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The effect of Outward Bound on health locus of control, health value, and wellness behavior

Latess, Dennis Richard, Ph.D.
The Ohio State University, 1988
THE EFFECT OF OUTWARD BOUND ON HEALTH LOCUS OF CONTROL, HEALTH VALUE, AND WELLNESS BEHAVIOR

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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The Ohio State University

1988

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DEDICATION

This research project is dedicated to my wife Sue. The sacrifice she made and the support she gave could only have been given out of sincere love.
ACKNOWLEDGEMENTS

I express my sincere appreciation to my committee members, Drs. Sy Kleinman, Cory Bates, and Jim Sweeney, for their guidance and support throughout this research project.

Sincere gratitude is given to Drs. David Kriska and Fred Ruland for their assistance with the interpretation of the data and statistical analysis. Appreciation is given to Mrs. Robin Chiarello for the hours she spent proofreading the draft of this manuscript.

I would like to express my thanks and appreciation to the Staff of the North Carolina Outward Bound School for their help and support. Thanks also go to Mr. Dan Simcox and his social studies class at Springfield Local High School for their help with the Pilot Study. I would also like to express my appreciation to my brother, Mr. Joseph Latess, for his help with the interview portion of this research project.

To my wife Sue I express my gratitude and appreciation for all the time she spent helping with the foundational work of this
manuscript, and especially for her support and understanding in my frequent absences.

Special thanks to my family, especially my parents, for all their love and support. I would also like to thank all those friends, too numerous to mention, who gave help and moral support.
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PUBLICATIONS

"Physical Education and Adventure Education: There is a relationship"  

**FIELD OF STUDY**

Major Field: Health, Physical Education, and Recreation/Outdoor Pursuits

Cognate Area: Natural Resources
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CHAPTER I
INTRODUCTION

Since the inception of Outward Bound in this country in 1961, adventure education has become recognized as a viable educative process. Using a blend of physical and social challenge the Outward Bound process, sometimes referred to as the adventure education process, is one that places the learner in unique physical and social surroundings in order to elicit specific outcomes. Inherent in the process is the presentation of two very important elements; (1) novel physical challenges many times presented as adventure or controllable risk; (2) novel social situations presented by thrusting individuals into interactions with a group of strangers. These two elements are important to the adventure education process because they create in the learner a state of uncertainty. The uncertainty, or adaptive dissonance, heightens arousal level to promote awareness of one's surroundings and a positive learning environment (Walsh and Golins, 1975).

Equally important to the process is the idea of programming for the learners successful completion of problem-solving tasks. Here, the learner is made to feel that successful resolution of physically and mentally challenging problems, with which he/she is
faced, is contingent on his/her own behavior or the cooperative behavior of the group. The resolution of the problems, therefore, is not attributed to an other individual (the instructor), or chance, luck, or fate.

The use of adventure in an educative manner is by no means a contemporary idea. Historically, early evidence that man used adventure as an educational tool can be traced at least as far back as the Greek soldiers who used mountain climbing activities as a means to train for confrontations with other hostile societies (Hackensmith, 1966). The mountain activities were thought to elicit in the soldiers greater amounts of discipline and the ability to withstand physical stress.

The evolution of modern-day adventure programming has made many strides since those early days of the Greek soldier. More recently adventure programs have been developed which purport having many benefits for those who participate. Notable among these programs are the Outward Bound Schools who, in their 25 years of operation, have served more than 160,000 Americans ranging in age from 14 to 66 years (Outward Bound, 1988). Although Outward Bound is recognized as the first adventure-based program in this country, they are not alone. Out of 123 colleges and universities listed in the 1985-86 Society of Park and Recreation Educators Curriculum Catalogue, 85 institutions (70%) reported
having courses directly related to outdoor adventure (Hendee and Roggenbuck, 1984). Hale (1978) reported over 200 colleges and universities offering courses or degrees in adventure-related activities. These are but three examples of the tremendous growth of adventure-based education in this country.

Along with this growth has come a multitude of research studies aimed specifically at the potential outcomes of adventure education for its many participants. Ewert (1986) classified these outcomes into four categories: psychological, sociological, educational, and physical.

The greatest concentration of research in the psychological category has centered on positive gains in self-concept of those individuals participating in survival training courses (Clifford and Clifford, 1967; Adams, 1970; Moses and Peterson, 1970; Howard, Heaps, and Thorstenson, 1972; Robbins, 1976; Ewert, 1983; and George, 1984) and adventure education programs (Naches and Roberts, 1967; Fornader, 1974; Jones, 1978; and Crume, 1983). A second area of psychological outcomes that has been dealt with is locus of control orientation of adventure education participants (Wright, 1983; Nowicki and Barnes, 1973; Moffatt and Pless, 1983; Kessell, Resnick, and Blum, 1985; Stremba, 1977; and Luckner, 1985). Fear reduction has also received some attention in this category (Ewert, 1987). Other psychological outcomes that have not
received the same attention are sensation-seeking and gains in confidence levels.

Sociological outcomes of adventure-based education that have seen a great deal of research effort include; increased recidivism of adjudicated youth (Kelly and Baer, 1971; Willman and Chun, 1973; Kelly, 1974; and Cytrymbaum and Ken, 1975) and rehabilitative programs for adjudicated youth (Wright, 1983) and incarcerated adults (Hunter, 1984).

Educational outcomes seem to have centered on adventure and its effect on academic achievement (Moses and Peterson, 1970; Hammerman, 1978; Stogner, 1978; and Moses, 1968), whereas physical outcomes of adventure education have centered on specific components of physical fitness (Sledentop, Herkowitz, and Rink, 1984; Wright, 1983).

