RELATIONSHIP OF HEALTH LOCUS OF CONTROL AND INTERNAL-EXTERNAL LOCUS OF CONTROL WITH UTILIZATION OF A STUDENT HEALTH SERVICE

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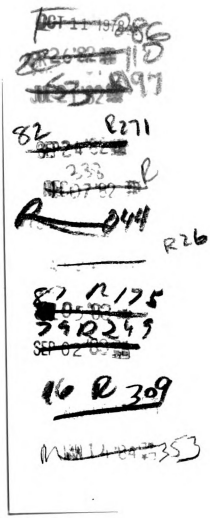

ABSTRACT

RELATIONSHIP OF HEALTH LOCUS OF CONTROL AND INTERNAL-EXTERNAL LOCUS OF CONTROL WITH UTILIZATION OF A STUDENT HEALTH SERVICE

By

James P. Stratoudakis

Rationale

Phenomenological psychology focuses on the relationship between the perceptions of the individual and his behavior. Perception is defined as a decision process whereby the individual uses discriminating cues made available when stimuli inputs from the environment are conceptualized and categorized.

According to this definition, the consequential choice of behavior is not merely the result of external stimulation. Internal factors, the consistency of which are found in personality, serve as mediators in the act of perception. A review of the literature indicates that Rotter's psychological construct of internal-external locus of control (I-ELC) can be considered to be an internal mediator of perception.

Locus of control (Rotter, 1966, 1975) refers to the extent to which an individual believes that he has control over the reinforcement which he experiences. Those who believe, report, or act as though forces beyond their control are the important factors in determining the occurence of reinforcing events are referred to as having an external locus of control. Such forces might include fate, chance, powerful others, or social constraints.

On the other hand those who believe and act as though they control their own future and believe that they are the effective agents in determining the occurrence of reinforeing events are referred to as having an internal locus of control. This hypothesized continuum of individual differences is conceptualized as a generalized expectancy or belief regarding the nature of the causal relationship between one's own behavior and its consequences.

Kirscht (1972) felt that locus of control should be associated with beliefs that health problems can be overcome, with action taken to ward off the problems, and with interest in information about protective actions. Furthermore, Wallston et al. (Note 1) developed a health locus of control scale (HLC) to measure locus of control in health situation. Wallston et al. also found that the value placed on health as well as HLC is related to health behavior.

Unfortunately, few studies have investigated the relationship among I-ELC, HLC, and health behavior. The

studies which did use these variables did not define health behavior in terms of utilization of student health services.

Research studies on the utilization of health services have used both non-college and college populations. Those studies based on non-college, adult populations indicate that demographic, economic, transportation, and need variable effect utilization of health services. Those studies using a college population clearly identify sex and need as significant factors associated with the utilization of a student health service on a college campus.

Although it seems entirely logical that the psychological constructs of I-ELC and HLC are related to the utilization of student health services (SHS), these relationships have never been studied in a college population.

Purpose

The primary purpose of this study was to examine the relationship between HLC and I-ELC with use of a SHS. The literature review on utilization of a SHS revealed that sex and perceived need are related to use of a SHS. Also, the literature review on HLC revealed an association between HLC and value placed on health.

The extraneous variables of sex, perceived need and value placed on health were controlled by design. They were included as independent variables along with the main independent variable of interest--use of SHS. The dependent variables were HLC and I-ELC.

A secondary purpose of this study was to examine the relationship of race, year in college, and estimated parental annual income with HLC and I-E scores.

Methodology

Residence halls on Michigan State University's campus were divided into four major complexes: north, south, east, and west. One male and one female residence hall were randomly selected from each complex for a total of 4 male and 4 female residence halls. A total of 411 undergraduate college students were randomly selected from these residence halls. There were 205 females and 206 males.

All students were asked to volunteer to complete a questionnaire booklet consisting of the following measures: (a) a value survey determining value placed on health; (b) HLC scale; (c) I-E scale; (d) questions to measure sex, perceived need, use or no use of the SHS, and demographic data.

Analysis

Multivariate analysis of variance procedures were performed on the data. The independent or classification variables were sex, value placed on health (high or low), perceived need (high or low), and utilization of SHS (use or no use). The dependent variables were HLC and I-E scores. Further multivariate analysis of variance procedures were performed to test the relationship of race, year in college, and estimated parental annual income as the separate independent variables with HLC and I-E as the dependent variables.

Results

Results indicated no simple or complex interactions among the independent variables and the dependent variables. Furthermore, when perceived need was eliminated as a variable, there were still no interactions among the extraneous variables and/or the main independent variable of use of a SHS with HLC or I-ELC. Likewise, when use was eliminated as a variable there were no interactions. Results also indicated no main effects or direct relationship between HLC or I-ELC with use of the SHS.

Concerning the relationship among the demographic variables of race, year in college, and estimated parental annual income with HLC and I-ELC, results indicated no differences among these various groups. However, there was a significant difference between sexes on I-E scores. Females were more external.

Implications and Recommendations

The implications of the findings are that it is reasonable to expect no realtionship among use of a SHS and value placed on health with HLC in a college population.

Further, the findings indicate no relationships exist between the extraneous variables of sex and perceived need with HLC. Also, there was no relationship between perceived need and I-E. However, sex did affect I-E scores, with females being more external than males.

It is possible that other psychological variables, such as attitude toward the SHS and satisfaction with services received could have greater impact on utilization of a SHS than HLC or I-ELC. This is subject to further research.

Concerning sample size, a larger one should be used. For further research a pre-established system which places emphasis on a stratified sampling by the independent variables could be an important consideration.

Regarding the HLC and I-E scales, their scale scores do not seem to be affected by race, year in college, and estimated parental annual income. This would imply that these scales can be used in future research with college populations without concern about the effects of these variables.

However, the possibility exists that the HLC scale in its present form is too general a measure of expectancy regarding specific health beliefs and health behaviors. A more behaviorally specific measure of locus of control regarding utilization of a SHS might be more sensitive to perceptions of control regarding utilization of a SHS.

This study did not purport to answer all of the questions that arise in connection with utilization of a SHS but, rather, was exploratory, specifying possible relationships between utilization of a SHS and certain psychological variables.

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By

James P. Stratoudakis

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DEDICATION

To Jay, James and Rose

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Chapter I

INTRODUCTION

Introductory Statement

"The people have been led to believe that national health insurance, more doctors, and greater use of high cost hospital-based technologies will improve health. Unfortunately, none of them will . . . The next major advances in the health of the American people will come from the assumption of individual responsibility for one's own health" (Knowles, 1975). More responsibility for the prevention and treatment of disease is shifting from the providers to consumers (American Psychological Association Task Force, 1976; Bellack, 1975; Mechanic, 1962; Rosenstock, 1974a).

It has been pointed out that the one crucial variable which serves as the basis for man's action in health and illness is the way he "sees" the situation (Bowden, 1974a, 1974b; King, 1962). Furthermore, Bowden (1974a, 1974b), Schontz (1975), and Weinerman (1964) have asserted that the overall perceptions of patients comprise the most neglected and the least appreciated element in medical care planning and evaluation, and that these perceptions limit

sharply the degree to which needed medical advice is sought, accepted, and heeded. Combs (1962) and Combs, Blume, Newman, and Wass (1974) suggest that in the helping professions (i.e. health profession), perceptions must become the center of research and the teaching-learning process.

Nature of the Problem

Considerable health related research and theory focuses directly upon perception as a determinant of health action (Allport, 1965; Becker, 1974; King, 1962; Hirscht, 1972; Knutson, 1965; Rosenstock, 1960, 1966, 1974a; Tornstam, 1975; and Youmans, 1974). The importance of the relationship between perception theory and health theory cannot be denied.

The role of perception in health theory has been discussed by psychologists who approach the problem in terms of personal tendencies, and by sociologists in terms of group membership and role performance, social interaction, and role definition. This study takes a psychological approach and proposes that where perception serves as a determinant of health behavior, personality factors influence health perception.

Before identifying the personality factors that influence perception, there arises a need to identify a perceptual model which lies within the framework of this approach. This study adopts Bruner's (1964) perceptual theory.

Bruner (1964) defines perception as a decision process whereby the individual uses discriminatory cues made available when stimulus (information) inputs from the environment are conceptualized and categorized. This cognitive process involves decision-making based on prior experience and the prediction of the probable value of the available cues. This infers more than a simple S-R (stimulus-response) sequence. It suggests an S-O-R model where some intrinsic characteristic of the organism acts as mediator. Therefore, perception, and the consequent choice of behavioral acts, is not merely the result of external stimulation alone but includes internal factors, the consistency of which may be found in personality.

Perceptual theory, as influenced by phenomenological theory, proposes that the self-concept acts as the set or screen through which all perceptions are formed; that is, perceptions are influenced by one's motivation to maintain or enhance self-concept. Stimuli which are consistent with current self-concept are seen as enhancing and may be assimilated into present self-organization. Stimuli which are inconsistent, and thereby threatening to self, may be perceived and acted upon in different ways depending upon the direction of motivation.

Research by phenomenological psychologists (Combs, et al., 1974; Combs & Snygg, 1959; Hamachek, 1971; Patterson, 1959; Phillips, 1956; Rogers, 1951; Snygg & Combs, 1949; Wylie, 1961, 1974; Ziller, 1973) have identified the "self"

as an important aspect of perception. Further, Sherif and Sherif (1967) suggested that the self-concept may be the most cogent determinant of the personal system. Phenomenologists also consider the self-concept as the basis of motivation (Combs, et al., 1974; Patterson, 1959; Rogers, 1951).

The internal factor of self-concept has been identified as an intrinsic mediator in perception and a great amount of time and energy has been spent in researching the self-concept. Yet, much of the evidence has been inconclusive due to the lack of adequate measures (Drude, 1973; Wylie, 1961, 1974). Another internal mediator is the Internal-External (I-E) personality dimension. This refers to the locus of control experienced by an individual.

Rotter (1966) postulates that a person's perception of his control over the environment affects the adequacy of his self-concept. Rogers (1961) identified locus of control as a trend which is evident in persons who have a positive self-concept: "The individual increasingly comes to feel that a locus of evaluation lies within himself. Less and less does he look to others for approval or disapproval . . . He recognizes that it rests within himself to choose" (p. 119).

Essentially, perceptions of control represent generalized expectancies that the outcome of most situations can be influenced by personal actions. Rotter (1966)

concluded that persons who are internally oriented make more attempts at controlling the environment.

Rotter (1966) has constructed an internal-external locus of control scale (I-E scale) which measures the extent to which a person perceives events as determined by factors external to himself (external control) versus the extent to which the individual perceives events as determined by factors intrinsic to himself (internal control).

Reviews of research (Joe, 1971; Lefcourt, 1966, 1971; Phares, 1973) employing Rotter's I-E Scale support Rotter's hypothesis that internals exert more control over their environment than externals. Heaton and Duerfeldt's (1973), Matthews' (1975), Phares' (1973), and Strassberg and Robinson's (1974) reviews of the literature on Rotter's (1966) concept of internal-external locus of control (IELC) strongly suggests that the IELC dimension includes within its domain the construct of self-concept. Both self-concept and locus of control are personality variables that describe an internal mediating process hypothesized to be capable of influencing behavior. Logically, it would appear that these two variables are correlated with each other. Studies (Heaton & Duerfeldt, 1973; Strassberg & Robinson, 1974; and others) demonstrated that persons with a positive self-concept are more internal.

Statement of the Problem

For this study, it becomes important to examine locus of control in relation to health behavior. The possibility that variations in locus of control are associated with variations in health-related behavior is an interesting one. Kirscht (1972) investigated this relationship and concluded that in the area of health and illness, beliefs in controllability should be associated with health action.

In order to provide a more sensitive prediction of the relationship between locus of control and health behavior, Wallston, Wallston, Kaplan and Maides (Note 1) have developed a more behaviorally specific Health Locus of Control (HLC) Scale. The HLC Scale is an area specific measure of expectancies regarding locus of control developed for prediction of health related behavior.

It stands to reason, therefore, that the health related locus of control scale would provide for more sensitive predictions of the relationship between locus of control and health behaviors. Rotter, himself, has written: "It has been demonstrated that the more specific the categories one works with, the higher the degree of prediction one can generate from one situation to another" (Rotter, Chance & Phares, 1972, p. 323).

Wallston, et al.'s studies (Note 1 and Note 2), which employed the HLC Scale, stressed the importance of the value placed on health. Wallston, et al. (Note 1) indicated that individuals who expect they can control their health also

value their health. Tornstam (1975) and Eshleman (1970) offer further confirmation of this position.

Viewing health behavior more generally, Moore (1975), Rosenstock (1974b), and Suchman (1967) report that many of the problems in preventive medicine and in the control and reversal of disease are related to values, beliefs, and the voluntary cooperation of the individual.

In sum, it becomes important to measure the relationship between the value placed on health and HLC in an attempt to understand health behavior. Furthermore, a behaviorally specific definition of health behavior was needed. Therefore, the specific health behavior investigated was utilization of student health services (SHS). In this study the SHS of interest was Olin Health Center on the campus of Michigan State University.

Need for the Study

The theoretical approach herein is an attempt to shed some light on possible associations of the psychological variables of locus of control and health locus of control, with use of a SHS.

Taking the position that locus of control, including self-concept and HLC, are internal mediating variables which affect perception, and behavior is a function of perception, it appears highly plausible that these constructs are correlates of health and illness behavior and correlated with each other. But, as the American Psychological Task Force

(1976), Kirscht (1974b), and Knutson (1965) have pointed out, an enormous gap still exists between knowing that health behavior is influenced by psychological factors and identifying the specific components of any particular health action.

What is required is a close examination of how each of the above variables are related to health behavior. The identification of these relationships as they contribute to the theory of health behavior seems significant. Furthermore, the possibility that these relationships may have predictive power in determining health behavior is undeniable.

Purpose of the Study

This study was concerned with the relationship of HLC and I-ELC with use of a SHS. The literature review on utilization of a SHS revealed that sex and perceived need are related to use of a SHS. Also, the literature review on HLC revealed an association between value placed on health and HLC.

The variables of sex, perceived need, and value placed on health were considered to be extraneous variables that had to be controlled. Extraneous variables are variables that are operating in the research situation in addition to the independent variable. Failing to control them results in a confounded study. Confounding occurs when an extraneous variable is related to the independent variable, and it might differentially affect the dependent scores (McGuigan, 1968). These extraneous variables were

controlled by including them in the design of this study as independent variables.

Therefore, the independent variables in this study were used of a SHS (two levels: use and no use); perceived need (high and low); value placed on health (high and low); and sex. There were two dependent variables: HLC and I-ELC.

This study was directed to the problem of testing, in a well population, on a college campus, the relationship of HLC and I-ELC with use of a SHS. Although it seemed logical that these psychological variables are related to use, their relationship has never been studied in a college population.

Furthermore, by including sex, perceived need, and value placed on health as independent variables, it was possible to determine if HLC and I-ELC were in any way affected by them in relation to use of the SHS.

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Chapter II

REVIEW OF LITERATURE

The material presented in this chapter was selected because it represents theoretical positions and areas of research pertinent to this study. The review deals with the following: (a) perceptual theory; (b) phenomenal self-theory; (c) social learning theory, including locus of control; (d) the relationship of perceptual theory, self-theory, social learning theory, and locus of control to health related theory and utilization of health care services.

Perceptual Theory

Over the past two decades the field of perception has come into prominence in psychology and a number of theoretical viewpoints have emerged. Of these, three specific orientations can be differentiated according to the kind of process which is identified as the key to understanding perception.

The theories which are cognitively oriented emphasize the mediation processes such as inferences, hypotheses, or problem solving (Bartlett, 1932; Bruner, 1957; Brunswik, 1955; Ittelson, 1962; Piaget, 1963; Vernon, 1957). While

each of these theories has a certain unique cognitive emphasis, all are descendents of Helmholtz's notion of unconcious inference in perception (Gibson, 1969).

Another group of theories of perception which are response-oriented assume the association process is the essential mechanism of integration, usually Pavlovian conditioning of stimuli to response. These theories subdivide into two classes. First, the Russian theories of perception (Gibson, 1969, pp. 53-57; Hebb, 1963; and Taylor, 1962) consider perception derived from and isomorphic with a motor copy of objects and events. Secondly, Gibson (1941) and Miller and Dollard (1941) consider perception as a discrimination process supplemented by response mediation. These response-oriented theories and cognitively oriented theories have been labeled enrichment theories of perception by Gibson (1969, Ch. 3, 4, 5).

The enrichment theories account for changes in perception in terms of some addition to the sensory input received from points of stimulation. The kind of enrichment varies with each theory. However, all have in common the assumption that a difference exists between sensations, which are "bare and meaningless," and perceptions, which arise when sensations are integrated and supplemented with information derived from some source other than the stimulus.

The third accomodation is a stimulus-oriented emphasis without separate mediating processes (E. Gibson, 1969; J. J. Gibson, 1966). Instead of assuming that stimuli

can give rise only to meager sensations, Gibson (1969, p. 75) considered the opposite assumption: that the environment is rich in varied and complex potential stimulus information, capable of giving rise to diverse, meaningful, complex perceptions. Gibson assumes there is information in stimuli to be picked up by a sensitive, exploring organism. This type of theory is stimulus oriented because it considers perception to be an active search in discriminating among information which is actually present in stimulation (Gibson, 1966).

