of the variation in risk-taking could be explained by the variation in PHLC and IHLC. The other statistics were F = 11.27, df 2, 184, and $p < .0001$.

Table 9

Significant Variables in Regression Equation

Source	Multiple R	R^2	df	F Value	p
PHLC	0.3034	0.0921	1,185	18.76	.0001
IHLC	0.3303	0.1091	2,184	11.27	.0001
Network	0.3423	0.1171	3,183	8.09	.001

Network was the last variable to enter the model. The multiple R was 0.3423, R^2 = 0.1171, F = 8.09, df = 3, 183, and $p < .001$. The PHLC, IHLC, and Network constituted 12% of the variation in risk-taking. The variable that did not enter the model was CHLC. As each of the three variables, PHLC, IHLC, and Network were added, there was a slight increase in ability to predict risk-taking.

As a result of these findings, the null hypothesis was rejected. The proportion of variance in risk-taking accounted for by health locus of control and social network was significantly different from 0.

CHAPTER V

Conclusions, Discussion, Implications, and Recommendations

Conclusions

The following conclusions are based upon findings from this study and are subject to the limitations previously cited:

1. For this sample, PHLC, IHLC, and Social network were predictive of risk-taking in adolescents.

2. CHLC was not predictive of risk-taking in adolescents.

3. Significantly more females than males smoked.

4. Alcohol use increased significantly with age.

5. Seat belt use decreased significantly with age after a temporary increase.

6. Reliabilities for the NSSQ and the RTQ were high while the reliabilities on the MHLC subscales were low.

Discussion

Findings are discussed as they relate to the conceptual framework as well as the review of research. In addition, a discussion of the findings related to the design and methodology used in this study is presented.

Findings Relevant to the Conceptual Framework

According to Neuman (1982), the adolescent is an open system who interacts with the environment. The environment contains stressors, whether internal or external, and the environment varies with the needs,

perceptions, and goals of the adolescent. The adolescent is composed of the interrelationship of the physiological, psychological, developmental, and sociocultural variables.

Physiological Variable

The physiological variable was identified as the gender of the adolescent. It was surprising that 8% more males participated in the study than females. The fact that more males participated in the study could have had some influence on the results.

From the Chi square analysis that was performed, smoking was found to be significantly increased in females, which is consistent with other research. Lowe (1986) stated that smoking is a means of being accepted in a particular peer group, increasing one's own self image, and acting in a way independent of authority. The phenomenon of females smoking more than males may also be due to smokeless tobacco use by males (Silvis & Perry, 1987). Smoking is currently a trend in female adolescent health (Marks & Fisher, 1987). This trend may represent an internal environment stressor to future health and well-being of adolescent females.

Developmental Variable

The ages of the adolescents ranged from 14 to 18 years with the mean age being 16.2 years. There was an almost equal distribution of participants by grade level.

Alcohol consumption and seat belt use were related significantly with age, according to the Chi square analysis and these findings were also consistent with prior research. Consumption of alcohol increased with age. Macdonald (1987) found that alcohol was the most popular drug among adolescents and that it was used by more high school seniors

than any other drug. Macdonald also found that when peers disapprove of alcohol use or associate its use with great risk, the proportion of use declines.

Perhaps increased use with age is also associated with accessibility. As the adolescent and the peer group become older, they are beginning to drive. The driving allows them to be in places and situations where alcohol is available, as opposed to the younger adolescent who does not yet have the freedom and increased experiences that driving brings.

Use of seat belts decreased with age, following a temporary increase from age 14 to age 15. By age 15, seat belt use increased 9% over use at age 14. During this time most adolescents are taking driver's education classes where safety and decreasing risks with driving are stressed. It may be that these classes have a temporary positive influence on this age group. Brown et al. (1986) stated that the intentional lack of use of the passenger restraints was related to a degree of social experimentation, peer pressure, and the struggle with one's own fallability and mortality.

Sociocultural Variable

Social network and race represented the sociocultural variables. Social network also represented the adolescent's external environment, while race was reflected in both the internal and external environment.