Although many of the specific areas within each category of outcomes have received some research effort, many have not. Figure 1 illustrates the four categories of outcomes derived from adventure education as outlined by Ewert (1986).

In contemporary society a greater concern for health related fitness and positive wellness attitudes is present. For this reason a fifth category of outcomes can be derived from adventure education. This category includes areas specific to the health and wellness of the individual participant.
As a treatment modality for substance abusers, survivors of rape and incest, victims of family violence, the chronically mentally ill, Vietnam veterans and youths with juvenile diabetes, the Outward Bound process has been used as an adjunct to therapy (Chase, 1981) with varying results. Bunting (1982), too, has dealt with the more general mental health area of adventure education and its stress reduction possibilities. Thus, there has been some research devoted to the Outward Bound process as an adjunct to therapy, however, little if any research is directed toward the Process as a preventive health behavior model.

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FIGURE 1. THE FOUR CATEGORIES OF OUTCOMES DERIVED FROM ADVENTURE EDUCATION (Ewert, 1986).
If this is viewed in terms of the Wellness-Illness continuum developed by Travis (1977), the Outward Bound process has been used as a health behavior model primarily from a treatment standpoint. Those participants for whom this treatment is provided would appear to fall somewhere on the continuum from "no discernible illness or wellness" to "premature death" (Figure 2).

![Wellness-Illness Continuum](Image)

**FIGURE 2. WELLNESS-ILLNESS CONTINUUM (Travis, 1977).**

As a preventive health model, Outward Bound would deal with those individuals who can be placed on the continuum from "no discernible illness or wellness" to "high level wellness". It seems possible that through the Outward Bound process an individual can gain greater control over those behaviors which can be labeled preventive health behaviors.
Wallston and Wallston (1978) report on much of the literature that identifies several preventive health behaviors. They include; use of seat belts, preventive dental care, and health information seeking. Others might include breast self-examination, testicular self-examination, positive eating habits, and involvement in physical fitness regimes.

Outward Bound as a preventive health model would include similar behavioral changes and personal growth for the individual as outlined by Chase's (1981) therapeutic approach:

- Self-esteem and self-confidence will increase.
- Locus of control and specifically health locus of control issues will be resolved as the individual learns that the reward of having "good" health is contingent on his/her own behavior.
- The true values of cooperation, interdependence, and compassion will be learned on an experiential basis.
- The sense of responsibility for self, for others in the group, and for society will be enhanced.
- The awareness of functional behavioral patterns will develop in a way that is not possible within four walls.
- The value inherent in taking risks will become clear, even when doing so involves confronting some of the participant's deepest fears.
• The wide range of human reactions will be experienced and expressed appropriately.

• The ability to trust and to be trusted will be heightened.

• Physical health will improve, and the awareness of the importance of maintaining physical fitness will develop.

• New avenues for recreation which are creative, enjoyable, and growth enhancing will be discovered.

The central focus of this research project is to look more closely at the second personal growth variable in the above outline. Attempting to change locus of control orientations in the specific area of health seems appropriate in helping individuals to attain preventive health behaviors.

The work of Rotter (1954; 1966), Rotter, Chance and Phares (1972), and Phares (1976) has dealt extensively with the social learning theory. Central to the theory is the concept of locus of control. This concept contends that when a reinforcement is perceived by an individual as following some action of his/her own but not being contingent upon his/her own action it is typically perceived as the result of luck, chance, fate, under the control of powerful others, or as being unpredictable because of a complexity of forces coming into play. When an individual interprets a situation in this way, it has been labeled as a belief in external
control (Rotter, 1966). On the other hand, if the same individual perceives the situation as being contingent on his/her own behavior, actions, or personal characteristics, it has been labeled as a belief in internal control (Rotter).

Phares (1976) contends that since locus of control refers to expectancies for control over one's environment, those individuals who have an internal locus of control (Internals) as determined by a pencil and paper test would demonstrate a higher level of coping than those individuals who have an external locus of control (externals). Early research does support Phares' contention.

Seeman and Evans (1962), in one of the earliest attempts to link locus of control with health-related behavior, focused on the association between locus of control and the information-seeking behavior of tuberculosis patients in a hospital setting. Using an early 12-item version of an Internal-External (I-E) Scale, they selected 43 internal-external pairs of white males who were matched for occupational status, education, and ward placement. Their findings suggest that those men who were determined to be Internals knew more about their disease than their external counterparts. Using a rating by the medical staff, the Internals had greater objective knowledge than externals. Internals were also more inquisitive with physicians and nurses about tuberculosis and their own situation. As Phares (1976) points out, it seems that the
internals in this study attempted to gain a greater control over their surroundings than did the externals. Since this early linkage between health related behavior and locus of control orientation, researchers have looked more critically at the locus of control construct and its relationship to health related behavior. More specifically, there is some evidence that the locus of control construct is not unidimensional but multidimensional in nature. Several studies (Levenson, 1973a, 1973b, 1973c; Reid and Ware, 1973; Collins, 1974) have identified the multidimensionality of the Internal-External Scale with varying results. However, in all of these studies at least three dimensions of locus of control were identified (Phares, 1976). Moreover, Wallston, Wallston, Kaplan, and Maldes (1976) summarized the value of developing a domain- or area-specific locus of control scale. This notion stems from the idea that individuals may possess internal locus of control orientations in one area, whereas, in another specific area that same individual may possess external orientations. An example of this would be the individual who perceives much internal control concerning the area of politics and at the same time perceives little personal control over his own health matters.
More recent research (Wallston, Wallston, and DeVellis, 1978) suggests the use of a multidimensional, domain-specific (i.e., health) locus of control scale to explore beliefs that the source of reinforcement for health-related behaviors is either internal, a matter of chance, luck, or fate, or under the control of powerful others.