The field of perception lies between sensory processes and cognitive processes. Perception either includes sensory and cognitive processes as one unit (i.e., it is an end product and process of an active search), or perception is a cognitive response process which occurs after the act of sensation has occurred.

It appears that these theoretical differences of how perceptual events should be explained do not allow for concise statements about the act of perception. In many cases, a cognitive process of problem solving is responsible for what is perceived. In other cases, a sensory mechanism based more directly on the impinging proximal stimulus is responsible. Nevertheless, it has been argued by Rock (1975, p. 8): "Our knowledge of neurophysiology is still rather limited, so it is unlikely that we could deal with the complex problems of perception in such terms at this time." Therefore, the strategy that has been adopted in this study is to look for central explanations of perceptions by

attempting to specify the kinds of events in the brain that must be assumed to be occurring. These explanations do not utilize direct neurophysical evidence.

For the purposes of the present study, it was assumed that all perceptions are influenced by both stimulus characteristics and the individual's personal characteristics; and that cognitive processes are largely responsible for what is perceived.

Perceptual Theory and Self-Concept

Perception, according to Bruner (1964), is a decision process whereby the individual uses discriminatory cues made available when stimulus (information) inputs from the environment are conceptualized and categorized. This cognitive process involves decision making based on prior experience and the prediction of the probable value of the available cues. This implies more than a simple S-R (stimulus-response) sequence. It suggests an S-O-R pattern where some intrinsic characteristic of the organism acts as mediator. Therefore, perception, and the consequent choice of behavioral acts, is not the result of external stimulation alone but of internal factors, the consistency of which may be found in personality.

Perceptual theory, as influenced by phenomenological theory, including self-concept, proposes that the self-concept acts as the set or screen through which all perceptions are formed; that is, perceptions are influenced by one's motivation to maintain or enhance self-concept. Stimuli which are

consistent with current self-concept are seen as enhancing and may be assimilated into present self-organization. Stimuli which are inconsistent, and thereby threatening to self, may be perceived and acted upon in different ways depending upon the direction of motivation. An individual may defend current self-concept by distorting or denying inconsistent information, he may accept only consistent information, or he may modify his self-organization and accept heretofore inconsistent information. He will choose to do that which will help him remove inconsistency and gain equilibrium (Papsidero, 1969).

A key proposition within this theory is that stability and consistency of self-concept are highly correlated with adjustment (Brownfain, 1952; Combs, et al., 1974; Lecky, 1945). Maladjustment or a tension state is considered a function of perceived threat to self (Combs, 1949). Threat occurs as a result of self-concept inadequate to cope with a perception. Since the person is always under the necessity of maintaining or enhancing the self-concept, perceptions which threaten it cannot be accepted into the personal organization. Bruner (1965) suggested that unless surprise, stress, conditions of exigent motivation, or threat are minimized, perceptual readiness will be restricted. This will lead to continual errors in perception.

Combs (1965) explained that while threat reduces perception, some people under threat apparently produce more effectively. Combs called this a function of challenge.

Threat involves one's perception of himself in jeopardy (personally, socially, and physically) with feelings of inadequacy to cope with threat. On the other hand, challenge involves a perceived threat, but with feelings of adequacy to deal with the threatening situation. An important proposition is that the better adjusted individual is one who has a positive self-concept, and the more positive the self-concept, the more adequate will be one's perceptions.

Phenomenological Psychology and Self-Concept

In order to study the personality characteristics of an individual as noted by Bruner (1964), a theoretical framework is needed which views human behavior through the eyes of the person doing the behaving. Phenomenological psychology is a framework which searches to understand the relationship between perceptions of the individual and his behavior (Combs & Snygg, 1959; Hamachek, 1971; Kelley, 1955; Lewin, 1943; Patterson, 1959, 1966, 1973; and Rogers, 1951).

Several phenomenologists including Combs, et al. (1974), Combs and Snygg (1959), Hamachek (1971), Patterson (1959), Phillips (1956), Rogers (1951), Snygg and Combs (1949), Wylie (1961, 1974), and Ziller (1973) have identified the "self" as a most important mediating variable in the perceptual process which ultimately influences overt behavior. Furthermore, Sherif and Sherif (1967) have suggested that the self-concept may be the most cogent determinant of the personal system. Combs, et al. (1974),

Festinger (1954), Patterson (1959) and Rogers (1951) underline this position by indicating that self-concept can serve as an important motivation force for personality growth.

It has been noted (Heaton & Duerfeldt, 1973; Papsidero, 1969) that the various terms used to describe these thoughts and feelings, i.e., self-concept, self-esteem, self-evaluation, and self-image, all mean much the same thing. Coopersmith's (1967, pp. 4-5) definition for self-esteem as referring to the evaluation a person "makes and customarily maintains with regard to himself" seems to reflect adequately the concept as proposed by self-theorists (e.g., Bishop, 1964; Wylie, 1961, 1974).

More specifically, Rogers' (1951) definition of the construct of self is most appropriate for the purposes of this study:

> The self-concept, or self-structure, may be thought of as an organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perceptions of one's characteristics and abilities; the percepts and concepts of the self in relation to others and to the environment; the value qualities which are perceived as associated with experiences and objects; and goals and ideals which are perceived as having positive or negative valence (p. 136).

In sum, self-concept can be viewed as an internal source of motivation capable of influencing overt behavior (Heaton & Duerfeldt, 1973). Also, Webster and Sobieszek (1974) have stated: "It is crucially important to ask when, under what circumstances, and for what types of people is self-maximization most likely" (p. 155). It is important to examine human behavior in behaviorally specific situations.

Development of Self-Concept

Webster and Sobieszek (1974) stress the role of significant others in the development of self-concept. Whatever traits a person has, whatever motivations, drives, attitudes, and characteristic ways of behaving, they are all explainable solely as the consequence of his previous interaction experiences with other persons.

However, it is not the actual behavior of others which directly determines an individual's actions. Rather, it is the individual's perception and interpretation of the expectations and acts of others which most influence his self-concept. The individual is thought to be aware of himself and of his actions, and is seen as an active agent who exercises a degree of control over the actions he chooses (Webster & Sobieszek, 1974).

The writings of Mead (1934) and James (1892) make explicit the idea that the individual may be thought of as having several selves, and that these selves vary with the particular social context in which the individual finds himself. By extension, it could be inferred that the individual's self-concept also changes with alterations in the social context (Combs, et al., 1974; Webster & Sobieszek, 1974). Thus, not only does he appear as several slightly different people at different times, but he also conceives of himself as being several different people, or, at least, he thinks of himself in several distinct ways.

This idea suggests that there are situational determinants of various selves. It becomes necessary to assert that one individual has several different self-concepts, dependent on what he is doing and with whom. It is the person's self-concept with respect to a behaviorally specific event which is of greatest concern in understanding behavior (Kirscht, 1974).

Self-Concept and Motivation

Motivation, according to phenomenologists (Shlien, 1970), has to do with what the person is trying to accomplish through his behaviors. Such behavior has a purpose; it is goal-directed. There is only one basic motive to which all behaviors are ascribed in this system. It is called "growth," or "self-enhancement," "self-realization" (Butler & Rice, 1963). Combs and Snygg (1959, p. 46) described it as "that great driving, striving force in each of us by which we are continually seeking to make ourselves ever more adequate to cope with life."

Rogers (1963) adds, "Whether the stimulus arises from within or without, whether the environment is favorable or unfavorable, the behaviors of an organism can be counted on to be in the direction of maintaining, enhancing, and reproducing life. That is the very nature of the process we call life" (p. 34).

Other theorists have also noted that the need for adequacy is the fundamental motivation of every human being

from conception to death (Combs, et al., 1974; Maslow, 1962; Papsidero, 1969). Allport (1961) has suggested that a person's mode of striving is a function of either adequate or inadequate self-concept.

Considering the utility of motivation in the development of self-concept, Reynolds (1966) suggests that a person is always motivated in terms of his own basic need which has been reinforced by significant others in behaviorally specific situations. Everyone is motivated to be and become as adequate as he can be in a given situation as he perceives it.

Internal-External Control and Social Learning Theory

Before proceeding to a specific discussion of internal-external locus of control (I-E), the theoretical framework from which I-E evolved is discussed; the theory is social learning theory (Rotter, 1954, 1965, 1966, 1975; Rotter, Chance & Phares, 1972).

Social Learning Theory is a molar theory of personality that attempts to integrate two diverse but significant trends in American psychology--the stimulus-response, or reinforcement theories and the cognitive, or field theories.

Within this theory three determinants of behavior are identified: (a) expectancies, (b) reinforcement, and (c) psychological situations. In its most basic form the general formula for behavior is that the potential for a behavior to occur in any specific psychological situation is a function of the expectancy that the behavior will lead to a particular

reinforcement in that situation and the value of that reinforcement, or the value of the goal toward which one is striving (Phares, 1973; Rotter, 1975).

To illustrate this general formula:

> A person will apply for a job not just because the salary is adequate but also because he has a reasonable expectation that his behavior of applying will be successful in getting the job. If his expectation is zero he will not apply even if the salary is very high. Also, even though his expectation is very high, he will not apply if the salary is very low. In short, the person is more likely to apply if both variables are high than if both are low or if one is high and the other is low (Phares, 1973, p. 2).

Of particular interest here are expectancies since I-E is regarded as an expectancy. Generally speaking, the magnitude of one's expectations is determined by several factors. Another example illustrates these factors:

> If an individual is running a footrace for the first time, his expectation of winning will be largely determined by his experience in competing in other events. However, as his experience in running increases, his expectancies for winning will be more and more determined by that experience and less and less by experience generalized from other events. Thus, an individual expectancy is determined by (1) expectancies generalized from past similar reward conditions, (2) expectancies based on specific experiences in the situation in question, and (3) the amount of experience in the latter situation (Phares, 1973, p. 3).

However, expectancy is only one of the three major determinants of a behavior potential in social learning theory. The second is the value of the reinforcement. Rotter (1975) noted:

> If we want to predict a specific behavior, such as studying for an exam, voting in an election, taking part in a student protest (using health care facilities), etc., we would have to know something about the values

> of the available reinforcement to a particular person before anything like an accurate prediction could be made (p. 58).

The third major variable is the psychological situation. Rotter (1975) noted:

> Psychological situations determine both expectancies and reinforcement values; consequently, they effect behavior potential. In addition, in social learning theory, the predictions of the potential of a particular behavior occurring in some situations must involve assessment of the alternative behaviors available in the same situation. For example, it is not sufficient if we would want to predict students' participation in some all-day protest to determine whether they are internals or externals according to some test; we would also need to know something about what alternative behaviors (such as reading in the library, attending classes, or even playing tennis) are available (p. 58).

In determining a behavioral potential, one must account for the three major variables in social learning theory: expectancy, reinforcement value, and psychological situation. However, "without doubt, the most frequent conceptual problem on the part of a number of investigators is the failure to treat reinforcement value as a separate variable" (Rotter, 1975, p. 59).

This present study attempted to account for these three variables by measuring generalized expectancy of control regarding life and health, value placed on health, and alternative means of obtaining health care. The review now considers the concept of internal versus external control of reinforcement, the first major variable generated from social learning theory, for the purpose of assessing generalized expectancies.

The Internal-External Personality Dimension: Locus of Control

The personality dimension of I-E has been described as locus of control or internal versus external control of reinforcement. This I-E construct is regarded as one of the major individual difference variables in psychology today (Phares, 1973) and has been succinctly defined by Rotter (1966, p. 1):

> When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control.

Locus of control refers to the extent to which an individual believes that he has control over the reinforcements which he experiences. Those who believe, report, or act as though forces beyond their control are the important factors in determining the occurrence of reinforcing events are referred to as having an external locus of control. Such forces might include fate, chance, powerful others, social constraints, the complexity or unpredictability of the world, etc.

On the other hand, those who believe and act as though they control their own future and believe that they are the effective agents in determining the occurrence of reinforcing events are referred to as having an internal

locus of control. This hypothesized continuum of individual differences is conceptualized as a generalized expectancy or belief regarding the nature of the causal relationship between one's own behavior and its consequences.

Relationship Between Locus of Control and Self-Concept

Hagmeier (1973), Heaton and Duerfeldt (1973), Lombardo and Berzonsky (1975), Matthews (1975), Phares (1973), and Strassberg and Robinson (1974) have reviewed the literature on I-E and self-concept. Their reviews strongly suggest there is a positive association between an internal locus of control and positive self-concept.

While the construct of self-concept is not a major variable in social learning theory from which I-E has emerged, it cannot be overlooked. Patterson (1973, p. 1975) argues that "Rotter's psychological unit of the person is similar to the self, and Rotter notes that the expectancies that a person has regarding the outcome of his behavior might be considered as the self-concept."

Furthermore, Lefcourt (1966) mentioned in his review of the I-E literature that individuals labeled as externals would be described in lay language as lacking in self-confidence, a construct which seems very closely related to self-concept.

Rogers' (1961) determination of what constitutes a positive as opposed to a negative self-concept focused on an internal locus of evaluation:

> Another trend which is evident in persons who have a positive self-concept related to the source or locus of choices and decisions, or evaluative judgments. The individual increasingly comes to feel that this locus of evaluation lies within himself. Less and less does he look to others for approval or disapproval; for standards to live by; for decisions and choices. He recognizes that it rests within himself to choose; that the only question which matters is "Am I living in a way which is deeply satisfying to me, and which truly expresses me?" (p. 119).

Further, Coopersmith's (1967) discussion of persons with a high self-esteem or self-concept suggests the element of self-control. He proposes that:

> . . . high self-esteem persons view themselves as: ". . . able to exert an influence upon people and events, partly because my views are sought and respected, and because I'm able and willing to present and defend those views . . . and have a fairly good understanding of the kind of person I am. I enjoy new and challenging tasks and don't get upset when things don't go well right off the bat" (p. 47).

Research by Baron (1970), Fish (1971), and Ziller, Hagey, Smith and Long (1969) indicated that people with high self-concept have a greater potential for self-reinforcement; that is, they have an internal locus of control. To test this contention, Platt, Eisenman, and Darbes (1970) correlated the Ziller, et al. (1969) self-esteem measure with Rotter's (1966) I-E scale. A correlation was hypothesized since low scores on the I-E scale indicate an internal orientation with respect to the perceived locus of reinforcements. Their results showed no significant correlations, thus failing to support the validity of the Ziller, et al. (1969) self-esteem measure, insofar as its relationship to perceived internal locus of control.

Another measure of self-concept, a feeling of inadequacy scale developed by Janis and Field (1959), was correlated with the I-E scale by Fish and Karabenick (1971). The feelings of inadequacy scale and the I-E scale was administered to 885 undergraduate males. Fish, et al.'s (1971) results supported the contention that males with higher, more positive self-concept tend to be more internally oriented. Moreover, Ryckman and Sherman (1973) found similar results for males and females.

Other studies using various self-concept scales have also reported findings that internals have more positive self-concepts than externals (Bellack, 1975; Breytspraak, 1974; Fitch, 1970; Heaton & Duerfeldt, 1973; Organ, 1973; Strassberg & Robinson, 1974; Wall, 1970; Warehime & Foulds, 1971).

To summarize, it is noteworthy that the majority of studies reviewed which identified the relationship between I-E and self-concept in a college population indicated that high self-concept is positively related to an internal locus of control.

Behavioral Correlates of Locus of Control

Basically, the usefulness of the I-E distinction is determined by the construct validity of the I-E scale. Based upon the definition and description of locus of

control, there should be specific and predictable differences in behavior of people who obtain differing scores on I-E measures.

Joe (1971), Lefcourt (1966, 1972), Matthews (1975), and Phares (1973) each offer an extensive review of the research findings regarding the relationship between locus of control and behavior. What follows is an overview which highlights the most significant findings.

Mastery of the Environment

If I-E refers to a generalized expectancy for control of one's life, then it appears reasonable that internals will be more active in their attempts to control, manipulate, or otherwise deal with their environment in an effective way. Research has shown that internals show more initiative and effort in controlling their environment. Internals seek information and adopt behavior patterns which facilitate personal control over their environments (Davis & Phares, 1967; MacDonald, 1970; Phares, 1968, 1973; Seeman, 1963; Seeman & Evans, 1962; Williams & Stack, 1972).

Related to the feeling that one can control the environment is the feeling of self-control. Research has demonstrated internals control their impulses better than externals (Foss, 1973; James, Woodruff & Werner, 1965; Straits & Sechrest, 1963; Zytkoskee, Strickland, & Watson, 1971). The research supports the hypothesis that internals show more initiative and effort in controlling their

environment than externals and also points out that internals can control their own impulses better.

Pursuit of Excellence

Everyday life tells us some people are more achievement oriented than others. Research has demonstrated that internals are characterized as having strong needs for achievement. Repeatedly internals were found to be more successful in academic achievement (Coleman, et al., 1966; Chance, 1965; Feather, 1965; Harrison, 1968; Hountras & Schaff, 1970; McGhee & Crandall, 1968; Nowicki & Roundtree, 1971; Wolk & DeCette, 1973). More specifically, these studies have shown that internal subjects spent more time in intellectual activities, showed more intense interest in academic activities and scored higher on intelligence tests and other academic tests than did externals. These findings were true for both college and non-college subjects. Similarly, an internal locus of control has been identified as characteristic of active, successful businessmen (Durand & Shea, 1974). Other research indicates that internals tend to value or prefer rewards based on skill more than those based on chance (Rotter & Mulry, 1965; Schneider, 1972).