The adolescents in the study were primarily Caucasian and lived in a nuclear family setting. Although the majority of homes contained both parents, approximately one-third were single-parent families. In a small percentage of homes, there were no parents. The adolescents lived with other family members. An adequate number of important people

was identified in the network. Who composed the network depended upon the age of the adolescent. Family members were considered most important to freshmen and seniors who represented 58% of the sample. Peers were most important to the sophomores and juniors who made up 55% of the sample. The peer group influence becomes less important in late adolescence while the younger adolescent at age 14 has not yet substituted family for peers (Adams, 1983).

Although the majority of participants were living in a nuclear family that was considered important, the network of the adolescent contributed slightly to risk-taking. Aspects of characteristics of the network must then contain external environmental stressors that contribute to risk-taking behavior. Erikson (1950) stated that during adolescence, parents become less supportive and are replaced by the peer group. The peer group became more influential than family, even though considered important by slightly fewer adolescents in this study.

Psychological Variable

The psychological variable was composed of the adolescents' identified health locus of control and risk-taking. Two of the three subscales of the MHLC accounted for variation in risk-taking. The variation in PHLC was found to account for 9% of the variation in risk-taking. If the adolescent believes that other people are responsible for how healthy a person is, and one's health is not the individual's responsibility, then perhaps the adolescent is more willing to approach risks. Possibly included in this willingness to approach risks is also the belief that other people will take care of them regardless of the outcome of their behavior.

The IHLC, when entered in the model, indicated that 11% of the variation in risk-taking could be explained by the variation in PHLC and

IHLC. People who are internally controlled believe that one becomes healthy or sick as a result of one's own behavior. Even though the percent of variance was slight, perhaps included in this belief is also the idea that one can take care of self if a choice is made to participate in risky behaviors.

The CHLC did not enter the regression model and did not explain any significant variation in risk-taking. Since this subscale had the lowest mean score, one must wonder whether the adolescents in this sample subscribed to the belief that their health or lack of health was a result of luck, chance, or fate.

The reliabilities of the three subscales of the MHLC must also be considered. For the two subscales that contributed to explanation of variance in risk-taking, the reliabilities ranged from .51 to .60. The CHLC, which did not enter the regression model had the highest reliability of the three subscales at .64.

Findings Relevant to the Review of Research

No studies were found with an adolescent sample related to the effects of health locus of control and social network on risk-taking. Findings in the review of literature are related to behaviors and relationships that are considered a risk to health.

Blum and Resnik (1982) found that adolescents who were pregnant were more external in belief, while those who used contraception were more internal in belief. Jamison et al. (1986a) found that adolescents with cancer had lower internal scores and higher external scores on the MHLC. Those adolescents also believed that the disease was not too severe, that it was better understood by doctors, and that they had a greater probability of recovery than those without the disease.

Those adolescents who became pregnant or who believed that cancer was not too severe and their probability of recovery was great, were possibly more willing to approach risks because of their belief that what happened to them was a result of fate, chance, or because of powerful others. Those who were internal in belief used contraception to avoid the risk of pregnancy.

Jorgensen et al. (1980) found that interpersonal relationships of adolescent couples were stronger than peer or family relationships. In a study by Held (1981), pregnant adolescents ranked their mothers as more important than they themselves. The adolescent's mother was the most disapproving of the pregnancy, yet the pregnant teen ranked her mother as most supportive. Galbo (1983) found that parents were the adults most frequently chosen by adolescents as significant.

Although interpersonal relationships of adolescent couples were beyond the scope of this research, a similar finding emerged. Findings in this study did determine that peers were slightly more influential than family even though peers were considered important by slightly fewer adolescents than family.

Findings Relevant to Design and Methodology

The design of this study was a descriptive, ex-post facto study. In this type study, the researcher attempts to explain or describe something that has happened in the life of an individual "after the fact" (Seaman, 1987). Data were described in terms of health beliefs that occur througnout life. In addition, social network which also develops over time was described. The health beliefs and the social network were together used to predict risk-taking in adolescents.

An assumption of the study was that adolescents participate in risk-taking behaviors. This assumption was found to be the case in this

sample. Another assumption was that nurses need knowledge about the health of adolescents in order to plan care that is effective for this age group. Implications for nursing will be presented with implications.

Although the reliabilities of the NSSQ and the RTQ were high, the reliabilities of the MHLC were not as satisfactory. Less than desirable reliabilities for the MHLC should be considered a limitation of the study.

Another limitation of the study involved the lack of randomization in the study. Findings should not be generalized beyond the sample described in the study.