Although many factors contribute to an individual's actions regarding his/her preventive health behavior (PHB), McKenzie and Yonker (1987) found a significant link between locus of control and PHB. The nature of the relationship was such that those individuals who were identified as health-internals (do not leave matters regarding health to chance or to the responsibility of significant others) were more likely to practice good PHB than those individuals who were identified as health-externals (leave matters of health to chance and deny responsibility for their own good health transferring it to significant others).

Cummings, Becker, and Malle (1980) in an attempt to combine the many variables that had been identified in several Health Belief Models narrowed the number of variables to fewer than one-hundred. Among the factors responsible for an individual's health-related behavior is internal/external locus of control. Cummings et al. defined this variable as the "individual's perception of his control over both personal health matters and life in general." The
individual's belief in having control is actually more important than whether he/she really does (Justice, 1987).

From a physiological perspective, when an individual has a sense of control the stress hormones cortisol, norepinephrine and epinephrine decline (Bandura, 1985; Rodin, 1979). Individuals who possess an internal control orientation are able, through their sense of control, to keep stress hormones and endorphins from reaching levels that can weaken their immune systems (Bandura, 1986). A sense of control modulates physiological and biochemical reactions for the body which is a crucial element in staying healthy (Justice, 1987).

Health locus of control can be categorized as one indicator of an individual's health behavior. A large amount of research seems to suggest that those individuals who possess an internal health locus of control are more likely to engage in preventive health behaviors (Strickland, 1978; Wallston and Wallston, 1978; and McKenzie and Yonkers, 1987). Furthermore, the benefits of possessing an internal health locus of control seem to be both physical and psycho-social in nature.

As an adjunct to therapy for those in a symptomatic or dysfunctional state of health, the Outward Bound process has met with some success (Chase, 1981). It seems possible that Outward Bound can effect change in the asymptomatic individual as well.
The results of this research indicate that an Outward Bound course can be used as a preventive health behavior model by reinforcing and/or moving an individual in the direction of greater internal health locus of control orientations thereby increasing positive behaviors with regard to health and raising their level of wellness.

**Statement of the Problem**

Although many of the expected outcomes and benefits of adventure education have received much research attention, many have not. More specifically, in the health category much of what has been written has dealt, to a large extent, with treatment modalities. Adventure education and the Outward Bound process as an intervention and adjunct to therapy in specific areas of mental health continues to increase in importance as our society becomes more complex.

A health area that also needs to be investigated is the idea of using adventure education as a preventive health behavior model. It seems possible that the use of the Outward Bound process as a personal growth model can effect change in an individual in the area of health locus of control thereby giving the individual more control over matters of personal health.
Therefore, the purpose of this investigation was to assess the extent to which participation in a 23-day Outward Bound course will effect change in health locus of control orientations, health value, and wellness behavior.

**Importance of the Study**

In a recent Gallop poll researchers indicated that the United States is experiencing a second fitness revolution. It was noted that the primary reason that many adults gave for engaging in fitness regimes was the quest for health (Mathes and Battista, 1985). This research suggests that health and well-being is an important goal to achieve for many Americans. Therefore, examining the possibility of using an Outward Bound course as a preventive health behavior model seems appropriate in helping individuals achieve their goal of reaching and maintaining a high level of wellness.

**Purpose of the Study**

The intent of this investigation was to examine the following null hypotheses:

1. There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the internal dimension
of the Multidimensional Health Locus of Control scale.

2. There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests of the Outward Bound treatment group on the Wellness Behavior Index.

3. There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests of the Outward Bound treatment group on the Health Value scale.

Definition of Terms

**Adventure Education:** The process of eliciting, in a learner, cognitive, affective, and psychomotor outcomes by using physical and social challenges and perceived risk which can be controlled by the individual, the circumstances, another individual or individuals, and/or equipment and paraphernalia.

**Outward Bound Process:** A process in which a learner is placed into a unique physical and social environment then given a characteristic set of problem-solving tasks. The learner enters a state of adaptive dissonance to which he/she adapts by mastery of the tasks. This, in turn, reorganizes the meaning and direction of the learner's experience and he/she gains control of his/her environment (Walsh and Golins, 1975).
Locus of Control: Reinforcement on preceding behavior which is dependent on whether the person perceives the reward is contingent on his/her own behavior or independent of it (Rotter, 1966).

Internal Locus of Control: When an individual perceives that reinforcement is contingent on his/her own behavior and not due to some external, uncontrollable force, chance, or a significant other.

External Locus of Control: When an individual perceives that reinforcement is not contingent on his/her own behavior but due to some external, uncontrollable force, chance, or a significant other.

Health Locus of Control: Reinforcement on preceding behavior concerning the specific area of health that depend on whether the individual perceives the reward as contingent on his/her own behavior or independent of it.

Wellness: A concept relating to an individual’s physical, spiritual, and social well-being which includes five dimensions: Physical Fitness, Self-responsibility, Nutritional Awareness, Stress Management, and Environmental Sensitivity (Ardell, 1986).