Changes in I-E

Since I-E is regarded as influencing a wide range of behaviors, it is important to understand the conditions that may relate to changes in I-E beliefs.

Research suggests that locus of control beliefs can be influenced by events in the individual's life which relate to variations in uncertainty, lack of control, or unpredictability. That is to say, specific experiences which seemingly lead to an experience of uncertainty may also lead to a rise in an individual's external orientation (Crandall, Katkovsky, & Crandall, 1965; Eisenmann, 1972; Gorman, 1968; Kiehlbauch, 1967; MacArthur, 1970).

Concerning social influence and I-E, the literature suggests that internals manifest greater resistence to social influence from the persuasive attempts of outside agents while externals exhibit greater suggestibility, attitude change, and conformity. In short, internals seem particularly wary when the influence is subtle (Doctor, 1971; Gore, 1962; Ritchie & Phares, 1969; Strickland, 1970).

Relating psychotherapy and change in I-E, external patients have demonstrated an increase in internality after five weeks of crisis therapy (Smith, 1970). Gillis and Jessor (1970) found that among patients judged by their therapist as being improved, there was more of an increase in internality than among a sample of untreated patients. Those patients, on the other hand, who were not judged as being improved did not shift in an internal direction.

Masters (1970) presented a case report where his primary strategy involved altering the patient's perception of control. He suggested action for exerting control over the patient's conflict, and he found therapeutic intervention

successful. Although this is a singular case, it illustrates that a sence of personal control can be an integral component of psychotherapy. Similar findings were reported by Parks, Becker, Chamberlain and Crandall (1975).

Moreover, there is some evidence that externals may achieve the most significant therapeutic benefits from a structured therapist intervention within a spaced time format, while internals may require a therapist model of minimal control and structure (Dua, 1970; Kilmann, Albert, & Sotile, 1975). Plus, in a learning situation it was found that a Personalized System of Instruction course (PSI) caused a change in I-E. Externals became more internal at completion of the course (Johnson & Croft, 1975).

Cognitive Activity

Recently, it has been noted that the personality characteristics and behavioral correlates associated with an individual's locus of control orientation bear an interesting relationship with those associated with an individual's field-dependence orientation (Tobacyk, Broughton, & Vaught, 1975).

The field-dependence dimension was conceived of as a perceptual-cognitive style that emerged from research relating individual differences in performance on Witkin's perceptual tasks (i.e., the rod-and-frame test (RFT), the Embedded Figures Test, and the body adjustment task) to a variety of personality characteristics and behavioral

correlates. Generally, this field-dependence dimension is considered to be indicative of a more general cognitive style (Witkin, Dyk, Faterson, Goodenough, & Karp, 1962).

Typically, field-independent persons tend to be socially independent, possess a well-developed sense of separate identity, to be less open to persuasion, and to possess intellectualized defense mechanisms. In contrast, field-dependent persons rely on social cues to a greater extent in guiding their interpersonal relations. They tend to take a passive, dependent orientation toward their social environment; to be relatively unaware of their inner feelings; and to utilize unsophisticated defense mechanisms, e.g., repression and denial (Tobacyk, et al., 1975).

A comparison of the research on I-E and Field-dependence signals that internals are similar to field-independent persons and externals are similar to field-dependent persons. Although seemingly related to similar types of behaviors, the two dimensions have been reported to be uncorrelated themselves (Bartlet, 1969; Lefcourt & Telegdi, 1971; Rotter, 1966). There have been some attempts in predicting how a person will perform on tests of cognitive activity by combining I-E and field-dependence. The results presented by Tobacyk, et al. (1975) are interesting and stimulating while needing further research.

Personal Adjustment

Rotter (1966) hypothesized a low linear relationship between perceived locus of control and personal adjustment in a normal population. That is, those who view reinforcements as contingent on their own behavior (internals) are better adjusted than those who see reinforcement as determined by chance, fate, or powerful others (externals).

Internality has been found to be related to efforts to better one's life circumstances (Joe, 1971; Lefcourt, 1966; Phares, 1973; Rotter, 1966, 1972). Externality has been found to be related to anxiety and neuroticism (Feather, 1967; Hountras & Scharf, 1970; Liberty, Burnstein & Moulton, 1966; Watson, 1967) and to both suicide and accident proneness (Neuringer, 1974; Williams & Nickels, 1969).

In still another study (Butterfield, 1964), internality was associated with facilitating anxiety and constructive responses to frustration, while externality was associated with debilitating anxiety and intropunitive responses to frustration. Further, internality was found to be related to insight and externality to death anxiety and sensitization (Tolor & Reznikoff, 1967). Also, higher externality has been found in pathological groups than in normal groups (Harrow & Ferrante, 1969).

Finally, internals have been found to depict themselves as active, striving, achieving, powerful, independent, effective, and better adjusted to their environment, while externals have depicted themselves in opposite fashion

(Crego, 1970; DuCette & Wolk, 1972; Hersch & Scheibe, 1967; Platt & Eisenman, 1968; Smith, 1970; Strassberg, 1973).

In reveiw, the above research evidence can be construed as supporting the hypothesized relationship between internality and personal adjustment.

Summary

Internals have been found to show more initiative and effort in controlling their environment than externals. Further, internals are better able to control their own impulses. Internals spend more time in intellectual activities and perform better in academic endeavors. Generally, internals are more achievement motivated than externals. Internals tend to be more resistant to change, especially when the influence is subtle. On the other hand, externals tend to achieve significant psychotherapeutic benefits from a structured therapeutic approach. Regarding cognitive activity, internals tend to be more field-independent. Finally, internals are better adjusted and have a more positive self-concept than externals.

From this summary and the studies reported above, it may be concluded that locus of control is a psychological construct that contains within its domain the construct of the self as defined in this study. It follows that internal locus of control contains within its domain the notion of positive self-concept which phenomenologists feel positively affects overt behavior.

Antecedents of Locus of Control

While considerable progress has been made in identifying the behavioral correlates of I-E, relatively little is yet known about the conditions which lead to the development of an internal or external orientation (Phares, 1973). The current emphasis on I-E has grown from psychologists' desire to understand, predict, and control behavior. However, if we are ever to understand how personality develops and operates, we must be able to embed it in a network so that we can predict individual behavior from knowledge of its antecedent conditions.

The reviews of the literature on I-E reveal that the demographic variables of age, sex, and intelligence are not significantly associated with I-E in any orderly fashion regardless of population studied, college or non-college (Joe, 1971; Lefcourt, 1972, 1966; Matthews, 1975).

Mainly, the research on I-E has concentrated on social class and ethnicity and I-E. Numerous studies have been summarized in Joe (1971), Lefcourt (1972, 1966), and Matthews (1975). Nearly all the evidence points to greater externality among blacks than among wihites. Similar findings occur with respect to social class. Lower social class status is associated with externality.

However, the populations studied rarely included college students. When college populations were studied using the I-E Scale, social class and ethnicity were not significantly related to I-E (Gore & Rotter, 1963; Rotter,

1966). Moreover, the majority of studies using college populations never bothered to analyze data by using any demographic or antecedent variables (Abromowitz, 1969; Gorman, 1968; Hersch, Kulik & Scheibe, 1969; Hersch & Scheibe, 1967; Hountras & Scharf, 1970; Rotter, 1971).

Some studies have focused on populations of black college students (Escoffery, 1968; Lao, 1970; Williams & Stack, 1972). These data also support the general hypotheeses that internals have more information about their environment and are more achievement motivated.

Locus of Control and Health Behavior

There is a dearth of theoretical research concerning the relations among health related behavior and I-E. Those studies which have been conducted used Rotter's I-E Scale or some non-standardized version of it.

In a tuberculosis hospital, internally-oriented adult patients acquired more information about their physical condition than did externals (Seeman & Evans, 1962). Internals had more information, asked more questions of nurses and doctors, desired more information, and were more cooperative patients.

Research on smoking has shown adult non-smokers are significantly more internal than smokers (Foss, 1973; James, Woodruff & Werner, 1965; Straits & Sechrest, 1963). The study by James, et al. (1965) showed that, following the report of the Surgeon General, males who quit smoking and

failed to return to it were more internal than males who believed the report but continued to smoke. Likewise, externals have been reported as less able to quit smoking or lose weight and less involved in their own medical treatment and in illness prevention (Strickland, 1973). Perceived external locus of control was also associated with essential hypertension (Naditch, 1974) in black adults.

Brunner (1969) characterized middle-aged men who participated in vigorous physical activity as self-controlled with internal and goal-centered motives, while Sonstroem and Walker (1973) found internal adults to have more favorable attitudes toward physical activity, obtained significantly better fitness scores and reported significantly greater amounts of voluntary physical exercise than the rest of the sample.

Manuck, Hinrichsen, and Ross (1975) studied the relationship between life-stress, I-E, and illness related treatment-seeking behavior in college students. Under conditions of low life-stress, externals were more vulnerable to illness or, at least, more likely to seek treatment than were internals. Yet, under high levels of life-stress, internals and externals appear not to differ in this behavior.

Other studies have attempted to describe individuals who engage in preventative health behaviors using scales, other than Rotter's I-E Scale, designed to assess expectancy of control and motivation to exert control. Among children aged 7-18, Gochman (1971) reported a series of relationships

between perceived internal control and health beliefs: (1) there was an inverse relationship between beliefs about adaptive health actions and perceptions of vulnerability to health problems for those with high perceived internal control; (2) this relationship was negative for those with low internal control; and (3) where health was of importance to the child, perceived internal control was inversely related to perceived vulnerability. Gochman (1971) concluded that internal control interacts with health motivation in relation to health beliefs.

In another study (Dabbs & Kirscht, 1971) perceived control was unrelated to the degree to which freshmen college students obtained immunization against influenza. However, when the overall measure of control was divided into expectancy and motivation items, these two sets of items were related in opposite ways to the obtaining of an innoculation: motivation for control positively, and expectancy negatively. The motivation scores were also positively related to a measure of vulnerability to influenza, while expectancy scores related negatively.

Kirscht (1972) studied non-academic university employees and found that those higher on internal control regard themselves as less vulnerable to ill-health conditions. Secondly, general expectancy for control (i.e., internals) was positively related to the overall efficacy of actions to ward off diseases.

Both Dabbs and Kirscht (1971) and Kirscht (1972) related their own non-standardized measures of perceived control to preventative health behaviors. While their intent to create measures particularly relevant to health situations is a step in the right direction, the validity of their measures is open to question.

Health Locus of Control

The need for a standardized instrument which delineates an individual's locus of control in a health situation has been answered by Wallston, Wallston, Kaplan, and Maides (Note 1). These researchers have developed a Health Locus of Control Scale (HLC). The HLC Scale is an area specific measure of expectancies regarding locus of control developed for prediction of health related behavior.

Rotter, himself, has written that, "It has been demonstrated that the more specific the categories one works with, the higher the degree of prediction one can generate from one situation to another" (Rotter, Chance, & Phares, 1972, p. 323). It stands to reason, therefore, that the health related locus of control scale would provide for more sensitive predictions of the relationship between locus of control and health behaviors.

Wallston, et al. (Note 1) presented adequate reliability and validity data which showed that the HLC Scale does work in an applied setting. Specifically, they observed that undergraduate subjects who placed a high

value on health and who were also classified as internals by their HLC scores engaged in positive health behavior by choosing more pamplets on hypertension than the other subjects. Nevertheless, they encouraged further research using their scale to determine if HLC is an effective measure.

Nature of Human Values: An Overview

Reviewing the literature on values, Rokeach (1973) stated: "there are compelling theoretical reasons for assuming that the study of a person's values is likely to be much more useful for social analysis than a study of the values that objects are said to have" (p. 5). With this consideration in mind, the following definition of value is presented: "A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach, 1973, p. 5). This definition contains the concept of belief which in the interest of clarity needs to be distinguished from the concept of values. Therefore, this definition of value is further delimited by distinguishing between beliefs and values.

A fundamental distinction between beliefs and values derives from the philosophical differentiation between questions of fact and questions of value. "Belief statements

refer to what is possible, what exists, what happened in history, what a person can do. They are framed in terms of expectancies, hypotheses, subjective probabilities, assumptive worlds, cognitive maps . . . Value judgments refer to what is wanted, what is best, what is desirable or preferable" (Scheibe, 1970, pp. 41-42).

Origin of Values

To a substantial degree, man learns what he values from significant others and personal experience. The family based years of human development, and specifically those of early childhood and adolescence, are crucial for the learning and development of values.

During the first few years, the child gains his value orientation (i.e., towards health) from his closest human relationships--parents and siblings. He lacks the knowledge and maturity to question and discriminate. He takes and experiences what there is (Konopka, 1973). Questioning and re-evaluation wait until adolescence (Erickson, 1968).

Fortunately, the origin of values does not need to be theoretically deduced in order for the values themselves to be measurable (Scheibe, 1970). For the purposes of this study, it is sufficient to identify health value without attempting to trace its origin.

Value: A Mode of Conduct and an End-State of Existence

When it is said that a person values something, it can be either his preferences concerning desirable modes of conduct, or desirable end-states of existence. Rokeach (1973) refers to these two kinds of values as instrumental and terminal values, respectively. In this study, the value of interest is a terminal one. Rokeach (1973) delineates two kinds of terminal values: personal (self-centered) and social (society-centered). This study is interested in a personal-terminal value: health.

Values and Locus of Control

It has been noted that locus of control research has been concerned with individual differences in expectations about means available for achieving valued outcomes (Naditch, 1974). Furthermore, locus of control assesses an individual's expectancy or belief that he has control over his behavior. Phares (1973) and Rotter (1975) noted: "The bulk of the I-E research carried out thus far has not tended to examine systematically the situation and reinforcement value."

It follows that reinforcement value is "the degree of preference for any one of several reinforcements to occur when the possibilities of occurrence are equal. Such preferences are independent of expectance" (Patterson, 1973, p. 160). In addition, the value of any reinforcement is a

function of the reinforcements it has previously been paired with, or had led to, or is perceived as leading to.

Stated in terms of expectancy and reinforcement value: the value of a particular reinforcement (i.e., healthy state) is a function of the expectancy (i.e., HLC) that this reinforcement (a healthy state) will lead to other reinforcements (health) in the same situation and to the value of these reinforcements in a situation. In this study, the situation examined is health behavior which is further stipulated as utilization of a SHS.

Therefore, in light of the above, if a person is to engage in rewarding health behavior, such as utilization of a SHS, he must believe he can control his behavior regarding health and he must value health. A person who has had positive, rewarding experiences and/or has learned from previous experience that health is important, is most likely to value health and engage in positive health behavior if given the opportunity.

Value Placed on Health and Health Locus of Control

Wallston, et al. (Note 1) found that the relationship between health locus of control beliefs, and health care related behaviors is highly complex. In neither of their two validation studies (Wallston, et al., Note 1) did they predict, or observe simple main effects for the HLC factor. For example, they did not expect HLC-internals, in general, to seek more information about hypertension than

HLC-externals. They expected and found this to be true only for subjects who placed a relatively high value on health. Their findings are consistent with Rotter's assertion that: "without doubt, the most frequent conceptional problem on the part of a number of investigators is the failure to treat reinforcement value as a separate variable" (Rotter, 1975, p. 59).

The importance of the value placed on health was also noted by Tornstam (1975). He proposed a relationship between the value of health and the perceived subjective health status of an individual, which affects a person's perceptions of his objective health status, and ultimately his health behavior. Tornstam (1975) proposed that more research be conducted in this area.

Furthermore, in a recent exchange this present writer had with Kenneth Wallston (Note 2), he stressed the importance of measuring value placed on health along with HLC. Eshelman (1970) has also recognized the importance of values and health behavior. Therefore, what seems essential is a measure of the value a person places on health. Such a measure of value was obtained in this study.

Perceptual Theory and Health Theory

There have been numerous articles and studies suggesting a close association between perceptual theory and health theory (Allport, 1965; Rosenstock, 1974a). Knutson (1965) noted:

> Through this remarkable process of perception, each man develops for himself his own way of defining the world in which he lives. Each creates through experience a private world, a world of personal meanings which guide him in his choice of actions. How he responds on any health related matter will depend upon the meaning the specific situation has for him, and on the relative significance he assigns to alternatives perceived (p. 147).

Weinerman (1964) reviewed a series of studies on patients' perceptions of group medical care. He highlighted the factors that determined the patients' perceptions of the medical care they received and of the practitioners who provided the care. Weinerman (1964) asserted that the overall perceptions of patients comprise the most neglected and least appreciated element in medical care planning and evaluation and that they limit sharply the degree to which needed medical advice is sought, accepted, and heeded.

Similarly, whether or not an individual seeks medical care is affected by the impact of sickness, as perceived by him (Gilson; Gilson; Bergner; Bobbitt; Kressel; Pollard & Vesselago, 1975). The importance of perception in health theory cannot be denied (Becker, 1974; Kelson, Puellella & Otterland, 1975; King, 1962; Kirscht, 1972, 1974a; Papsidero, 1969; Rosenstock, 1960, 1966, 1974a, 1974b; Tornstam, 1975; Youmans, 1974; Young, 1968; Young & Simmons, 1967). Recognizing that perception is an integral aspect of health theory, and ultimately behavior, the review next turns to the utilization of health care services.