Implications

Implications of the findings are presented as follows. For the purpose of this study, the implications are presented in relation to education and practice.

Education

Education is presented from two perspectives: that needed for the adolescent, as well as that needed for the health professional who works with the adolescent. Education needed by the adolescent should begin early in the K to 6 years of school. Early education programs which begin in the K to 6 years of school will serve as primary prevention interventions when their goal is comprehensive health education. Included in this comprehensive health education curricula should be concepts of preventive health care practices, health maintenance and promotion, changes in growth and development, individual health responsibility, and the influence of the peer group on behavior.

Health education concepts important for junior and senior high school students would serve as primary and secondary prevention

interventions. Secondary prevention interventions should focus on symptoms once stressors occur. Examples of secondary prevention intervention programs are comprehensive sex-health education, substance abuse prevention emphasis, driving safety, responsibility for individual health as well as the responsibility for the risks of behavior, and the influence of peers on health-risk behavior.

Health care professionals should first be grounded in growth and development principles for the period of adolescence. Knowledge of adolescence as a developmental stage different from childhood and adulthoos is essential to promote adolescent health. Inherent in this knowledge is also the ability to communicate with the adolescent therapeutically. Additionally, knowledge of and appropriate treatment for health problems specific to adolescents are essential to promote optimal health.

Practice

Health services should be geared to appeal to adolescents rather than pediatric clients. A protocol specifically for youth that delineates both the frequency and the content of health visits should be developed. Development of programs specific to the health needs and problems such as anticipatory guidance, issues of pubertal development, sexual behavior and responsibility particularly regarding contraception, smoking, and substance abuse are essential to improve the health of adolescents. These services would serve as primary and secondary prevention intervention programs.

Recommendations

Based upon the findings of this study, the following research recommendations were made to determine:

1. Why more females smoke than males and what effect this behavior is having on female adolescent health?

2. What effect drivers' education classes had on the findings of this study?

3. Why use of seat belts decreased with age?

4. What additional environmental stressors contribute to risk-taking?

5. What kinds of protective environments foster optimal psychosocial development?

6. Does risk-taking differ with the sexes?

7. Continue research on the MHLC with an adolescent sample to determine if reliability improves.

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Appendix A

Multidimensional Health Locus of Control Scales

Form A

Appendix B

Institutional Review Board Approval Form

The University of Alabama in Birmingham
Institutional Review Board for Human Use
205/934-3789

FORM 4: IDENTIFICATION AND CERTIFICATION OF RESEARCH PROJECTS INVOLVING HUMAN SUBJECTS

The Institutional Review Board (IRB) must complete this form for all applications for research and training grants, program project and center grants, demonstration grants, fellowships, traineeships, awards, and other proposals which might involve the use of human research subjects independent of source of funding.

This form does not apply to applications for grants limited to the support of construction, alterations and renovations, or research resources.

PRINCIPAL INVESTIGATOR Joy Whatley, R.N., M.S.N.

PROJECT TITLE Effects of Health Locus of Control and Social Network on Risk-Taking in Adolescents

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_____ 1. This is a training grant. Each research project involving human subjects proposed by trainees must be reviewed separately by the Institutional Review Board (IRB).

__X__ 2. This application includes research involving human subjects. The IRB has reviewed and approved this application on 4-28-88, in accordance with UAB's assurance approved by the United States Public Health Service. The project will be subject to annual continuing review as provided in that assurance.

__X__ This project received expedited review.

_____ This project received full board review.

_____ 3. This application may include research involving human subjects. Review is pending by the IRB as provided by UAB's assurance. Completion of review will be certified by issuance of another FORM 4 as soon as possible.

_____ 4. Exemption is approved based on number(s) _____.

4-28-88
Date

Russell Cunningham, M.S.
Interim Chairman of the
Institutional Review Board

Appendix C

Risk-Taking Questionnaire

Appendix D

Norbeck Social Support Questionnaire

Appendix E

Explanation of Study

EXPLANATION OF STUDY

DO NOT PLACE YOUR NAME ON ANY PIECE OF PAPER

Dear Students:

As a doctoral student in nursing at UAB, I am interested in your health. I am conducting a study which will attempt to identify if there is any effect in what you believe about who controls your health, and the people you feel are important in your life on how willing you are to approach or avoid taking risks.