Wellness Behavior: The deliberate self-care actions which an individual performs of their own accord and on their own behalf to maintain life, health, and physical, mental, and social well-being.
**Health Value**: The extent to which an individual places importance on matters concerning health and well-being.

**Health status**: The condition of an individual's body, mind, and spirit.

**Assumptions of the Study**

1. Participants of the study will actively take part and complete a 23-day Outward Bound standard course.
2. Participants of the study will not have participated in any previous Outward Bound courses.
3. Participants of the study will be asymptomatic with regard to any disease or illness prior to the beginning of the Outward Bound course.
4. Participants of the study will be of similar age (17 - 24 years), education, socioeconomic status, and state of health (free from chronic disease or illness).
5. Participants of the study will have come to participate in the Outward Bound Program for a wide variety of reasons.
6. Participants of the study will have completed the battery of tests at four different periods of time.
Limitations of the Study

1. The sample for this study consists of a self-selected group, therefore, randomization will be impossible.

2. It has been observed that those who participate in an Outward Bound course experience a "readiness to change" (Borstelmann, 1970) prior to their participation, therefore, a suitable control group is not used.

3. Participants in the study will experience instructor biases even though program content will remain similar.

4. Results of the study can only be generalized to those individuals of the same age, socioeconomic status, and health status who participate in similar programs of the same length.

5. Because this study is quasi-experimental utilizing a time series design, there may be a history threat to internal validity if the sample is exposed to a great deal of health information prior to being tested. (Campbell and Stanley, 1963).

6. Three of the four testing times were administered by mail. This may have resulted in experimental mortality and increased non-response rate.
7. Because three of the four testing times were administered by mail, subjects may have completed the battery of tests at different times within a 7-10 day period.

8. The measures used in this investigation tap self-perceptions regarding health-status.

9. There may be a threat to external validity caused by the interaction of testing and the treatment.

10. The students for the interview portion of this study were randomly selected from the Cedar Rock basecamp, however, students for the North Carolina Outward Bound School course NC-348 were not randomly selected as to which basecamp they would attend.
CHAPTER II
REVIEW OF LITERATURE

The review of literature is divided into the following categories:

1. **Locus of control construct** - theoretical underpinnings of the construct and early attempts to measure locus of control. Much research suggests that the construct is multidimensional and domain-specific indicating the use of a measurement scale specific to the area to be tested (i.e., health).

2. **Locus of control and outdoor education** - a limited amount of research has dealt with changes in locus of control as a result of an outdoor camp experience with various populations.

3. **Locus of control and health related behavior** - research in this category has shown that those who possess an internal locus of control engage in preventive health behaviors more so than those individuals who possess an external locus of control.
4. **The Concept of Wellness** - this concept is receiving ever increasing acceptance in our society today. Research in this area deals mainly with identifying the concept of wellness.

**Locus of Control Construct**

Social learning theory is a complex and multifaceted theory of personality development. Contained within the theory are three basic constructs which include behavior potential, general expectancy of reinforcement, and reinforcement value. These constructs work in a synergistic manner in the measurement and prediction of human behavior (Rotter, 1982).

Central to the construct of general expectancy of reinforcement is locus of control. Rotter (1966) posits that the role of reinforcement, reward, or gratification is globally recognized by those who study human nature as a critical one in the acquisition and performance of skills and knowledge. He points out that the effect of a reinforcement or reward following a behavior on the part of an individual is not a "stamping-in process" but depends, to a large extent, on whether or not the individual perceives a causal relationship between his/her own behavior and the reinforcement or reward.
Rotter illustrates the complexity of locus of control with in the construct of reinforcement value by describing two individuals' perception of the same event taking place. One individual regards the event as a reward or reinforcement, whereas, the other individual may perceive and react to the event in a totally different manner. The crucial element in the individual reactions to the same event is the degree to which each individual perceives that the reinforcement is contingent on his/her own behavior versus the degree to which the individual perceives the reinforcement is contingent, or controlled by, forces independent of his/her own actions.

Therefore, the locus of control concept contends that when a reinforcement is perceived by an individual as following some action of his/her own but not being contingent upon his/her action it is typically perceived as the result of luck, chance, fate, under the control of powerful others, or as being unpredictable because of a complexity of forces coming into play. When an individual interprets a situation in this way, it has been labeled as a belief in external control (Rotter, 1966). On the other hand, if the same individual perceives that the situation is contingent on his/her own behavior, actions, or personal characteristics, it has been labeled as a belief in internal control (Rotter, 1966).
An early attempt to measure generalized expectancy in external control was conducted by Phares in 1957. In his study, Phares developed a 26-item Likert-type scale of which 13 items were stated as external attitudes and 13 as internal attitudes. Although results did not reach statistical significance, this first attempt at measuring differences in locus of control revealed that individuals who scored high on the 13 external attitudes behaved similar to all subjects when placed in a chance versus a skill situation.

James (1957), using a similar 26-item revised version of Phares' test added 6 filler items in a Likert format. The 32-item scale was based on what James felt to be the most successful items in Phares' study. James hypothesized that within each group of subjects, whether by chance or skill instructions, individuals who score in a more external direction would behave in each group in the same way as the difference between the chance group and the skill group for all subjects. In the data analysis he found a significant relationship between his test and behavior in the task situation. Furthermore, external subjects had smaller increases and decreases following success and failure, generalized less from one task to another, and showed less recovery following a period of extinction. James also pointed out that external subjects tended to produce more peculiar shifts in expectancy (up after failure and down after success).
The James-Phares scale has been used in some research concerning internal-external control, however, J.B. Rotter, M. Seeman, and S. Liverant took on the task of broadening the test (Rotter, 1966). Their work lead to the development of an internal-external locus of control scale (I-E Scale) which has become the most widely used instrument used in measuring internal and external locus of control orientations (Levenson, 1981).