Utilization of Health Services

The problem of why different patterns of utilization of health services occur within and among populations is of interest to behavioral scientists involved in medical care research. The complexity of this problem is represented in the concept of "illness behavior." This concept is defined by Mechanic and Volkart (1961) as follows:

> By illness behavior we mean the way in which symptoms are perceived, evaluated, and acted upon by a person who recognizes some pain, discomfort, or other signs of organic malfunction. Two persons having much the same symptoms, clinically considered, may behave quite differently; one may become concerned and immediately seek medical aid, while the other may ignore the symptoms and not consider seeking treatment at all (p. 51).

Furthermore, Kirscht (1974) noted:

> Illness behavior, narrowly defined, includes only that portion of the process in which the individual attempts to discover what is wrong--the transition between feeling states and undertaking some course of restorative action or resuming ordinary behavior. But the boundaries are fuzzy, and it is not entirely clear whether some behaviors represent illness or sickness. We have used a broader definition that includes symptom experiences, self-treatment of untreated episodes, and seeking care. In many instances, seeking care is a mixed category that contains many types of utilization without regard to the stage of the episode (p. 387).

This general definition of illness behavior raises the question: "What are the characteristics of persons who use health services?" Also, "What motivates a person to utilize health services?" Is it simply a matter of illness, or are there other psycho-social factors at work?

The use of health services has come to be recognized as the intricate end result of a number of related and interacting factors (Geertsen, Klauber, Rindflesh, Kane &

Gray, 1975). Understanding such a complex set of interactions is almost impossible without a theoretical model to serve as a framework for analysis.

It is not surprising, therefore, that a number of models, each arising from different theoretical positions and each placing emphasis on different aspects of the problem, have been proposed for understanding illness behavior when narrowly and broadly defined (Anderson & Bartkus, 1973; Kirscht, 1974a).

Such models differ considerably in the domain of factors that are used to explain behavior and they differ in what is to be explained, ranging from actions taken when symptoms are experienced, to utilization of health care services, to all health and illness behavior (Geertsen, et al., 1975; Kirscht, 1974a).

For purposes of this study, a broader definition of illness behavior, namely, utilization of health care services, was employed. What follows is a consideration of some models of health behavior, succeeded by a section on health theory, self-concept and locus of control. Finally, a section on models of utilization is presented.

Theoretical Models of Health Behavior

The following models of health behavior proceed from the assumption that perception is a process characteristic of living human beings. The role of perception in health theory has been discussed by sociologists who approach the

problem in terms of epidemology, groups membership, role performance, social interactions and role definition; and by psychologists who approach the problem in terms of personal tendencies.

Sociological Models

Suchman's (1969) sociological model explains health perception, as well as motivation and behavior, in terms of (a) social group structure, defined as either parochial (traditional, ethnocentric, closed) or cosmopolitan (progressive, individualistic, open), and (b) health orientation, described as either popular (nonscientific), or scientific (objective, professional). His major hypothesis is that the popular-nonscientific group will tend to have perceptions of illness which inhibit use of medical care, while the cosmopolitan-nonscientific group's perceptions will enhance medical care.

Also, Suchman (1967) attempted to bridge the gap between the psychological and sociological views by proposing an "epidemiological model," more pragmatic than theoretical, which considers (a) personal readiness factors (i.e., internal tendencies influencing perception), (b) social control factors (i.e., environmental influences upon perception), and (c) situational factors (i.e., perceived attributes of the health realted object or agent). Thusly, Suchman combines "psychological readiness," "social approval,"

and object characteristics in a social-psychological model on health related perception and behavior (Papsidero, 1969, p. 37).

Recent research on Suchman's model of social factors in health care utilization (Geertsen, et al., 1975) indicated some real merit in pursuing further his approach to utilization behavior. However, Geertsen, et al. (1975) stated: "To his approach we would add the need to assess the subcultural beliefs and practices of different groups of individuals independent of their social group structure" (p. 236).

Psychological Models

Rosenstock's (1966, 1974a, 1974b) psychological model utilizes the construct of psychological readiness, consisting of the individual's beliefs and perceptions of susceptibility (vulnerability) and seriousness (severity), otherwise described as perceived health threat. These subjective threats, considered specific to individual diseases, fall within a continuum of awareness and tend to produce a sensitivity to associated stimuli and a readiness to respond to them. That is, health motives do not exist unless these perceptions include distinctive cues which result in the conscious experience of a health threat, such threat possibly ranging from low to high intensity, where lower levels are considered more effective than upper levels or no threat at all.

Kirscht's (1972) psychological model explains health beliefs and behavior by using a perception of control model. Individual's perceptions of their control over the environment and its relationship to behavior has received considerable support (Lefcourt, 1966, 1972; Matthews, 1975; Rotter, 1966). This study adopted this psychological model of health behavior. It remains desirable to elaborate on perception of control.

Essentially, perceptions of control represent generalized expectancies that the outcome of most situations can be influenced by personal actions. Rotter (1966) concluded that persons who are internally oriented made more attempts at controlling the environment. Research by Davis and Phares (1967) and Seeman and Evans (1962) indicated that internals actively seek information that would be useful in the future.

Kirscht (1972) felt these findings suggest that, in the area of health and illness, beliefs in controllability should be associated with beliefs that health problems can be overcome, with actions taken to ward off the problems, and with interest in information about protective actions. However, health beliefs and behavior have received little attention as a specific area in which to investigate perceptions of control. "Since many health actions depend on voluntary behaviors and many programs are predicated on an assumption of controllability, people's expectancies

concerning control seem a potentially worthwhile area of investigation" (Kirscht, 1972, p. 225).

Theoretical Models of Health Behavior: Self-Theory and Locus of Control

The significance of self-theory to health theory has been expressed by Knutson (1965), Litman (1962), Papsidero (1969), Schontz (1975), and Wright (1960, 1967), who have emphasized that what is of primary importance in health behavior is the person's self-concept. The major proposition is that if a person has a positive self-concept, he will engage in behaviors to protect or enhance his health and self-concept.

However, models of health behavior, including utilization, have not included the self-concept as a major variable of interest. Papsidero (1969) noted:

> In neither Suchman's sociological model nor in his epidemiological model is the self an explicit theoretical consideration; however, its role may be inferred with respect to the emphasis on "social role definition" in the former model, and "host factors" in the latter model . . . While the Rosenstock model on perceived health threat does not explicitly consider the phenomenal self, Levanthal has explained that: '. . . The belief in susceptibility and severity are aroused by a variety of health-relevant stimuli . . . However, stimuli will arouse the motivating beliefs if the beliefs are consistent with more basic beliefs about the self' (p. 37).

In taking a psychological approach to health behavior, this study has assumed that where perception serves as a determinant of behavior, personality factors, such as self-concept, influence perception. But, as previously noted, the

psychometric instruments for assessing the personality factor of self-concept are inadequate (Drude, 1973; Wylie, 1961, 1974). Nevertheless, it remains desirable to examine other intrinsic personality factors that affect perception.

Touching upon the most salient points developed, the previously discussed personality factor locus of control is related to self-concept and is measurable. Furthermore, Kirscht's (1972) model of health behavior explains behavior by using a perception of control framework grounded in locus of control. Likewise, there exists the HLC scale to measure expectancy of control over health. However, more research needs to be conducted relating locus of control to utilization behavior.

Models of Utilization of Health Services

This section presents various models of utilization which are applicable to non-college and college populations.

Utilization in the Non-college Population

Berkanovic and Reeder (1973) found that: (a) unequal access, (b) culture of poverty, and (c) cultural and social psychological differences related to ethnicity and socio-economic status are all important determinants of utilization of health services. Similar findings were reported by Ludwig and Gibson (1969) and Ort (1974).

Furthermore, Anderson (1968) proposed a behavioral model of three distinct components to explain utilization

behavior: (a) predisposing - demographic variables; (b) enabling - economic and transportation variables; and (c) need - morbidity variables. Using this model he found the need component the most and the enabling the least valuable predictor of total health care utilization.

Feldstein (1964) used an economic model and found enabling factors the most valuable predictors of utilization. Wirick and Barlow (1964) added social variables, and were able to show that background characteristics in addition to economic factors affect patterns of utilization although need was the most important predictor of use. Bice and White (1969) studied utilization patterns on an international level and perceived need emerged again as the best predictor of utilization.

Additional studies in a general non-college population have linked powerlessness or externality to a low level of utilization of some types of preventive care. In a study of children in a well baby clinic, Morris, Hatch, and Chipman (1966) found that mothers who scored high on measures of powerlessness and social isolation obtained fewer immunizations for their babies. Further, Nakagawa (1971) found that women who scored high on the Srole anomie scale were slower to seek prenatal care and were less likely to have visited the clinic or doctor for a postnatal visit or to have secured immunizations for their children.

Bullough (1972) found that the more well known barriers to the utilization of preventive services were

reinforced by alienation, including feelings of powerlessness, hopelessness and social isolation. Family planning behavior was found to be the type of preventive care most influenced by alienation. However, no studies have been conducted linking HLC and I-E to value placed on health, perceived need, and health behavior (utilization of a Student Health Service) in a college population.

Utilization in the College Population

In studies concerning the utilization of a SHS by college populations, the various demographic variables and enabling variables reported to affect utilization in the general population were not associated with use of SHS by college populations. Rather, reviews of the literature by Schmale (1972) and by Weiner (1974) disclosed a diverse array of personal factors to be associated with usage of college health services. These factors include: students' predisposition to adopt the sick role; and of stress (Mechanic & Volkart, 1960); self-perception of having a high incidence of illness (Singer, Singer, & Thompson, 1963; Solleder, 1964); having an academic rating other than satisfactory (Lewis, 1966a); being less self-reliant (Summerskill & Darling, 1957); and possessing a faulty coping style (Jacobs, Spilken, & Norman, 1971; Spilken & Jacobs, 1971).

The implications of the above findings are that students who visit the college health service are less

adequate, more dependent, and more troubled individuals than their counterparts who infrequently visit the health service (Weiner, 1974).

One study (Manuck, Hinrichsen & Ross, 1975) examined the relationship between life-stress, I-E and utilization of SHS. The results indicated that under conditions of low life-stress, externals are more vulnerable to illness or, at least, more likely to seek treatment, than are internals. However, under high levels of life-stress, internals and externals appear not to differ in this behavior. Finally, satisfaction with health service care has also been associated with use of SHS (Comstock & Slome, 1973; King & Goldman, 1975).

Using Anderson's (1968) model of utilization, Burke (1974) reported that females had a greater perceived need for, and greater utilization rate of, a SHS. These findings are constant in utilization studies using populations consisting of both males and females (Kasl & Cobb, 1966). In order to control this sex difference the majority of studies on utilization of a SHS used either all male or all female populations (Jacobs, et al., 1970, 1971; Lewis, 1966a, 1966b; Mechanic, 1960; Parens, 1966; Spilken, et al., 1971). Recently, Anderson and Bartkus (1973) found that for both male and female undergraduates, an increase in need resulted in, as the above implies, greater use of a SHS.

Chapter III

METHODOLOGY AND PROCEDURES

Research Population

Two hundred and six undergraduate males and two hundred and five undergraduate females living in Michigan State University's campus residence halls were the sample in this study.

Rationale

The review of the literature on locus of control and health locus of control strongly suggests that the use of an undergraduate college population controls for antecedent and/or demographic variables though to affect locus of control and health locus of control.

Concerning the literature on the utilization of a SHS by undergraduate college populations, it has been determined that the use of undergraduates controls for the econo-demographic and enabling variables which are felt to affect utilization of health services. However, sex and perceived need have been found to affect utilization. The majority of SHS utilization studies use either male or female populations to control for sex effects on utilization.

In this study the selection of both male and female undergraduates for the population and the inclusion of perceived need controlled by design the sex and need effect on utilization. With sex and need built into the design, it was possible to achieve a "cleaner," more precise description of the population on the major psychological variables of interest.

Sample Selection

Michigan State University campus is divided into four major residence hall complexes: north, south, east, and west. One male and one female residence hall were randomly selected from each complex for the total of four male and four female residence halls.

Fifty students were randomly selected from each residence hall in the following manner: (a) the floors in each residence hall were randomly ordered. For example, Dorm A, males, with five floors resulted in the order: 3, 2,4,1,5,; (b) rooms on each floor were randomly selected. For example, Dorm A, males, the third floor room numbers ranged from 301-355. Eleven rooms were randomly selected on this floor and on each of the other floors for a total of 55 rooms. Starting with the third floor, each room selected was contacted; (c) the nature of the study was explained to the student who answered the door and this student was asked to participate on a voluntary basis. If two or more students were present in a room only one student was asked to complete the questionnaire. This procedure was followed for each

of the dorms. (See Tables 1 and 2 for characteristics of the dorms sampled).

Collection of Data

At the time of distribution of the questionnaires, each student participant's room number was recorded. Approximately one hour after distribution, questionnaires were personally collected by the researcher.

A total of 440 questionnaires were distributed, 220 males and 220 females. The final count of useable answer sheets was 206 males and 205 females. Once the data were collected, the list of room numbers was destroyed to safeguard anonymity as required by Michigan State University's committee on use of human subjects.

Instrumentation (Scales)

The questionnaire packet contained the following scales in this order: (a) Health Value Survey; (b) Health Locus of Control Scale (HLC); (c) Rotter's I-E Scale; (d) demographic items; (e) questionnaires to measure perceived need and utilization of SHS. (See Appendix A for a sample of the questionnaire booklet.) The following sections describe the types of scales used and the procedures employed in the development of each scale.

Rotter's I-E Scale

The I-E Scale measures a person's beliefs about the nature of the world, and general expectancies or beliefs

TABLE 1

Original male dorms sampled and sample sizes for analysis*

Dorm	No. of Floors	No. of Floors Sampled	No. of Rooms per Floor	No. of Rooms per Floor Randomly Sampled	Total No. of Rooms Sampled (1 Person per R)	Analyzed*
A	5	5	54	11	55	52
B	3	3	20,40,65	8,17,28	53	50
C	4	4	50	14	56	53
D	4	4	26	14	56	51
					220	206

TABLE 2

Original female dorms sampled and sample size for analysis*

Dorm	No. of Floors	No. of Floors Sampled	No. of Rooms per Floor	No. of Rooms per Floor Randomly Sampled	Total No. of Rooms Sampled (1 Person per R)	Analyzed*
E	12	5	24	11	55	50
F	6	6	24	9	54	51
G	5	5	24	11	55	53
H	4	4	50	14	56	51
					220	205

about the control of reinforcement. Individual I-E scores are computed by adding the number of external items the individual selects. Thus, a high score reflects an "external" orientation and a low score indicates an "internal" orientation. The highest possible "external" score is 23.

Forced-Choice Technique

The Internal-External Scale (I-ES) is a 29-item, forced-choice measure including six filler items. The forced-choice technique was simultaneously developed by several psychologists working in industry or in the armed services during the decade of the 1940s (Jurgensen, 1944; Shipley, Gray & Newbert, 1946; Sisson, 1948). Essentially, it requires the respondent to choose between two descriptive terms or phrases that appear equally acceptable but differ in validity. The paired phrases may both be desirable or both be undesirable (Anastai, 1968, p. 458).

The construction of a forced-choice inventory requires two principal types of information regarding each response alternative, vis., its social desirability or preference index and its validity or discriminative index. The latter may be determined on the basis of any specific criterion the inventory is designed to predict, such as academic achievement or success on a particular kind of job, or it may be based on the factor loading of items or their theoretical relevance to different traits. Social desirability can be ascertained by having the items rated

for the variable by a representative group, or by ascertaining the frequency with which the item is endorsed in self-descriptions (Anastasi, 1968, p. 459).

In order to rule out the operation of the social desirability variable, forced-choice tests contain items that are equated in general social desirability. However, research has shown (Anastasi, 1968; Cronbach, 1970) that forced-choice tests can be faked.

Studies regarding the relationship between internal-external locus of control and social desirability have been contradictory. Strickland (1965), Tolor and Reznikoff (1967), Tolor and Jalourec (1968) and Rotter (1966) found that nonsignificant correlations between the I-E Scale and the Marlow-Crowe Social Desirability Scale (MC-SDS), while Feather (1967) and Altrocchi, et al. (1968) found a significant relationship between I-E Scale scores and MC-SDS scores. Berzins, Ross and Cohen (1970) reported a significant correlation between the I-E Scale and the Edwards Social Desirability Scale. These findings indicate that the I-E Scale is not completely free of the social desirability set as claimed by Rotter (1966).

Recently, Rotter (1975) stated:

> Even though the forced-choice method allows control over social desirability, it is well known that such measures change in their relationship to social desirability under different testing conditions . . . the I-E Scale is subject, as are all personality measures, to the conditions of testing and the known or suspected purposes or nature of the examinee (p. 62).

Nevertheless, in discussing the measurement of I-E, Rotter (1975) and Throop and MacDonald (1971) pointed out that Rotter's I-E Scale is presently considered the best test for assessing global locus of control in a population.