It is very important that you answer all questions and that you answer them as honestly as you can. There is no way to identify who you are so there is no risk to you for being honest. Honest, complete answers may give me information that could improve the overall health of adolescents.

There are three questionnaires plus some general questions concerning your age, year in school, sex and race in the envelope. It should take approximately 20 minutes to complete the entire packet. Please read the instructions on each sheet of paper and follow the directions carefully. Completion of the questionnaires signifies your willingness and agreement to participate. When you have completed the questionnaire packet, place your completed questionnaires back in the envelope and seal the envelope. Give the sealed envelope to the teacher in exchange for a small thank-you from me for participating.

Good luck in your future endeavors.

Appendix F

Instructions for Teachers

INSTRUCTIONS FOR TEACHERS

1. Give each student an envelope containing the questionnaires.
2. Ask the students to open the envelope and take out the questionnaires.
3. Have the students read the first sheet, the explanation of the study, silently as you read it aloud. Your copy of the explanation is directly behind this sheet of instructions.
4. Remind the students to answer all questions honestly, thoroughly and to omit their name.
5. Please collect any envelopes of students that choose not to participate.
6. As the student finishes, collect the completed questionnaires in the sealed envelope.
7. In exchange for the sealed envelope of questionnaires, give the student one small white envelope which contains complementary coupons for food at various fast-food restaurants in the area.
8. THANK YOU FOR YOUR ASSISTANCE WITH DATA COLLECTION!

Appendix G

Demographic Data

Demographic Data

Please answer all statements honestly and thoroughly . Remember, there is no way you can be identified. Place a check mark next to the item that most nearly describes you.

1. How old are you?
   (1) 14____
   (2) 15____
   (3) 16____
   (4) 17____
   (5) 18____

2. What sex are you ? (1) Male___ (2) Female___

3. What is your race ? (1) White___(2) Black___(3) Other___
Please specify if you checked #3 above._____

4. What grade are you in ?
   (1) 9____
   (2) 10____
   (3) 11____
   (4) 12____

5. Counting yourself, how many total people live in your home?
   (1) Two___
   (2) Three___
   (3) Four___
   (4) Five___
   (5) Six or more___

6. What relationship are these people to you?
   (1) One parent___
   (2) Both parents___
   (3) Brothers, sisters___
   (4) Grandparent or grandparents___
   (5) Aunts, uncles___
   (6) Friends___

7. Do you have an allowance? 1. Yes ____ 2. No ___

8. Do you have any other source of income? 1. Yes____ 2. No ___

9. If you have another source of income, what is it?

10. Do you participate in any of the following programs or activities?

1. School sports activities	1.Yes___	2.No___
2. Weight control program	1.Yes___	2.No___

3. Extracurricular school activities(outside the classroom) 1.Yes___ 2.No___
4. Church related activities 1.Yes___ 2.No___
5. Regular planned exercise 1.Yes___ 2.No___

Listed below are common adolescent behaviors that affect health and general wellbeing. Please indicate your participation in these activities by checking a "yes" or "no".

11. Are you overweight? 1.Yes___ 2.No___

12. Do you drink alcohol? 1.Yes___ 2.No___

13. Have you had a dental exam in the last year? 1.Yes___ 2.No___

14. Do you wear seat belts? 1.Yes___ 2.No___

15. Have you ever had a moving violation traffic ticket? 1.Yes___ 2.No___

16. Do you smoke? 1.Yes___ 2.No___

17. Have you had a physical exam in the last year? 1.Yes___ 2.No___

18. Do you have sex? 1.Yes___ 2.No___

19. Do you eat food from the four food groups daily? (These include meat, fish, poultry, bread, cereal, fruits, vegetables, milk, dairy products). 1.Yes___ 2.No___

20. Do you often eat junk food in between meals or in place of meals? 1.Yes___ 2.No___

21. Have you ever experimented with drugs? 1.Yes___ 2.No___

22. Do you do things that you consider to be dangerous or that get you in trouble? 1.Yes___ 2.No___

23. How do you classify your health?
    1. Poor
    2. Fair
    3. Good
    4. Excellent

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Joy Harris Whatley

Major Subject Maternal Child Health Nursing

Title of Dissertation Effects of Health Locus of Control and Social Network on Risk-Taking in Adolescents

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PS-1428