The evolutionary process of extending Rotter's I-E Scale (Rotter, 1966) continued when Levenson (1972) conceptualized that locus of control orientations could theoretically be multidimensional rather than simply unidimensional. Her conceptualization differentiated between two types of external control. The first theorized that those with external orientations could conceivably believe in chance, luck, or fate as the reasons for their reinforcements or rewards. The second theorized that those with perceptions of external control may actually extend those perceptions to powerful others being in control in connection with chance, luck, or fate. It is interesting to note that with belief in powerful others being in control there is potential for the individual to have some control. Levenson states:

It is quite conceivable that a person who believes in control by powerful others may also perceive enough regularity in the actions of such people as to believe
that he or she can obtain reinforcements through purposeful action. Such a view of externality would be quite similar to Rotter's conceptualization of internality. Furthermore, a person who believes in chance control may be cognitively and behaviorally different from one who feels a lack of personal control (Levenson, 1981, p. 15).

Thus, from this early theoretical conceptualization came a multidimensional locus of control scale containing three dimensions; internal, powerful others, and chance orientations. The development of a multidimensional locus of control scale resulted in a new measuring instrument able to enhance prediction of an individuals' control orientations. This new scales contained Internal (I), Powerful Others (P), and Chance (C) components (Levenson, 1973a, 1973b, 1973c).

The I, P, and C Scale was designed to differ from early unidimensional scales in several important ways as identified by Levenson, (1981):

1. Instead of a forced-choice format, a Likert-type Scale was used enabling the three dimensions to be more statistically independent of one another.

2. In the I, P, and C Scale all statements are phrased so that they pertain only to the person answering. They measure the degree to which the individual perceives their control over
an event, not what the individual perceives is the case for the general population. Levenson referred to this as "personal-ideological distinction".

3. Gurin, Gurin, Lao, and Beattie (1969) found that personal versus ideological control and system modifiability were contaminating factors in Rotter's I-E Scale. Therefore, the I, P, and C Scale contains no wording that might imply modifiability of the specific issues.

4. There are negligible and nonsignificant correlations between items on the I, P, and C Scale and the Marlowe-Crowne Social Desirability Scale.

With the multidimensionality of a measurement device for the locus of control concept established, many researchers (Strickland, 1973; Wallston, Wallston, Kaplan, and Maides, 1976) conceived an instrument that not only had three dimensions but was also domain-specific. Health is one domain-specific area in which there has been much interest in relating locus of control beliefs.

Wallston et al. (1976) constructed one of the first locus of control scales dealing specifically with the area of health. Their original health-related scale consisted of 11 items in a 6-point Likert format. In comparison with other measures of locus of control, the Health Locus of Control Scale (HLC) was scored so that high scores indicated agreement with externally worded beliefs.
Those individuals who score above the median are labeled "health-externals". Those who are determined to be health externals by the HLC Scale presumably have generalized expectancies that factors which determine their health are contingent on elements such as luck, fate, chance, or powerful others. Those individuals who score below the median are the "health internals". These individuals perceive that factors determining their health are under their own control and to stay or become healthy or sick is a result of his/her own actions. It is important to note that even though the HLC Scale is domain-specific, it is not multidimensional in nature (Wallston and Wallston, 1981). However, the early studies conducted in order to develop the HLC Scale offer evidence of its construct validity and show the utility of using a domain-specific scale over the more generalized I-E scale (Wallston, Wallston, Kaplan, & Maides, 1976). Further refinements of the HLC Scale were yet to come.

Levenson's early work with the multidimensionality of the locus of control concept influenced Wallston, Wallston, and DeVellis (1978) to further refine the HLC Scale. The result is a Multi-dimensional Health Locus of Control (MHLC) scale which has been used in much research to operationalize the latent variable of health locus of control.
Beginning with the original 11-item HLC Scale, new items were added which reflect three dimensions of health locus of control beliefs. These new dimensions include; internality (IHLC); powerful others (PHLC); and chance (CHLC) externality. New items were calculated at a 5th-6th grade reading level using the Dale-Chall (1948) formula, however, they were generally developed for an eighth grade reading level and are written in the personal mode (Wallston et al, 1978).

The MHLC Scale consists of two equivalent forms (A & B) each containing three 6-item scales which correspond to an individuals' IHLC, PHLC, or CHLC orientations using a 6-point Likert-type format. This new scale has several advantages for those interested in health research as pointed out by Wallston and Wallston (1981):

1. It has greater potential utility than the original HLC Scale.
2. Scores can be obtained on three (IHLC, PHLC, and CHLC) theoretically and empirically different dimensions.
3. The availability of equivalent forms (A & B) of the scale have greater utility for research designs requiring repeated measures over a short period of time.

It is also important to note that because of the multi-dimensionality of this scale there is a problem in labeling individuals as "externals" or "Internals" based on their median scores on a single dimension. Wallston and Wallston state "the
 designation 'external' became doubly ambiguous if not totally meaningless."

From a global point of view, the research that has been done in developing an instrument that measures an individuals' multi-dimensional health locus of control orientations seems to suggest that; a) health locus of control is a viable concept in helping to better understand an individuals' health behavior, and b) the MHLC scale is a valid and reliable instrument in measuring control orientations in a health-related area.