Construct validity of the I-E Scale is indicated by the differences in behavior for persons above and below the median of the scale or from correlations with behavior criteria or mean differences in total scores between groups. The fact that median splits are a much less sensitive measure of population characteristics, and the fact that I-E was a dependent variable in this study, total mean I-E scores as opposed to median splits were used in the analysis. Again, total means scores are more sensitive measures of general population characteristics, and this study was interested in a college population. The discussion in Chapter II of locus of control, its antecedents and behavioral correlates, offers all the evidence regarding the construct validity of the I-E Scale.

The test-retest reliability coefficients for the I-E Scale have ranged from 0.49 to 0.85 over a two-month interval. A group of 60 college students who participated in the test-retest measure for a year exhibited a reliability coefficient of 0.72 based on the correlation of their total internal-external score the first year, with their total score the second year. Internal consistency estimates of reliability have ranged from 0.65 to 0.79 with nearly all correlations in the 0.70s (Rotter, 1966).

Discrimination among respondents is indicated by the low relationship with such variables as social desirability, intelligence, and political affiliation. According to Minton (1967), the internal-external scores of 69 males were unrelated to political liberalism or conservatism, "left" versus "right" ideology, or attitude on international relations for 67 females.

Rotter (1966) reported that sex differences on the I-E Scale among college students appear to be minimal. Williams (1972) reported no significant differences between male and female black college students on locus of control as measured by the I-E Scale. However, Feather (1967, 1968) reported that females earned significantly higher external scores than males at the University of England.

Rotter (1966) reported a comprehensive review of the work on the development, validity and reliability of the internal-external scale. According to Rotter (1966, 1975), the item analysis and factor analysis indicate high internal consistency for an additive scale. In other words, the I-E Scale consistently measures one factor or is unidimensional.

Mirles (1970) explored the tenability of the Rotter I-E Scale measuring multidimensional rather than unidimensional levels. Mirles (1970) identified two factors within the I-E Scale: (a) a belief concerning felt mastery over one's personal life, and (b) a belief concerning the extent to which the individual can exert control over political

and world affairs. Foward and Williams (1970) have reiterated Mirles' (1970) clarification of the two factors within the I-E Scale.

In response to the question of unidimensionality versus multidimensionality, it should be noted that in the early development of the I-E Scale, two factor analyses were done (Rotter, 1966), both of which showed that most of the variance was accounted for by one general factor. But some factors with only a few items with significant loadings did account for a small but significant variance. Furthermore, Rotter (1975) stated:

> It is still true, however, that each of the items correlates with the total of the other items with that item removed, and that usually when factor analyses are done and applied to a different population, the factor scores, based on specific items that load most heavily on a particular factor, intercorrelate significantly . . . The point is only to discourage the notion that the factor analysis of any particular scale reveals the "true structure of a concept" . . . they may be useful if it can be demonstrated that reliable and logical predictions can be made from subscales to specific behaviors and that a particular sub-scale score produces a significantly higher relationship than that of the score of the total test (p. 63).

In summary, the data on the I-E Scale has been satisfactory with internal consistency data and test-retest reliability data ranging from moderate to high (Matthews, 1975; Phares, 1973; Rotter, 1966, 1975). This data is sufficiently consistent and acceptable to this investigation.

HLC Scale

The HLC Scale is an area specific measure of expectancies regarding locus of control developed for assessment and prediction of health related behavior.

Likert Scale

The HLC is an eleven-item Likert type scale. The Likert procedure (Likert, 1932) does not require the classification of items by a group of judges as does the Thurstone technique. Instead, items are selected by "intuition" and only those items which are clearly favorable or unfavorable are used. Subjects are asked to respond to each item in terms of several degrees of agreement or diasgreement. Usually, the response format for each item includes five categories from strongly approve to strongly disapprove. Some investigators have used both fewer than and more than five categories.

In its most stringent applications, Likert items are pretested on a population that is representative of the subjects to be actually used. Likert scales are scored by summing the "number" of the response categories marked by the subject on each item over all the items on the scale (Hamersma, 1972, p. 113).

This eleven-item HLC Scale has six categories providing a potential range from 11 to 66. All the HLC items were selected by the authors (Wallston, et al., Note 1) from previous research and their knowledge of the health

field. The scale is scored in the external direction. Certain items are reverse scored. Thus, a high score reflects an external orientation and a low score indicates an internal orientation.

Wallston, et al. (Note 1) have reported on the scale development work as well as on two validation studies. Item analysis of the HLC for the original scale development sample of college students resulted in a coefficient alpha reliability of .72. In addition, item analysis for three subsequent samples (N = 100 per sample) resulted in coefficient alpha reliabilities of .40, .50, and .54. Also, a -.01 correlation with the Marlowe-Crowne Scale indicated that the HLC did not reflect a social desirability bias. Finally, within each of the samples, no significant differences in HLC scores were found between males and females.

Concurrent validity of the HLC was evidenced by a correlation of .33 with Rotter's I-E Scale for the original sample. The discriminant validity of the new HLC Scale was enhanced by the fact that the HLC Scale shared only 10 percent common variance with the I-E Scale, a more established measure of locus of control. Thus, the HLC met the requirement that a new test not correlate too highly with measures form which it is supposed to differ (Campbell & Fiske, 1959).

In the two validation studies (Wallston, et al., Note 1), subjects' beliefs in locus of control were assessed by both the HLC and the I-E Scales, thus providing tests of the differential functional utility of the two instruments.

In Study 1, the correlation between the two measures was .25 (N = 85); in Study 2, it was .46 (N = 34). Furthermore, test-retest reliability of the HLC over an eight-week period for subjects in Study 2 was .71.

In Study 2, classifying subjects as internals or externals on the basis of their HLC scores led to results which although nonsignificant, were more congruent with the hypotheses than if I-E scores were solely relied on. Wallston, et al. (Note 1) point out: "In fact, had we done the latter (in both studies), we would have been left with two more instances of probably unpublished "negative findings" (p. 13).

In Study 1, when HLC was used as the basis of classification, high health value internals chose more pamphlets on hypertension than all other types of subjects who did not differ from one another--high value externals, low value internals, and low value externals. A planned comparison test was significant ($t = 1.84$, $df = 80$, p .04 one tailed). No such results would have been evident if the more general I-E Scale had been the only basis for classifying subjects as internals or externals.

Also, a replication of Study 1 yielded results parallel to those in Study 1. The high health value subjects classified as internals by their HLC scores again chose more pamphlets than the other subjects (Wallston, et al., Note 1).

In summary, during the development and validation of the HLC scale, Wallston, et al. (Note 1) used a population of college undergraduates and found no sex, or social class differences. However, the undergraduates who placed a high value on health, and who were internal on HLC Scale, engaged in more positive health behavior than other undergraduates. Wallston, et al. (Note 1) pointed out that more research is necessary to determine if the HLC scale is an effective instrument for health researchers.

With one slight modification, the HLC Scale was utilized in this study. Due to optical scan limitations at MSU's evaluation services, the original six-answer foils, providing a potential range of 11 to 66 were reduced to four-answer foils, providing a potential range from 11 to 44. The two extreme answer foils of "very strongly agree" and "very strongly disagree" were deleted.

Personal communication with Wallston (Note 2) about this modification of the HLC Scale uncovered the fact that in the construction of the scale there was no strong rational for choosing six foils as opposed to four foils. In the scale construction, the only stringent requirement was not to have a neutral item. The six foils were chosen rather arbitrarily. Wallston felt the use of four foils would not affect the scale in any significant way.

Actually, most respondents ignore the two extreme choices and treat the answers as though there were only

four distinctly different and significant choices (Wallston, Note 2).

Wallston, et al.'s HLC scale using 6 foils has a 3.5 item mean due to chance. In order to compare the results of this HLC Scale with his results, Ken Wallston advised a simple, molar transformation. He suggested adding 11 points to the means obtained from this modified HLC Scale. Also, since HLC was a dependent variable in this study, like I-E, total scores were used in the analysis of the data.

Health Value Survey

This scale is a measure of the relative value subjects place on health. This scale, modeled after Rokeach's (1973) value survey, asks subjects to rank order by importance 10 terminal values. Subjects who rank health in one of the top four positions are classified as having "high health value." Wallston, et al. (Note 1) used this "health value" survey in their studies of HLC. This scale was also used in this study.

Perceived Need

Utilization research suggests perceived medical need is an important predictor of utilization of health services. Anderson and Bartkus (1973) found that for both male and female undergraduates an increase in need results in proportionately greater use of the student health center. Burke (1974) found that females had a greater need for and greater utiliztion of a SHS. The importance of need in

predicting illness behavior is underscored by other studies which also found a measure of need to be an important predictor of the individual's use of health services (Anderson, 1968; Bice & White, 1969; Mechanic & Volkart, 1961; Scheff, 1966; Suchman, 1965; Wirick, 1966).

In this study, perceived need was determined by Burke's (1974) method. Need was assessed by classifying less than three days' restricted activity as low need and three days or more of restricted activity as high need. Need was built into the design, not as a predictor of utilization, but as a control variable, in order to achieve a clearer, more precise description of the relationship between HLC and use of SHS.

Utilization

In this study health behavior was defined as utilization of a student health center. However, it was recognized that an individual could engage in alternative health behavior such as use of an off-campus clinic, self-medication, or a combination of behaviors. Therefore, questionnaire item number 66 which assessed utilization included all of these alternative behaviors.

The measurement of utilization of the SHS was finally obtained by combining the subjects who chose foils 1, 3, 5, or 7 in question 66. Utilization of the SHS was necessary if the subject chose one of these foils for their answer.

To obtain a measure of subjects who did not use the SHS, foils 2, 4, 6, and 8 were combined. Students who chose foil 9 (no problems) were omitted from the primary analysis, since utilization was defined by two levels: use of SHS and/or no use of SHS.

To confirm the validity of the self-reported use of a student health service, a list of student numbers in sequential order by the last three digits was presented to a member of the medical records staff at Olin Health Center. This staff member provided the researcher with a count of the total number of students in the sample who actually used Olin Health Center. At all times, this information was treated with strict confidence. At all times, only student numbers, not names, were exchanged.

Other Instrumentation

In addition to subjects' responses to the scales, demographic data were collected. Although the literature suggests that these variables do not seriously affect college populations on locus of control, HLC, and utilization behavior, these items serve as a further check of such generalization. The demographic data included questions concerning the following: (a) race, (b) year in college, and (c) estimate of parental income (Consumer Income, 1976a, 1976b).

Research Design

This study was concerned with determining the relationship of HLC and I-E with utilization of SHS.

The design of this study was correlational. It is a common design in field studies (Bolton, 1974). In correlational (relationship) studies, the criterion behavior (dependent variable) and other independent or classification variables are measured at the same point in time. Such studies are concerned primarily with gaining a better understanding of a complex behavior pattern by studying the relationships between the pattern and variables to which it is hypothesized to be related (Borg & Gall, 1971). This type of research design is especially useful for exploratory studies in areas where little or no previous research is available. Such a design was useful in this study.

In this study, HLC and I-E scores were the dependent variables. The classification variables were sex, value placed on health, perceived need, and use of SHS. The statistical analysis of the data included use of multivariate analysis of variance (MANOVA). A discussion of MANOVA follows in the next section.

Statistical Analysis

Multivariate Analysis of Variance (MANOVA)

Analysis of variance procedures were utilized in the analysis of the data. Slakter (1972, p. 338) noted: "We do not limit the use of ANOVA to experimental studies, where

we randomly assign subjects to treatments. We also find ANOVA useful as a method of data analysis in correlational studies when one random variable is qualitative and the other is quantitative."

Multiple variables such as those employed in this study, HLC, I-E, value placed on health, need, and utilization of SHS could hardly be considered to be independent of each other. Consequently, the use of multiple inter-related dependent variables utilizing the statistical approach of multivariate analysis of variance (MANOVA) was utilized. Furthermore, Jones (1966) noted:

> Multivariate analysis of variance, like the more familiar univariate analysis of variance, focuses upon differences between groups or between experimental conditions. In this sense, it may be contrasted with correlational methods, which apply to within-group-inter-individual relations. In analysis of variance, the math at issue is that of systematic differences in performances between groups of subjects, with groups defined by the levels of classification of one or more independent variables (p. 245).

Also, multivariate analyses of variance aids one in looking for significance of the relationship of several independent and several dependent variables (Horst, 1966).

MANOVA Output

The multivariate analysis of variance, covariance, and regression program developed by Finn (1967) and modified for use on the CDC 6500 computer at Michigan State University by Scheifley and Schmidt (1973) was used in the analysis.

The MANOVA yields three types of F-rations: (a) multivariate F ratios, (b) step-down F ratios, and (c)

univariate F ratios. The multivariate F yields an analysis of whether or not all the dependent variables are simultaneously significant. The step-down F ratio yields a test which allows determination of the effect the independent variables have on the dependent variables with the dependent variables conditioned on each variable. The univariate F is simply a test of the effect of the classification variables on the single dependent variables.

If the multivariate analysis of variance yields a significant relationship then caution must be utilized in interpreting any univariate F test, because the possible violation of independence of the variables would elevate the alpha to a level which is not known. The best approach in this context is first to analyze the variables in a multivariate context and if the multivariate test yields significance, then proceed with the step-down F analysis, observing which variables prove to be "causing" or which combination of variables prove to be "causing" the significant multivariate tests. The alpha level for the step-down F can be determined by dividing alpha utilized for multivariate tests by the number of dependent variables (Bedwell and Jordan, 1976). In this study alpha is .05 for the multivariate and .025 for the step-down F's.

Step-down analysis is structured in the following manner: The first step-down analysis is independent of the other dependent variables. The second step-down analysis is dependent upon or conditioned upon the first dependent

variable. A third step-down F would be conditioned upon the second, and first dependent variable, and so forth.

Consequently, the analysis begins from the step-down F, which includes all of the dependent variables, and moves to the step-down F, which includes only itself. If the step-down F involving all the dependent variables is significant, then analysis of further step-down F's cannot be inferred because alpha will be unknown.

One can only say there is a significant relationship between the independent variables on the remaining dependent variables, and that the experimental manipulation or the relationship that is shown in the independent variables or classification variables results in a significant change among the remaining dependent variables.

However, if the step-down F (the one involving all of the dependent variables) results in a non-significant F, then one can move to the next one and, consequently, progressively eliminate dependent variables until arriving at the significant effect. The step-down F then is highly dependent upon the order in which the dependent variables are presented to the computer. The order chosen for the analysis in this study was I-E and HLC. Following step-down analysis, univariate F's can be examined in a "guarded" fashion, remembering that alpha is unknown (Bedwell and Jordan, 1976).

Data Matrix

The data matrix representing how this study was conceptualized is presented in Table 3. The independent or classification variables were sex, value placed on health (high or low), perceived need (high or low), utilization of SHS (users of SHS, non-users of SHS). The dependent variables were HLC and I-E scores. (See Appendix B for the basic variable by IBM card and column.)

Research Hypotheses

The hypotheses for this study are presented in two sections. The first section is concerned with the primary hypotheses of the study (H: 1-6): the relationship of sex, value, perceived need, and use versus no use of SHS with HLC and I-E scores. The statistic used in this analysis was MANOVA.

The second section (H: 7-12) is concerned with the secondary hypotheses of the relationship of the demographic variables of race, year in college, and reported family income with HLC and I-E scores. The statistic used in this analysis was one-way MANOVA. All of the hypotheses are stated in the research form.

Primary Hypotheses

H-1: Subjects classified as users of the SHS and having a high value on health will have lower mean HLC scores (more internal) than all other subjects.

Rationale: The review of the literature suggests that an internal HLC and a high value placed on health are related. If HLC distinguishes between

TABLE 3

Data matrix

Users SHS								Non-Users SHS							
Value								Value							
High				Low				High				Low			
Need				Need				Need				Need			
High		Low		High		Low		High		Low		High		Low	
Sex		Sex		Sex		Sex		Sex		Sex		Sex		Sex	
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
HLC								HLC							
I-E								I-E							

users and non-users, it would be expected that internals with a high value on health would be the users.

Instrumentation: HLC scale, classification variables of use and value placed on health.

Analysis: MANOVA - interaction effects.

H-2: Subjects who used the SHS will have mean HLC scores no different from those who did not use the SHS.

Rationale: According to Social Learning Theory, locus of control in a given psychological situation is affected by the value placed on the situation or the reinforcement to be gained from engaging in the behavior. Also, Wallston, et al. (Note 1) and Wallston (Note 2) found that value placed on health is significantly associated with HLC internals. Therefore, HLC by itself should not be any different for users or non-users of SHS.

Instrumentation: HLC scale, use variable.

Analysis: MANOVA - main effects.

H-3: Subjects who use the SHS will have higher mean I-E scores (more external) than those who did not use the SHS.

Rationale: If students who use the SHS tend to be more troubled, maladjusted, and if I-E is a measure of adjustment, with externals being more maladjusted, then users of SHS should be more external than non-users.

Instrumentation: I-E scale, use variable.

Analysis: MANOVA - main effect.

H-4: Subjects with a high value on health will have lower mean HLC scores (more internal) than those with a low value on health.

Rationale: Wallston, et al. (Note 1), Wallston (Note 2) found that persons who placed a high value on health were significantly more internal on HLC than other subjects.

Instrumentation: HLC scale, value variable.

Analysis: MANOVA - main effects.

H-5: There will be no significant differences between sexes on mean HLC scores.

Rationale: Wallston, et al. (Note 1) reported no significant differences between male and female college students on HLC scores.

Instrumentation: HLC scale, sex variable.

Analysis: MANOVA - main effect.

H-6: There will be no significant differences between sexes on mean I-E scores.

Rationale: To date, results are conflicting. Matthews (1975), Rotter (1966), and Williams (1972) reported no significant differences between sexes on mean I-E scores. However, Feather (1967, 1968) and Phares (1973) reported that sex differences in I-E do exist. The jury is still out on this issue.

Instrumentation: I-E scale, sex variable.

Analysis: MANOVA - main effect.

Secondary Hypotheses of Demographic Variables With HLC and I-ELC

H-7: There will be no significant differences among races on mean HLC scores.

Rationale: Wallston, et al.'s (Note 1) sutdies of college students and their HLC scores did not report data on race and HLC. Therefore, this analysis serves to investigate this relationship.

Instrumentation: HLC scale and race variable.

Analysis: MANOVA

H-8: There will be no significant differences among races on I-E scores.

Rationale: When college populations were studied using the I-E scale, race was not significantly related to I-E (Gore & Rotter, 1963; Rotter, 1966).

Instrumentation: I-E scale and race variable.

Analysis: MANOVA

H-9: There will be no significant differences in HLC among the reported estimates of parental annual income.

Rationale: During the development and validation of the HLC scale, Wallston, et al. (Note 1) used college undergraduates as subjects. They did not report demographic data of parental income, or any measure of socio-economic level. This analysis serves to investigate the possibility of such a relationship.

Instrumentation: HLC scale and estimate of parent's income variable.

Analysis: MANOVA

H-10: There will be no significant differences in I-E scores among the reported estimates of parental annual income.

Rationale: When college populations were studied using the I-E scale, socio-economic level was not significantly related to I-E (Rotter, 1966). However, the majority of studies using college populations never bothered to analyze data by parental income or any measure of socio-economic level. Therefore, this analysis will serve as a further check of this relationship.

Instrumentation: I-E scale and estimate of parent's income variable.

Analysis: MANOVA

H-11: There will be no significant differences in HLC scores among year in college.

Rationale: Wallston, et al. (Note 1) did not report data on HLC and year in college; therefore, this analysis will serve to further investigate this relationship.

Instrumentation: HLC scale and year in college variable.

Analysis: MANOVA

H-12: There will be no significant differences among year in college and I-E scores.

Rationale: I-E studies using college populations never reported the relationship among year in

college and I-E. This analysis will serve to investigate if any relationship exists.

Instrumentation: I-E scale and year in college variable.

Analysis: MANOVA

H-13: There will be a mild positive relationship between HLC and I-E scores.

Rationale: Previous research has shown that concurrent validity of the HLC with I-E scale was .33. Furthermore, Wallston, et al. (Note 1) reported that the HLC scale shares 10 percent common variance with the more established measure of locus of control. The overlap with the I-E scale was kept purposely low to enhance its discriminant validity, thus meeting the requirement that a new test not correlate too highly with measures from which it is supposed to differ (Campbell & Fisk, 1969). This will serve as further validation of the HLC scale.

Analysis: Pearson Product Moment correlations.

Chapter IV

ANALYSIS OF DATA

The primary purpose of this study was to examine the relationship of HLC and I-E with use of a SHS. The literature review on utilization of a SHS revealed that sex and perceived need are related to use of a SHS. Also, the literature review on HLC revealed an association between HLC and value placed on health.

The extraneous variables of sex, perceived need, and value placed on health were controlled by design. They were included as independent variables along with use of SHS. The dependent variables were HLC and I-ELC. These data were analyzed using multivariate analysis of variance procedures.

A secondary purpose of this study was to examine the relationship of race, year in college, and estimated parental annual income with HLC and I-E scores. As stated in Chapter III, undergraduate college students were used in the present study. Table 4 presents demographic characteristics of the total research sample and provides means and standard deveiations (SD) for HLC scores and I-E scores and for each demographic variable. These descriptive statistics are also referred to later in this section.

TABLE 4

Demographic characteristics of sample with means and standard deviations for HLC and I-E scores for each demographic variable

	N	Percentage	HLC		I-E	
	411	100	Mean	SD	Mean	SD
SEX						
Female	205	49.88	25.63	3.67	12.00	4.13
Male	206	50.12	25.15	3.59	10.38	4.30
RACE						
Black	21	5.10	25.38	4.40	10.95	4.89
White	376	91.48	25.40	3.62	11.19	4.26
Oriental	2	.48	20.50	4.94	9.00	2.82
Indian	8	1.94	26.00	1.77	11.00	4.24
Others	1	.24	24.00	.00	5.00	.00
Error	3	.72				
YEAR IN COLLEGE						
Freshman	187	45.49	25.84	3.63	11.50	3.90
Sophomore	106	25.79	25.03	3.79	11.40	4.67
Junior	71	17.27	25.04	2.77	10.76	4.67
Senior	43	10.46	24.83	4.46	9.79	4.17
Error	4	.97				
ANNUAL PARENTAL INCOME						
Less than 5,038	12	2.91	24.83	4.10	10.75	4.02
$5,039-$10,000	28	6.81	25.03	4.15	10.78	5.11
$10,001-$15,000	60	14.59	25.98	3.26	11.40	4.02
$15,001-$20,000	75	18.24	25.54	3.43	11.26	4.67
$20,000-$30,000	111	27.00	24.90	3.98	11.03	4.45
$30,000 up	111	27.00	25.63	3.51	11.12	3.93
Error	14	3.40				

Hypothesis Testing

Primary Hypotheses

Table 5 presents means and standard deviations for HLC and I-E scores for each independent variable and indicates respective levels. The data in this table offer the reader a global overview of the nature of the sample analyzed in this section.

HLC, Value Placed on Health, and Use of SHS

H-1: Subjects classified as users of the SHS and having a high value on health will have lower mean HLC scores (more internal) than all other subjects.

The data from the multivariate analysis of variance procedures (Table 6) indicated no significant interactions. Thus, the data did not support the research hypothesis. Consequently, this hypothesis was rejected. The null hypotheses was tested and retained.

HLC and Use of SHS

H-2: Subjects who used the SHS will have mean HLC scores no different than those who did not use the SHS.

The data from the multivariate analysis of variance procedures presented in Table 7 indicated no significant differences in HLC scores between subjects who used or did not use the SHS. Consequently, the hypothesis was accepted; that is, the data contain no evidence contrary to the hypothesis.

TABLE 5

Means and standard deviations for HLC and I-E scores in the sample analyzed for the primary hypotheses (2x2x2x2 MANOVA) (N = 307)

	N	Percentage	HLC		I-E	
	307		Mean	SD	Mean	SD
SEX						
Female	148	48.21	25.63	3.69	11.87	4.05
Male	159	51.79	25.23	3.48	10.53	4.20
VALUED PLACED ON HEALTH						
High	213	69.38	25.13	3.72	11.08	4.10
Low	94	30.62	26.13	3.17	11.54	4.34
PERCEIVED NEED						
High	95	30.94	25.87	3.90	11.41	4.27
Low	212	69.06	25.25	3.43	11.14	4.14
USE						
Use SHS	145*	47.23	25.68	3.79	11.44	4.38
No use SHS	162	52.77	25.22	3.40	11.03	3.98
TOTAL SAMPLE	307	100.00	25.44	3.59	11.22	4.17

*A check with the medical records office at MSU Health Center indicated 95 percent who reported use of SHS actually did.

TABLE 6

Multivariate analysis of variance for two dependent variables and interactions among classification variables of sex, value placed on health, perceived need, and use analyzed for the primary hypotheses*

Multivariate F

F = .9261 df = 22 and 580 P less than .5601

Dependent Measure and Classificatory Variables in Overall Test for Interaction	Univariate F	P	Step-Down F	P
HLC				
Classificatory Variables Combined for Interaction	1.2905	.2290	1.2905	.2290
I-E				
Classificatory Variables Combined for Interaction	.7323	.7073	.5708	.8521

*2x2x2x2 MANOVA
N = 307
Use (two levels: (a) use of SHS; (b) no use of SHS)

TABLE 7

Multivariate analysis of variance for two dependent variables and classification variable of use analyzed for the primary hypotheses*

Multivariate F		
F = .2253	df = 2 and 290	P less than .7985

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Use	.3423	.5590	.3423	.5590
I-E				
Use	.1919	.6617	.1093	.7412

*2x2x2x2 MANOVA
N = 307
Use: Two levels (a) use of SHS; (b) no use of SHS

I-ELC and Use of SHS

H-3: Subjects who used the SHS will have higher mean I-E scores (more external) than subjects who did not use the SHS.

The data from the multivariate analysis of variance procedures (Table 7) indicated no differences in I-E scores between subjects who used or did not use the SHS. Consequently, the data did not support the research hypothesis.

HLC and Value Placed on Health

H-4: Subjects with a high value on health will have lower mean HLC scores (more internal) than those with a low value on health.

The data from the multivariate analysis of variance procedures (Table 8) indicated a significant difference in HLC scores between those with a high value on health and those with a low value on health.

In other words, the multivariate analysis of variance, which considered value placed on health as an independent variable with two levels: (a) high, and (b) low; and which compared the value placed on health simultaneously on the two dependent variables of HLC and I-E, showed a significant difference between the values placed on health.

The I-E variable was not significant as indicated by the step-down F and Univariate F (Table 8). This indicates that HLC alone is significantly different, depending

TABLE 8

Multivariate analysis of variance for two dependent variables and classification variable of value placed on health analyzed for the primary hypotheses*

Multivariate F

F = 3.1554 df = 2 and 290.0 P less than .0441

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Value	5.7797	.0169	5.7797	.0169
I-E				
Value	1.4251	.2336	.5402	.4630

*2x2x2x2 MANOVA
N = 307

on value placed on health. That is, value does not contribute to I-E, but does contribute to HLC.

The multivariate analysis procedure per se does not indicate which level of health was significantly different on HLC scores, but examination of the HLC means (Table 5) indicates that those with a high value placed on health had the lower mean HLC scores (more internal). Those with a low value on health had higher mean HLC scores (more external).

HLC and Sex

H-5: There will be no significant differences between sexes on mean HLC scores.

The data from the multivariate analysis of variance procedures (Table 9) indicated no significant differences in HLC scores between sexes. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

I-ELC and Sex

H-6: There will be no significant differences between scores on mean I-E scores.

The data from the multivariate analysis of variance procedures (Table 9) indicated there was a significant difference between sexes on mean I-E scores. Consequently, the hypothesis was rejected; that is, the data do no support the hypothesis.

In other words, the multivariate analysis of variance, which considered sex as an independent variable, and

TABLE 9

Multivariate analysis of varinace for two dependent variables and classification variable of sex analyzed for the primary hypothesis*

Multivariate F

F = 4.0658 df = 2 and 190 P less than .0182

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Sex	.9696	.3256	.9696	.3256
I-E				
Sex	7.9587	.0052	7.1416	.0080

*2x2x2x2 MANOVA
N = 307

which compared sex simultaneously on two dependent variables, HLC and I-E (Table 9), showed a significant difference between sexes.

The I-E variable was significant as indicated by the step-down F and Univariate F. However, the HLC variable (the first step-down F) was not significant as indicated by its step-down F (Table 9). This indicates that I-E is not dependent upon HLC for the differences between sexes on I-E scores. That is, the relationship shown in the independent variable of sex and I-E scores is not dependent upon the remaining dependent variable of HLC.

The multivariate analysis procedure per se does not indicate which sex was significantly different on I-E scores. Examination of the I-E means (Table 5) indicates that females have a higher mean I-E score (more external) than males.

Exploratory MANOVAS

The analysis of the primary hypotheses, H;1-6, were analyzed with a sample size of 307. However, the total sample of usable data numbered 411 subjects. Thus, in the analysis of the primary hypotheses of "users" and "non-users" of SHS, 104 subjects classified as "No problems" were eliminated from the analysis. This was explained in the methodology section.

The possibility exists that the additional 104 subjects might clarify the relationship among sex, value placed on health, perceived need, and use (use of SHS, no

use of SHS, no problems) with HLC and I-E. Additional exploratory MANOVAS were conducted to investigate this possibility.

The next analysis using all 411 subjects was a multivariate analysis of variance using sex, value placed on health, perceived need, and use (now with three levels: (a) use of SHS; (b) no use of SHS; (c) no problems) with two dependent variables of HLC and I-E. However, in this analysis the computer indicated problems in running the program. An examination of the data showed that persons who reported "no problems" did not report "high need." Thus, zero cells were occuring. Logically, it makes sense that zero cells of high need and no problems would occur. Therefore, need was eliminated as an independent variable. It is noteworthy that in the analysis of the primary hypotheses, there were no significant differences in either I-E or HLC scores based on perceived need (high or low) (Table 10).

2 x 2 x 3 MANOVA

The next exploratory analysis was a 2 x 2 x 3 multivariate analysis of variance. Sex, value placed on health, and use (three levels: (a) use SHS; (b) no use SHS; (c) no problems) were the independent variables. HLC and I-E were the dependent variables.

Table 11 presents means and standard deviations for HLC and I-E scores for each independent variable and its respective levels. These data are included to give the

TABLE 10

Multivariate analysis of variance for two dependent variables and classification variable of perceived need analyzed for the primary hypotheses*

Multivariate F		
F = 1.1522	df = 2 and 290	P less than .3174

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Perceived Need	2.2918	.1312	2.2918	.1312
I-E				
Perceived Need	.1874	.6655	.0203	.8869

*2x2x2x2 MANOVA
N = 307

TABLE 11

Means and standard deviations for HLC and I-E scores in the sample analyzed for sex x value placed on health x use 2 x 2 x 3 exploratory multivariate analysis of variance (N = 411)

	N	Percentage	HLC		I-E	
	411		Mean	SD	Mean	SD
SEX						
Female	205	49.88	25.63	3.67	12.00	4.13
Male	206	50.12	25.15	3.59	10.38	4.30
VALUE PLACED ON HEALTH						
High	276	67.15	25.16	3.71	10.99	4.26
Low	135	32.85	25.85	3.43	11.60	4.34
USE						
Use SHS	145	35.28	25.68	3.79	11.44	4.38
No use SHS	162	39.42	25.22	3.40	11.03	3.98
No problems	104	25.30	25.24	3.77	11.09	4.64
TOTAL SAMPLE	411	100.00	25.39	3.63	11.19	4.29

reader an overview of the nature of the sample analyzed in this exploratory section.

The results of this 2 x 2 x 3 exploratory MANOVA (N = 411) indicated no significant interaction effects among sex, value placed on health, and use with HLC and I-E (Table 12). Also, there were no significant main effects due to value placed on health (Table 13). It is interesting to note the addition of the "no problems" group eliminated the previously found statistically significant difference in HLC scores according to value placed on health (Table 8).

Furthermore, there were no significant differences in I-E or HLC scores due to use (Table 14). However, there was one significant main effect, due to sex and I-E scores (Table 15). These data indicate that I-E is not dependent upon HLC for the differences that exist between sexes on I-E. Once again, examination of the mean I-E scores for sexes in this 2 x 2 x 3 MANOVA (Table 11) indicate that females are more external than males on I-E.

2 x 2 x 2 MANOVA

One additional exploratory multivariate analysis of variance was performed to determine the effect of need on the other variables of sex, value placed on health, HLC, and I-E with the use factor eliminated and using all 411 subjects.

Table 16 presents means and standard deviations for HLC and I-E scores for each independent variable and its

TABLE 12

2 x 2 x 3 Exploratory multivariate analysis of variance for two dependent variables and interactions among classification variables of sex, value placed on health and use*

Dependent Measure and Classificatory Variable	Multivariate F & (df); Same for HLC and I-E	P	Univariate F	P	Step-Down F	P
HLC						
Sex x Value	.0276 (2,398)	.9737	.0530	.8182	.0530	.8182
Sex x Use	1.0672 (4,796)	.3717	1.2079	.3000	1.2079	.3000
Value x Use	.6480 (4,796)	.6285	1.2193	.2966	1.2193	.2966
Sex x Value x Use	.1885 (4,796)	.9445	.3042	.7380	.3042	.7380
I-E						
Sex x Value			.0073	.9322	.0007	.9795
Sex x Use			1.3784	.2532	.9297	.3956
Value x Use			.0242	.9762	.0813	.9219
Sex x Value x Use			.0478	.9534	.0736	.9291

*N = 411
Use: Three levels: (a) Use of SHS; (b) No use SHS; (c) No problems

TABLE 13

2 x 2 x 3 Exploratory multivariate analysis of variance for two dependent variables and classification variable of value placed on health*

Multivariate F

F = 2.3476 df = 2 and 398 P less than .0970

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Value Placed on Health	3.5592	.0600	3.5592	.0600
I-E				
Value Placed on Health	2.3344	.1274	1.1347	.2875

*Value Placed on Health has two levels: (a) high; (b) low.
N = 411

TABLE 14

2 x 2 x 3 Exploratory multivariate analysis of variance for two dependent variables and classification variable of use*

Multivariate F

F = .2860 df = 4 and 796 P less than .8872

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Use	.5494	.5778	.5494	.5778
I-E				
Use	.1094	.8964	.0243	.9761

*Use = (a) Use SHS; (b) No use SHS; (c) No problems
N = 411

TABLE 15

2 x 2 x 3 Exploratory multivariate analysis of variance for two dependent variables and classification variable of sex*

Multivariate F

F = 7.4833 df = 2 and 398 P less than .0007

Dependent Measure and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Sex	1.8200	.1781	1.8200	.1781
I-E				
Sex	14.8807	.0002	13.0914	.0004

*Total N = 411

TABLE 16

Means and standard deviations for HLC and I-E scores in the sample analyzed for the sex x value placed on health x perceived need 2 x 2 x 2 exploratory multivariate analysis of variance (N = 411)

	N	Percentage	HLC		I-E	
			Mean	SD	Mean	SD
SEX						
Female	205	49.88	25.63	3.67	12.00	4.13
Male	206	50.12	25.15	3.59	10.38	4.30
VALUE PLACED ON HEALTH						
High	276	67.15	25.16	3.71	10.99	4.26
Low	135	32.85	25.85	3.45	11.60	4.34
PERCEIVED NEED						
High	96	23.36	25.88	3.88	11.44	4.26
Low	315	76.64	25.24	3.55	11.11	4.30
TOTAL SAMPLE	411	100.00	25.39	3.63	11.19	4.29

respective levels. These data are included to give the reader a more thorough understanding of the nature of the sample analyzed in this exploratory section.