Locus of Control and Outdoor Education

In 1977, Duke, Johnson, and Nowicki studied the effects of an eight-week sports fitness summer camp on the locus of control orientations of children ages 6 to 14. Subjects were 74 boys and 35 girls enrolled in a sports fitness camp in the summer of 1975. During the first week of the camp, the Children's Nowicki-Strickland Internal-External Control Scale (Nowicki & Strickland, 1973) and a battery of physical fitness tests were administered to the campers. The procedure was repeated at the conclusion of the eight-week program. Using analyses of covariance and controlling for the effects of sex and age, the results indicated that there were significant changes ($F_{1,104} = 23.00$, $p < .01$) from an external to an internal locus of control as well as significant improvement in the
six measures of physical fitness. Duke et al. concluded that "the camp experience was accompanied by a stronger belief, on the part of the children, in their own ability to control what happens" (1977, p. 280).

Of primary interest in the study was the data that showed the children became more internally controlled as a result of participating in the camp program. However, the authors indicate that because of the design of this study, it is not possible to attribute any one variable to the changes in feelings of control in the children. It may have been one or any number of factors that may have interacted in a way unknown to the researchers. For example, the increased levels of physical fitness, the group experience with peers, or reinforcement from the camp leaders may have contributed to changes in locus of control orientations.

In a similar investigation, Nowicki and Barnes (1973) studied the effects of one week structured camp program on 261 predominantly (95%) Black inner-city teenagers. They predicted that this experience would lead to a change toward internality in the locus of control orientation of these youngsters. They also predicted that the trend toward internality would continue in a group of youngsters \( n = 27 \) who returned for an additional week of camp.
Incorporating a pretest/posttest design and using an early version of the Nowicki-Strickland Childrens Locus of Control Scale (1973), Nowicki and Barnes found significant changes in locus of control orientation after the camp experience. Data analysis revealed that the overall *t* test (*t* = 5.93, *df* = 260, *p* < .005) for eight one-week camp sessions supported their hypotheses that subjects would move in an internal direction after their one-week experience. The author's second prediction was also supported with significant finding. An analysis of scores for those youngsters (*n* = 27) who returned to camp for an extra one-week session indicated that scores continued to become more internal with more time spent at camp (*F* = 21.56; *df* = 3, 75; *p* = < .001).

As with the Duke et al. investigation, Nowicki and Barnes' study must only be taken as suggestive and generalized with care for reasons "not the least of which is the lack of a control group and the lack of experimental control of procedures in the camp program" (Nowicki & Barnes, 1973, p. 251).

In a treatment program for chronically ill children locus of control was measured at the beginning and end of a three-week camp experience in 156 children with juvenile diabetes (Moffatt & Pless, 1983). A one year follow-up was also done on a small nonrandom sample of 23 campers. The results were compared with those of 30 diabetic children who did not attend camp. Locus of
control orientations were measured using both the Nowicki Strickland Children's Locus of Control (Nowicki & Strickland, 1973) and the Parcel Health Locus of Control scales (Parcel & Meyer, 1978). In addition, several staff members used a five-point Likert-type scale to make subjective assessments of diabetes management skills in all campers. Significant changes toward internal locus of control were found on the Nowicki Strickland Locus of Control Scale and these changes seem to have persisted for the 23 subjects in the one year follow-up. No significant changes were found on the Children's Health Locus of Control Scale. Further data analysis indicated that initial scores on both scales correlated moderately with the diabetes management skills ratings made at the end of camp. Unlike the two previous investigations, the use of a control group by Moffatt and Pless suggest, with reasonable certainty, that the camp experience accounted for the differences found in locus of control orientations.

Adventure -- Etc. was created as a wilderness/urban Outward Bound experience for chronically ill, physically disabled, and able-bodied teens. Included in the program were two phases -- the wilderness phase and the urban phase with specific tasks within each. In the wilderness phase the tasks included canoeing, portaging, camping, final expedition, solo, and rock climbing. In the urban phase the tasks included bus orienteering, interviewing,
service project, marathon (bus, canoe, run), and family potluck (Kessell, Resnick, & Blum, 1985).

Research conducted with this program by Kessell, Resnick, and Blum (1985) used pre and posttesting with the Nowicki Strickland Children's Locus of Control Scale and interviewing to assess locus of control, self-image, family environment, and family dynamics. Over a two-year period (1980, 1981), 37 teens completed the program and were tested; 23 were chronically ill or disabled. The chronically ill/disabled group showed a significant increase in internal locus of control. However, no change was found in the able-bodied group. Postprogram and follow-up interviews with parents supported the quantitative data. In the interviews "parents described their children in terms of increased independence including greater responsibility for self-care and illness management as well as more social involvement outside the family" (Kessell, et al., 1985, p. 435).

In a program similar to Adventure -- Etc., Stremba (1977) conducted a research project with the Outward Bound Schools to assess the changes in participants' level of self-esteem and locus of control orientations. The Outward Bound course was 23-days long and included hiking and backpacking, training in outdoor wilderness skills and safety measures, rock climbing and rappelling, a 3-day solo, and a 3-day final expedition.
Stremba's experimental group consisted of 13 male and female Outward Bound participants with a mean age of 18.62 years. The control group consisted of 27 individuals who were pre-enrolled for an Outward Bound course but who had not yet participated in any program elements.

One of Stremba's hypotheses was that there would be a significant difference in locus of control, in an internal direction, between the experimental and control groups, and was tested with Rotter's Internality-Externality Scale. Using analysis of covariance, data analysis revealed that there was no significant difference on locus of control orientations. These results were attributed to a possible "ceiling effect" on the variable of locus of control which the individuals in the study may have attained.