The results of this 2 x 2 x 2 exploratory MANOVA (N = 411) indicated no significant interaction effects among sex, value placed on health, and perceived need with HLC and I-E (Table 17). Furthermore, there were no significant main effects due to value placed on health (Table 18) or due to perceived need (Table 19). There was a significant main effect due to sex with I-E (Table 20). This significant effect showed that females were more external than males on I-E.

Summary: Primary Hypotheses Results

2 x 2 x 2 x 2 MANOVA (N = 307)
Sex X Value Placed on Health X
Perceived Need X Use (Use SHS; No Use SHS)

1. Interaction Effects (N = 307): There were no statistically significant interactions among HLC and I-E scores based upon the independent variables of sex, value placed on health (high or low), perceived need (high or low), and use (use of SHS, no use of SHS).
2. Main Effect - Use (N = 307): There were no significant differences between users of the SHS and non-users of the SHS on HLC and/or I-E scores.
3. Main Effect - Perceived Need (N = 307): There were no significant differences on HLC and/or I-E scores for persons with either high or low perceived need.

TABLE 17

2 x 2 x 2 Exploratory multivariate analysis of variance for two dependent variables and interactions among classification variables of sex, value placed on health, and need*

Dependent Variable and Classificatory Variable	Multivariate F & (df); Same for HLC and I-E	P	Univariate F	P	Step-Down F	P
HLC						
Sex x Value	.0372 (2,402)	.9636	.0745	.7851	.0745	.7851
Sex x Need	.4545 (2,402)	.6351	.8751	.3502	.8751	.3502
Value x Need	.5402 (2,402)	.5831	1.0262	.3117	1.0262	.3117
Sex x Value x Need	1.1617 (2,402)	.3141	.3513	.5538	.3513	.5538
I-E						
Sex x Value			.0061	.9380	.0000	.9958
Sex x Need			.1873	.6655	.0360	.8496
Value x Need			.0016	.9680	.0566	.8121
Sex x Value x Need			1.4339	.2319	1.9712	.1611

*N = 411

TABLE 18

2 x 2 x 2 Exploratory multivariate analysis of variance for two dependent variables and classification variable value placed on health*

Multivariate F

F = 2.3528 df = 2 and 402 P less than .0965

Dependent Variable and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Value Placed on Health	3.5780	.0593	3.5780	.0593
I-E				
Value Placed on Health	2.3503	.1261	1.1265	.2892

*N = 411

TABLE 19

2 x 2 x 2 Exploratory multivariate analysis of variance for two dependent variables and classification variable perceived need*

Multivariate F

F = 1.2154 df = 2 and 402 P less than .2977

Dependent Variable and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Perceived Need	2.4294	.1199	2.4292	.1199
I-E				
Perceived Need	.2487	.6183	.0074	.9317

*N = 411

TABLE 20

2 x 2 x 2 Exploratory multivariate analysis of variance for two dependent variables and classification variable sex*

Multivariate F		
F = 7.5279	df = 2 and 402	P less than .0007

Dependent Variable and Classificatory Variable	Univariate F	P	Step-Down F	P
HLC				
Sex	1.8296	.1770	1.8296	.1770
I-E				
Sex	14.9825	.0002	13.1709	.0004

*N = 411

4. Main Effect - Value Placed on Health (N = 307): There was a significant difference on HLC scores, but not on I-E scores, for persons with high or low value placed on health. Those with a high value on health were more internal on HLC.
5. Main Effect - Sex (N = 307): There was a significant difference between sex on I-E scores, but there was no significant difference between sex and HLC scores. Females were more external on I-E than males.

Exploratory 2 x 2 x 3 MANOVA (N = 411)
Sex, Value Placed on Health, Use (Use SHS; No Use SHS; No Problems)

1. Interaction Effects (N = 411): There were no significant interactions among HLC and I-E scores based upon the independent variables of sex, value placed on health (high or low), and use (Use of SHS, No Use of SHS, No Problems).
2. Main Effect - Use (N =411): There were no significant differences among users of SHS, non-users of the SHS, and those reporting no problems on HLC and/or I-E scores.
3. Main Effect - Value Placed on Health (N = 411): When all subjects were employed in the analysis, there were no significant differences in HLC or I-E scores between persons who placed a high or low value on health.

4. Main Effect - Sex (N = 411): There was a significant difference on I-E scores, but not on HLC scores, for sex. Females were more external than males.

Exploratory 2 x 2 x 2 MANOVA (N = 411)
Sex, Value Placed on Health, Perceived Need

1. Interaction Effects (N = 411): There were no significant interactions among HLC and I-E scores based upon the independent variables of sex, value placed on health (high or low), and perceived need (high or low).
2. Main Effect - Perceived Need (N = 411): There were no significant differences on HLC or I-E scores for persons with either high or low perceived need.
3. Main Effect - Value Placed on Health (N = 411): Again, as seen in the Main Effect - Value placed on health in the 2 x 2 x 3 MANOVA (N = 411), there were no significant differences in HLC or I-E scores between persons who place a high or low value on health.
4. Main Effect - Sex (N = 411): Same as Main Effect - Sex in the 2 x 2 x 3 MANOVA (N = 411): There was a significant difference on I-E scores, but not on HLC scores, for sex. Females were more external than males.

Results of Secondary Hypotheses of Demographic Variables with HLC and I-E Scores (H:7-12)

At this point it is useful to refer back to Table 4 and peruse the means and standard deviations for HLC and I-E scores for each demographic variable in order to restablish familiarity with the nature of the sample analyzed in this section.

HLC and Race

H-7: There will be no significant differences among races on mean HLC scores.

The data from the multivariate analysis of variance procedures (Table 21) indicated no differences in HLC scores among races. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

I-ELC and Race

H-8: There will be no significant differences among races on mean I-E scores.

The data from the multivariate analysis of variance procedures (Table 21) indicated no differences in I-E scores among races. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

TABLE 21

Multivariate analysis of variance for two dependent variables and race

Multivariate F

F = .7547 df = 8 and 804 P less than .6431

Dependent Measure and Race	Univariate F	P	Step-Down F	P
HLC				
Race	.9905	.4125	.9905	.4125
I-E				
Race	.6645	.6170	.5218	.7198

HLC and Parental Income

H-9: There will be no significant differences in mean HLC scores among the reported estimate of parental annual income.

The data from the multivariate analysis of variance procedures (Table 22) indicated no differences in HLC scores among the groupings of reported parental annual income. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

I-ELC and Parental Income

H-10: There will be no significant differences in mean I-E scores among the reported estimate of parental annual income.

The data from the multivariate analysis of variance procedures (Table 22) indicated no differences in I-E scores among the groupings of reported parental annual income. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

HLC and Year in College

H-11: There will be no significant differences in mean HLC scores among year in college.

The data from the multivariate analysis of variance procedures (Table 23) indicated no differences in HLC scores among year in college. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

TABLE 22

Multivariate analysis of variance for two dependent variables and reported estimate of annual parental income

Multivariate F

F = .4906 df = 10 and 780 P less than .8968

Dependent Measure and Reported Estimate of Annual Parental Income	Univariate F	P	Step-Down F	P
HLC				
Income	.9392	.4554	.9392	.4554
I-E				
Income	.1256	.9866	.0468	.9987

TABLE 23

Multivariate analysis of variance for two dependent variables and year in college

Multivariate F

F = 1.4610 df = 8 and 804 P less than .1677

Dependent Measure and Year in College	Univariate F	P	Step-Down F	P
HLC				
Year in College	1.4231	.2255	1.4231	.2255
I-E				
Year in College	1.8898	.1114	1.5024	.2007

I-ELC and Year in College

H-12: There will be no significant differences in mean I-E scores among year in college.

The data from the multivariate analysis of variance procedures (Table 23) indicated no differences in I-E scores among year in college. Consequently, the hypothesis was accepted; that is, the data do not offer evidence against the hypothesis.

Relationship Between HLC and I-E Scales

H-13: There will be a mild positive relationship between the HLC and I-E scores in the total population.

The data from the correlational matrix for the two dependent variables indicated a weak-positive correlation between HLC and I-E. $r = .26$ ($N = 411$, $p < .01$).

Summary: Secondary Hypotheses

The results associated with each of the secondary hypotheses are now summarized.

1. Race: There were no significant differences in HLC or I-E scores among races.
2. Reported estimate of parental annual income: There were no significant differences in HLC or I-E scores among reported estimate of parental annual income.
3. Year in college: There were no significant differences in HLC or I-E scores among year in college.

4. Correlation between HLC and I-E Scales: There was a weak-positive correlation between the HLC and I-E scales.

Chapter V

DISCUSSION, SUMMARY AND RECOMMENDATIONS

Purpose

The primary purpose of this study was to examine the relationship of HLC and I-E with use of a SHS. The literature review on utilization of a SHS revealed that sex and perceived need are related to use of a SHS. Also, the literature review on HLC revealed an association between HLC and value placed on health.

The extraneous variables of sex, perceived need, and value placed on health were controlled by design. They were included as independent variables along with the main independent variable of interest--use of SHS. The dependent variables were HLC and I-ELC.

A secondary purpose of this study was to examine the relationship of race, year in college, and estimated parental annual income with HLC and I-E scores.

Methodology

Residence halls on Michigan State University's campus were divided into four major complexes: north, south, east, and west. One male and one female residence hall were

randomly selected from each complex for a total of 4 male and 4 female residence halls.

A total of 411 undergraduate college students were randomly selected from these residence halls. There were 205 females and 206 males.

All students were asked to volunteer to complete a questionniare booklet consisting of the following measures: (a) a Value survey determining value placed on health; (b) HLC scale; (c) I-E scale; (d) questions to measure sex, perceived need, use or no use of the SHS, and demographic data.

Analysis

Multivariate analysis of variance procedures were performed to test the first six primary hypotheses. The independent or classificatory variables were sex, value placed on health (high or low), perceived need (high or low), and utilization of SHS (use or no use). The dependent variables were HLC and I-E scores. Further multivariate analysis of variance procedures were performed to test the six secondary hypotheses with race, year in college, and estimated parental annual income as the separate independent variables and HLC and I-E as the dependent variables.

Discussion of Primary Hypotheses

H-1: Subjects classified as users of the SHS and having a high value on health will have lower mean HLC scores (more internal) than all other subjects.

From a social learning theory position and from research on the HLC scale, it was hypothesized that an interaction would exist between internal HLC, a high value on health and use of the SHS. Contrary to this expectation, the analysis of the data did not support this hypothesis.

When subjects were classified as users of the SHS, and having a high value placed on health, they did not have lower mean HLC scores than other subjects. This suggests that the relationship between locus of control beliefs, value placed on health, and utilization of a SHS is not as highly interrelated as thought. Such a finding indicates that social learning theory may not be a viable theory for explaining utilization of SHS.

Another explanation of these results is that although HLC is a measure of expectancy of control over health, it appears to be a very general measure, like the I-E scale, which does not differentiate users from non-users. A more behaviorally specific HLC scale requiring subjects to respond to items measuring utilization of SHS or other behaviors such as medicine taking or appointment keeping would provide a more positive estimate of a person's feeling of control regarding specific health behaviors. Certainly, the more specific the instrument, the better the prediction of a particular behavior in a particular situation.

Another explanation may be that the tested phenomenon is specific to the topic or behavior in question. Possibly, use of the SHS is an issue on a college campus which is more

related to the factors of knowledge of services available and satisfaction with services received as well as attitudes.

H-2: Subjects who used the SHS will have mean HLC scores no different than those who did not use the SHS.

The analysis supported this hypothesis. An explanation is Rotter's assertion that locus of control is affected by reinforecement value. Therefore, one would expect an interaction effect between HLC and value placed on health, rather than just a main effect.

However, this assertion was not supported when use, value placed on health, and locus of control were analyzed together in (H-1). This finding for (H-2) also suggests that social learning theory may not be a meaningful theoretical framework for explaining utilization of SHS, or that the current scale available to measure expectancy, a major variable in social learning theory, is a weak instrument.

H-3: Subjects who use the SHS will have higher mean I-E scores (more external) than those who did not use the SHS.

The analysis did not support this hypothesis. Past research in Chapter II, reported users of SHS as being more troubled individuals. If I-E is a measure of personal adjustment which identifies externals as more maladjusted than internals, and if externals have a more negative self-concept than internals, then it would be expected that users of SHS have higher mean I-E scores than non-users.

A possible explanation is that usage of SHS is less tied to personality predispositions and more tied to factors such as satisfaction with services provided, attitudes towards the SHS, or knowledge of services.

It is also possible that I-E interacts with other variables. But this possibility was not supported in this study. I-E was not in any way related to use, perceived need, value placed on health, and HLC scores (Table 6). Again, suggesting that these personality variables may not be associated with the other variables as measured in this study and use of SHS.

H-4: Subjects with a high value on health will have lower mean HLC scores (more internal) than those with a low value on health.

The analysis supported this hypothesis. The results confirm Wallston, et al.'s (Note 1) and Wallston's (Note 2) findings that persons who placed a high value on health were significantly more internal on HLC than other subjects. The results also concur with social learning theory which suggests that when assessing a person's locus of control in a particular behavioral or psychological situation, persons who highly value the situation will also feel they have some control over their behavior in this area. However, when the variable of use was included (H-1, H-2), there was no interaction. The results of this main effect (H-4) is really not a meaningful finding, concerning the major purpose of this study.

H-5: There will be no significant differences between sexes on mean HLC scores.

The analysis supported this hypothesis which further supports Wallston, et al.'s (Note 1) findings that no significant differences exist between male and female college students on HLC scores.

H-6: There will be no significant differences between sexes on mean I-E scores.

The analysis did not support this hypothesis. The finding agrees with some past research and disagrees with other research. In all, the evidence on the relationship between sex and I-E scores remains conflictual.

These findings indicated that the females sampled in this study are more external in their feelings of control concerning everyday life. This finding could also indicate that the women sampled in this study have a more traditional outlook as to the woman's role in the world today. On the other hand, males in this study appear to fit the stereotype of males in our society who feel they have control over their lives.

Discussion of Exploratory MANOVAS

The total sample of useable data was 411. The analysis of the primary hypotheses (H:1-6) was based upon the number of students who used the SHS (N = 145) and the number of students who did not use the SHS (N = 162). The total N for the primary analysis was 307.

The 104 students in the total sample (N = 411) who reported no health problem were not included in the primary analysis but were included in the subsequent exploratory analysis conducted to investigate possible effects of these 104 previously unanalyzed subjects on the dependent variables of HLC and I-ELC. The total N for these exploratory MANOVAS was 411.

(2 x 2 x 3 MANOVA) Sex X Value Placed on Health X Use

In this exploratory MANOVA, need was eliminated in order to determine the effect of the "no problem" group on HLC and I-E, and to determine if any interaction existed between sex, value placed on health, and use (use of SHS, no use of SHS, no problem). The total N for this analysis was 411.

The results of this analysis indicated no interaction effects for use, sex, and value placed on health with HLC and I-E. Also, there were no main effects for use and HLC, I-E, although, there were significant main effects for sex and I-E. Also, the main effect for value placed on health and HLC reported in the primary analysis of Hypothesis 4 was negated.

When the mean HLC scores of students who reported "no problems" and placed in high value on health (n = 63, X = 25.25) and the mean HLC scores of students who reported "no problems" and placed a low value on health

(n = 41, X = 25.22) were added to the mean HLC scores of users and non-users who placed a high or low value on health, the mean HLC scores were reduced.

The addition of the "no problems" group apparently reduced the means and variances of HLC scores for both high and low value groups, thus eliminating the differences previously found in the primary analysis.

(2 x 2 x 2 MANOVA) Sex X Value Placed on Health X Perceived Need

In this exploratory MANOVA, use was eliminated in order to determine the effect of need on HLC and I-E, and to determine if any interaction existed between need, sex and value placed on health with HLC and I-E. The total N for this analysis was the total sample of 411.

The results of this analysis substantiated the findings related to the primary hypotheses, with the exception of Hypothesis 4. Again, there was a main effect due to sex and I-E. Further, as in the 2 x 2 x 3 exploratory MANOVA, there were no differences in HLC scores due to value placed on health. Thus, the addition of the "no problems" group (N = 104) produced no effects due to perceived need, as measured in this study.