Again, assessing the effects of adventure programming on the physically challenged, Luckner (1985) investigated the effectiveness of using a 10-day winter outdoor-adventure education course as a method of intervention for enhancing the self-concept and altering the locus of control of hearing impaired individuals. The 10 students in the experimental group were tested before, immediately after, and two months following the course. The control subjects, who were matched with subjects in the experimental group for sex, age, ethnicity, degree of hearing loss, age of onset, parental hearing status, and lack of a secondary handicapping condition were tested
within a similar time frame.

The instrument used to assess locus of control orientations was the Levenson Locus of Control Scale (Levenson, 1973a). Using analysis of covariance the findings indicated that participation in an outdoor-adventure education course had a significant increase in the experimental group’s internal locus of control orientation, and that the gains were still present at the two-month follow-up testing.

Alone, no one of the aforementioned studies totally supports the idea that adventure education effects an individual's locus of control orientations in an internal direction. The absences of comparison groups, small sample size, and/or lax methodological procedures seems to have diminished the strength in many of these studies. However, this research collectively seems to suggest that adventure education can effect change in the area of locus of control at least for the physically and mentally challenged population.

**Locus of Control and Health Related Behavior**

Seeman and Evans (1962), in one of the earliest attempts to link locus of control with health-related behavior, focused on the association between locus of control and the information-seeking behavior of tuberculosis patients in a hospital setting. Using an early 12-item version of an Internal-External (I-E) Scale, they
selected 43 internal-external pairs of white males who were matched for occupational status, education, and ward placement. Their findings suggest that those men who were determined to be internals knew more about their disease than their external counterparts. Using a rating by the medical staff, the internals had greater objective knowledge than externals. Internals were also more inquisitive with physicians and nurses about tuberculosis and their own situation. As Phares (1976) points out, it seems that the internals in this study attempted to gain a greater control over their surroundings than did the externals.

In two other early studies (Straits & Sechrest, 1963, and James, Woodruff, & Werner, 1965) the locus of control orientations of smokers and nonsmokers was demonstrated. Straits and Sechrest, using a true-false inventory developed for their study, measured the extent to which an individual felt that what happens to him/her is dependent upon his/her own behaviors as opposed to the operations of chance (internal versus external control). Their findings suggest that smokers were more "chance oriented" than nonsmokers.

Similarly, James, et al., assessed the locus of control orientations of smokers and nonsmokers. Their study was conducted one week after the release of the Surgeon General's report on smoking. Using Rotter's I-E Scale to assess locus of control, their
findings suggest that (a) both male and female smokers were significantly more externally controlled than were nonsmokers; (b) smokers who were convince by the evidence in the Surgeon General's report had lower external control scores than those who were not convinced; and (c) among males, those who stopped smoking following the report were more internally oriented than those who continued their smoking habit. James, et al. concluded that locus of control orientations may be an important personality dimension in relation to smoking behavior.

More recently, several researchers have investigated the relationship between locus of control orientations and other health-related behavior such as wearing seat belts (Williams & Wechsler, 1972); being inoculated against disease (Dabbs & Kirscht, 1971); practicing birth control methods (Phares, 1976); following a medical regimen (Lewis, Morisky, & Flynn, 1978); health-related information-seeking (Wallston, Maides, & Wallston, 1976); losing weight (Rothstein, 1986; Saltzer, 1979); dental health practices (Dembroski, 1969); and coping with stress (Krause, 1986). In all of the aforementioned studies internal locus of control orientation is related to what can be termed good health practices and with the ability to achieve recommended preventive health behavior.
The development of domain-specific measures of locus of control in the health area (Wallston, Wallston, Kaplan, & Maldes, 1976; Wallston, Wallston, & DeVellis, 1978) have allowed a more precise assessment tool to be used in investigating perceived control relative to health behavior. Since their development, many researchers have used these domain-specific scales with much success.

Abella and Heslin (1984) used the Health Locus of Control scale developed by Wallston et al. (1976), along with a Health Value rating (Wallston, Maldes, & Wallston, 1976) adapted from Rokeach’s Value Survey, to investigate the role of health locus of control beliefs in the association of relevant psychological variables to preventive health behavior. With seventy-one male college-age volunteers as their subjects, Abella and Heslin found that males who both valued health and had an internal health locus of control reported engaging in more preventive health behaviors than the average of all other respondents combined. Their data also revealed that persons who were exposed to negative social surroundings and identified as health-externals were least likely to engage in preventive health behaviors. These findings were statistically significant. Abella and Heslin concluded that valuing health alone in not sufficient to ensure that an individual will engage in preventive health behavior.
The person must both value health and possess an internal locus of control regarding health. "The absence of either one of these factors will result in lowered levels of preventive health behavior" (1964, p. 292). These findings support similar research in studies using clerical workers (Baughman, 1978), College-age individuals (Wallston, Maldes, & Wallston, 1976), smokers (Kaplan & Cowles, 1978), and the elderly (Andersen, 1979).

These findings are congruent with Social Learning Theory in that they not only support expectancy of reinforcement being attributable to one's own actions or chance, fate, or powerful others, but they also support the postulate of reinforcement value. Wallston and Wallston state that: "... the relation between expectancies and values is multiplicative" (1984, p. 32). In keeping within the context of Social Learning Theory, then, it seems evident that equal attention must be apportioned to generalized expectancies related to a specific situation and reinforcement value. Hence, in the aforementioned studies, valuing one's health (reinforcement value) is as important in predicting health behavior as the expectancy that reinforcements are contingent on one's own actions or behaviors (expectancy).