Discussion of Secondary Hypotheses

H-7: There will be no significant difference among races on mean HLC scores.

Analysis supported this hypothesis. The results support Wallston, et al.'s (Note 1) research findings of no significant difference in a college population between race and HLC.

H-8: There will be no significant difference among races on mean I-E scores.

The analysis supported this hypothesis. Race had no effect on I-E. The results also supported previous research (Gore & Rotter, 1963; Rotter, 1966) which reported that race was not an antecedent variable to I-E.

H-9: There will be no significant differences in mean HLC scores among the reported estimates of parental annual income.

Analysis supported this hypothesis. These results provide additional data for the HLC scale.

In the development of the HLC scale, Wallston, et al. (Note 1) did not report any measure of socioeconomic level. Socioeconomic level was estimated on the basis of reported parental annual income. Income as defined in this study (Consumer Income, 1976a, 1976b) approximates the traditional socioeconomic levels (e.g., low, middle, upper) which are no longer in vogue. This analysis suggests that estimated parental income is not related to HLC scores in a college population.

H-10: There will be no significant differences in mean I-E scores among the reported estimates of parental annual income.

Analysis supported this hypothesis and thus supported Rotter's (1966) original contention. Again, socioeconomic level was estimated on the basis of reported parental income and was not found to be an antecedent variable to I-E.

H-11: There will be no significant differences in mean HLC scores among year in college.

Analysis supported this hypothesis. In the development of the HLC scale, Wallston, et al. (Note 1) did not investigate year in college as a possible antecedent to HLC. This initial investigation indicates no relationship among year in college and HLC.

H-12: There will be no significant differences in mean I-E scores among year in college.

This analysis indicated no relationship between I-E scores and year in college. No other data presently exists on this relationship to either lend support or refute this finding.

H-13: There will be a mild positive relationship between HLC and I-E scores.

The results do support this hypothesis. The results of the analysis indicate there is a weak-positive relationship between HLC and I-E scores. In this study, the concurrent validity of the HLC with I-E scale was .26 ($N = 411$, $p < .01$). This suggests that the HLC scale shares a 6 percent common variance with the I-E scale. This finding supports Wallston, et al.'s (Note 1) finding that the HLC scale is measuring something different from the

more general locus of control scale. Further, these findings indicate that the HLC scale meets the requirement that a new test not correlate too highly with measures from which it is supposed to differ (Campbell & Fisk, 1959).

Summary of Results

This study was concerned with the relationship of HLC and I-ELC with use of a SHS. The literature reviewed on utilization of a SHS indicated that sex and perceived need are related to use of a SHS. Also, the literature reviewed on HLC suggested an association between value placed on health and HLC. These extraneous variables, sex, perceived need, and value placed on health, were controlled by design. They were included as independent variables with the main independent variable of interest--use of SHS. The dependent variables were HLC and I-ELC.

Results indicated no simple or complex interactions among the independent variables and the dependent variables. Furthermore, when perceived need was eliminated as a variable, there were still no interactions among the extraneous variables and/or the main independent variable of use of a SHS with HLC or I-ELC. Likewise, when use was eliminated as a variable, there were no interactions. Results also indicated no main effects or direct relationship between HLC or I-ELC with use of the SHS.

Concerning the relationship among the demographic variables of race, year in college, and estimated parental

income with HLC and I-ELC, results indicated no differences among these various groups. However, there was a significant difference between sexes on I-E scores. Females were more external.

Implications and Recommendations

The implications of the findings are that it is reasonable to expect no relationship among use of a SHS and value placed on health with HLC. This applies to a college population of students who have access to a SHS where many of the economic and other barriers to care have been removed.

Further, the findings indicated no relationship exists between the extraneous variables of sex and perceived need and I-E. However, sex does affect I-E scores, with females being more external than males. This last finding has no direct bearing on the major purpose of this study, but, nevertheless, contributes to the I-ELC literature.

It would appear that other psychological variables, e.g., attitudes towards the SHS, satisfaction with services received, knowledge about the SHS, could have greater impact on utilization of a SHS than HLC or I-ELC. This is subject to further research. Theoretically, perception is construct or process which cannot be denied. However, while HLC and I-ELC are mediating variables, they are not related to use of a SHS. They may be related to what Franklin and McLemore (1970) call primary symptom response, which entails

perception of symptoms and deciding when to choose a course of action. This is subject to future research.

Concerning sample size, a larger one could be used. For future research a pre-established system which places emphasis on stratified sampling by the independent variables could be an important consideration.

Regarding the HLC and I-E scales, their scale scores do not seem to be affected by the demographic variables of race, year in college and estimated parental annual income. This would imply that these scales can be used in further research with college populations without concern about the effects of these variables.

Regarding the HLC scale as a measure of health expectancy, the possibility exists that the HLC scale in its present form is too general a measure of expectancy of control regarding health and specific health behavior. A more behaviorally specific measure of locus of control regarding utilization of SHS might be more sensitive to perceptions of control regarding utiliztion of a SHS.

This study did not purport to answer all of the questions that arise in connection with utilization of a SHS, but, rather was exploratory, specifying possible relationships between certain psychological variables and utilization of a SHS.

APPENDIX A

QUESTIONNAIRE

APPENDIX A

QUESTIONNAIRE

UTILIZATION SURVEY

DIRECTIONS

General Information

This booklet contains statements of how people behave in certain situations or feel about certain things regarding life, health, and health behavior. The answers you provide to the following questions are useful for the study of college students who use campus health facilities.

General Instructions

1. Answer every question to the best of your ability. Give as honest an answer as you are able.

2. Please follow the specific directions given throughout the booklet. Erase completely any answer you wish to change.

3. Mark your answers on the IBM answer sheet using a 2 or 2½ lead pencil.

4. Do not write your name on the answer sheet. Your answers are confidential.

5. Please return all materials: answer sheet and questionnaire.

6. Before beginning, please mark your sex in the appropriate box on the IBM answer sheet.

VALUE SURVEY

Below you will find a list of 10 values listed in alphabetical order. Your task is to arrange them in order of their importance to YOU, as guiding principles in YOUR life.

Study the list carefully and pick out the one value which is the most important for you. Write the number "1" in the space to the left of the most important value. Then pick out the value which is second most important for you. Write the number "2" in the space to the left. Then continue in the same manner for the remaining values.

Some people find it difficult to distinguish the importance of some of these values. Do the best that you can, but please rank all 10 of them. The end result should truly show how YOU really feel.

1._____A COMFORTABLE LIFE (a prosperous life)

2._____AN EXCITING LIFE (a stimulating, active life)

3._____A SENSE OF ACCOMPLISHMENT (lasting contribution)

4._____FREEDOM (independence, free choice)

5._____HAPPINESS (contentedness)

6._____HEALTH (physical and mental well being)

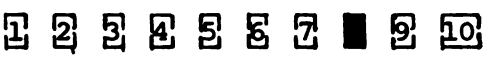
7._____INNER HARMONY (freedom from inner conflict)

8._____PLEASURE (an enjoyable, leisurely life)

9._____SELF-RESPECT (self-esteem)

10._____SOCIAL RECOGNITION (respect, admiration)

Now, please transfer all your ranked values to the IBM answer sheet. For example, if you ranked item 1 (a comfortable life) eighth in order of importance then you would look at item 1 on the answer sheet and fill in the eighth (8) answer space. Your answer would look like this:

1.___8___A COMFORTABLE LIFE: 1. 

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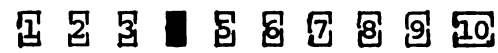
HEALTH REACTION INVENTORY

Listed below are 11 statements about health. You are asked to choose the answer that best describes your beliefs concerning each statement. Please mark the appropriate box on the answer sheet. For example, look at item 11. If you strongly agree with statement 11 then look at number 11 on the answer sheet and mark slot 4 on the answer sheet. Your answer would look like this:

11. 

11. If I take care of myself, I can avoid illness:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

12. Whenever I get sick it is because of something I've done or not done:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

13. Good health is largely a matter of good fortune:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

14. No matter what I do, if I am going to get sick I will get sick:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

15. Most people do not realize the extent to which their illnesses are controlled by accidental happenings:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

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16. I can only do what my doctor tells me to do:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

17. There are so many strange diseases around, that you can never know how or when you might pick one up:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

18. When I feel ill, I know it is because I have not been getting the proper exercise or eating right:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

19. People who never get sick are just plain lucky:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

20. People's ill health results from their own carelessness:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

21. I am directly responsible for my health:

    1. strongly disagree
    2. disagree
    3. agree
    4. strongly agree

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SOCIAL REACTION INVENTORY

Listed below are 29 pairs of statements. You will probably agree with one of the two statements more than you will with the other one. Sometimes neither of the two statements will really say what you would like it to say. If this happens, just choose the one which is closest to what you believe. There are no right or wrong answers.

Please put all of your answers on the answer sheet page. For example, look at item 22 below. If you agree with statement "1" then look at number 22 on the answer sheet and make a heavy dark line on the answer sheet between the first two lines after the number 22. If you agree with statement "2" then mark between the second lines.

22. 1. Children get into trouble because their parents punish them too much.

    2. The trouble with most children nowadays is that their parents are too easy with them.

23. 1. Many of the unhappy things in people's lives are partly due to bad luck.

    2. People's misfortunes result from the mistakes they make.

24. 1. One of the major reasons why we have wars is because people don't take enough interest in politics.

    2. There will always be wars, no matter how hard people try to prevent them.

25. 1. In the long run people get the respect they deserve in this world.

    2. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

26. 1. The idea that teachers are unfair to students is nonsense.

    2. Most students don't realize the extent to which their grades are influenced by accidental happenings.

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27. 1. Without the right breaks one cannot be an effective leader.

    2. Capable people who fail to become leaders have not taken advantage of their opportunities.

28. 1. No matter how hard you try some people just don't like you.

    2. People who can't get others to like them don't understand how to get along with others.

29. 1. Heredity plays the major role in determing one's personality.

    2. It is one's experience in life which determine what they're like.

30. 1. I have often found that what is going to happen will happen.

    2. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

31. 1. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

    2. Many times exam questions tend to be so unrelated to course work that studying is really useless.

32. 1. Becoming a success is a matter of hard work, luck has little or nothing to do with it.

    2. Getting a good job depends mainly on being in the right place at the right time.

33. 1. The average citizen can have an influence in government decisions.

    2. This world is run by the few people in power, and there is not much the little guy can do about it.

34. 1. When I make plans, I am almost certain that I can make them work.

    2. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

35. 1. There are certain people who are just no good.

    2. There is some good in everybody.

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36. 1. In my case getting what I want has little or nothing to do with luck.

    2. Many times we might just as well decide what to do by flipping a coin.

37. 1. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

    2. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

38. 1. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

    2. By taking an active part in political and social affairs the people can control world events.

39. 1. Most people don't realize the extent to which their lives are controlled by accidental happenings.

    2. There really is no such thing as "luck."

40. 1. One should always be willing to admit mistakes.

    2. It is usually best to cover up one's mistakes.

41. 1. It is hard to know whether or not a person likes you.

    2. How many friends you have depend upon how nice a person you are.

42. 1. In the long run the bad things that happen to us are balanced by the good ones.

    2. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

43. 1. With enough effort we can wipe out political corruption.

    2. It is difficult for people to have much control over the things politicians do in office.

44. 1. Sometimes I can't understand how teachers arrive at the grades they give.

    2. There is a direct connection between how hard I study and the grades I get.

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45. 1. A good leader expects people to decide for themselves what they should do.

    2. A good leader makes it clear to everybody what their jobs are.

46. 1. Many times I feel that I have little influence over the things that happen to me.

    2. It is impossible for me to believe that chance or luck plays an important role in my life.

47. 1. People are lonely because they don't try to be friendly.

    2. There's not much use in trying too hard to please people, if they like you, they like you.

48. 1. There is too much emphasis on athletics in high schools.

    2. Team sports are an excellent way to build character.

49. 1. What happens to me is my own doing.

    2. Sometimes I feel that I don't have enough control over the direction my life is taking.

50. 1. Most of the time I can't understand why politicians behave the way they do.

    2. In the long run the people are responsible for bad government on a national as well as on a local level.

GO ON TO NEXT PAGE

SELF - DESCRIPTION INVENTORY

Each of the following ten items are composed of two words which form a continuum. Please mark the appropriate space on the IBM answer sheet that describes the WAY YOU SEE YOURSELF on each of the items.

For example, look at item 51. The words are hard - soft. If you see yourself as a hard person, you would fill in space 1 or 2 on the IBM answer sheet for item 51. However, if you see yourself as soft, you would fill in 6 or 7. If you see yourself between the two words, you would fill in 3, 4, or 5 on the answer sheet for item 51.

THE WAY I SEE MYSELF:

51.	HARD	1	2	3	4	5	6	7	SOFT
52.	TRUSTWORTHY	1	2	3	4	5	6	7	UNTRUSTWORTHY
53.	QUICK	1	2	3	4	5	6	7	SLUGGISH
54.	POWERFUL	1	2	3	4	5	6	7	FRAIL
55.	JOYOUS	1	2	3	4	5	6	7	DEPRESSED
56.	FIERY	1	2	3	4	5	6	7	ICY
57.	PROFOUND	1	2	3	4	5	6	7	SUPERFICIAL
58.	PLEASANT	1	2	3	4	5	6	7	UNPLEASANT
59.	ACTIVE	1	2	3	4	5	6	7	PASSIVE
60.	VALUABLE	1	2	3	4	5	6	7	WORTHLESS

GO ON TO NEXT PAGE

BEHAVIOR QUESTIONNAIRE

This part of the survey has to do with personal information about you. Since the survey is confidential please answer every question honestly and accurately.

61. Please indicate to which racial group you belong:

    1. Black
    2. White
    3. Oriental
    4. Indian (American)
    5. Other

62. What year are you in college:

    1. Freshman
    2. Sophomore
    3. Junior
    4. Senior

63. What is the approximate yearly income of your parents?

    1. less than $5,038
    2. $5,039 - $10,000
    3. $10,001 - $15,000
    4. $15,001 - $20,000
    5. $20,001 - $30,000
    6. $30,001 and over.

64. Since school began in September, 1975, how many days were you kept from the usual things you do because of a problem with your health?

    1. none
    2. one to two days
    3. three to more days

65. If since school began in September, 1975, you were kept from the usual things you do because of a problem with your health, estimate the intensity or degree of your problem:

    1. slight problem,
    2. moderate problem,
    3. severe problem,
    4. no problem.

GO ON TO NEXT PAGE

66. If at any time since school began in September, 1975, you had a problem with your health, which of the following actions did you choose to take (choose one)?

    1. sought medical care at campus health center,
    2. sought medical care off campus,
    3. sought medical care at both campus health center and off campus,
    4. medicated yourself,
    5. medicated yourself and sought medical care at campus health center,
    6. medicated yourself and sought medical care off campus,
    7. medicated yourself, sought medical care at both campus health center and off campus,
    8. did nothing
    9. had no problems.

67. Since school began in September, 1975, how frequently have you engaged in the behavior you checked in question 66?

    1. once,
    2. twice,
    3. three times,
    4. had no problems.

68. In general, how satisfied are you with the campus health center?

    1. satisfied,
    2. neutral,
    3. dissatisfied.

69. How would you evaluate your overall health status?

    1. poor, fair,
    2. good,
    3. excellent.

70. In order to establish the validity of self-reported use of the campus health center, my dissertation committee requires me to ask you for your student number. I will provide the Medical Records office at the health center with a list of student numbers. They will provide me with the percentage of the total sample who reported using the health center and who actually used it. This information is strickly confidential. Would you please fill in the appropriate boxes on the answer sheet for student number.

    Thank you for your cooperation!

APPENDIX B

BASIC VARIABLE LIST BY IBM CARD AND COLUMN

Appendix B

Basic variable list by IBM card and column

Variable	Score Range	IBM Card	IBM Column
IND. VARIABLES			
1. Sex[a]	1-2	1	3
2. Value Placed on Health[b]	1-10	1	16
3. Perceived Need[c]	1-3	1	74
4. Use[d]	1-9	1	76
DEP. VARIABLES			
5. HLC scale[e]	11-44	1	21-31
6. I-E scale[f]	0-23	1	32-60
DEMOGRAPHIC			
7. Race	1-5	1	71
8. Year in College	1-4	1	72
9. Income of Parents	1-6	1	73
IDENTITY			
10. Card number	1	1	4
11. Student number	1-6	1	5-10
OTHER			
12. Value Survey	1-10	1	11-20
13. Self-concept Scale	10-70	1	61-70
14. Intensity of Illness	1-4	1	75
15. Frequency of Use	1-4	1	77
16. Satisfaction	1-3	1	78
17. Estimate of Health	1-3	1	79

[a] Sex: 1 male; 2 female

[b] Value placed on health: 1-4high=2; 5-10=low=1

[c] Perceived need: 1-2=low=1; 3=high=2

[d] Use: 1,3,5,7-Use of SHS=2; 2,4,6,8=No use of SHS=1; 9=No problems=3

[e] HLC: Reflect items in Cols. 21,22,28,30,31; Total Score=Sum of all Items

[f] I-E: Positive Scores omit Cols. 39,45,50,55,58 from scoring. Total Score equals sum of certain keyed items.

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