McKenzie and Yonker (1987) conducted a research project the purpose of which was to determine if a relationship existed between individuals' health locus of control and their preventive
health behavior. Two hundred and eighty-one randomly selected residents of a county in northwestern Ohio completed a mailed questionnaire. The questionnaire included several demographic questions and the Multidimensional Health Locus of Control Scale (modified Form A) developed by Wallston et al. (1978). A canonical correlational analysis revealed a statistically significant correlation (p < .05) between health locus of control and preventive health behavior.

McKenzie and Yonker's research lends further support to earlier studies that found a positive relationship between internal health locus of control and weight reduction in the obese (Chavez & Michaels, 1980), health fair participants (Germer & Price, 1981), and participants in a corporate fitness program (O'Connell & Price, 1982).

The Wellness Concept

Ardell (1986) identifies Halbert L. Dunn as the founding father of the wellness concept. Dunn's early ideas of holistic health established many of the principles now associated with the concept of wellness as it is known today. Central to Dunn's principles was his focus on the integration of mind, body, and spirit (Dunn, 1961). Furthermore, his principles stressed the importance of nature, self-responsibility, cellular unity and wholeness, and the
importance of the mind as healer. He also recognized the body's own restorative capacities as the most esteemed avenue in well-being (Ardell, 1986).

Nearly two decades later, several authors continue to contribute to what is known as the wellness revolution. Travis (1977), with his belief that health is more than the absence of disease, established one of the first wellness resource centers in this country. He describes wellness as:

- A way of life -- a lifestyle an individual designs in order to achieve his/her highest potential for well-being

- Having four major dimensions: Nutrition, physical awareness, stress reduction, and self-responsibility

- Involving the individual's whole being -- physical, emotional, mental, and spiritual

- Recognizing that the only thing that is certain in the universe is change

Travis is also responsible for developing the Wellness-Illness continuum that appears in Figure 2 of Chapter One. Travis and Ryan (1988), using the Wellness-Illness continuum, are quick to point out that it is possible to be physically ill and still be
oriented towards wellness, or physically healthy and still be functioning from an illness mentality. Greenberg (1985) gives a good example of the above using paraplegic individuals. Greenberg states:

Two paraplegics may be defined as ill but if one becomes depressed and angry and isolated from other human beings while the other does not, they surely differ in their degree of social health. When one joins the Wheelchair Olympics and keeps physically active and the other does not, certainly they differ in their degree of physical health.... Paraplegics may not be defined as healthy, but they can achieve high level wellness by maximizing and integrating the five components of health. Within their physical limitations, they can live a quality life. They may interact well with family and friends (social health), express their feelings when appropriate (emotional health), sense how they fit into the 'grand scheme of things' either through a religious belief or a belief in the laws of nature (spiritual health), and exercise within their capabilities, such as completing a marathon on crutches or in a wheelchair (physical health). When these components of health are enhanced near their potential, and are integrated, a person may achieve wellness in spite of being ill (1985, p. 404).
Greenberg (1985) defines wellness as the integration of social, mental, emotional, spiritual, and physical health at any level of health or illness. The reason that positive and negative states can exist at the same time lies in what he calls the concept of potentiality. That is, certain illnesses limit the potential for health. However, within those limitations also is the potential for variability. Herein lies the reason why a paraplegic individual can attain high level wellness.

Ardell (1986) includes five dimensions in describing wellness. Each of the five dimensions of wellness; self-responsibility, nutritional awareness, physical fitness, stress management, and environmental sensitivity, is fundamental to a complete lifestyle of well-being. An individual needs to have a balance between the five dimensions “for if you specialize in one or more to the neglect of even a single dimension, you will forfeit the effects of an integrated approach, which are synergistic” (1986, p. 57).

Pelletier’s (1977) idea of holistic health has given way to the concept of health being more than the absence of disease. An individual must also assume the responsibility of educating him/herself concerning all the dimensions of wellness as outlined by Ardell (1986). Holistic approaches to healing are one major aspect of transforming an individual’s consciousness with regard
to their well-being.

The ideas of wellness can help an individual understand that they are not a helpless victim struggling through life. Basically, the individual has the potential to be in complete control of his/her own life and health and they are capable of changing their way of thinking by opening themselves to the flow of energies of the body and mind (Travis & Ryan, 1988).

**Summary**

In summarizing the literature regarding locus of control, it has been found that the concept is derived from the complex and multifaceted social learning theory. Moreover, shifts toward an internal locus of control can take place as the result of participation in a structured summer camp experience and adventure education programs similar to Outward Bound.

It has been suggested that experiences such as these which can increase an individual's internal orientation can also have a relationship with various characteristics associated with locus of control. In particular, those individuals' who's orientations can be maintained or enhanced in a more internal direction have a greater degree of cognitive activity related to health behavior. The current study was an attempt to determine whether these changes can be expected to take place as the result of participation in an
Outward Bound program.

The concept of wellness was identified as an integration of the body, mind, and spirit. It also is described by many authors as more than simply the absence of disease. Wellness is multidimensional and deals with the individual in a holistic manner with regard to well-being.

The present study was an attempt to go beyond previous ones in measuring changes in locus of control as a result of participation in Outward Bound by assessing the domain-specific area of health using an asymptomatic population. Two related measures were employed; a health value rating, and a wellness behavior index. In addition, results were analyzed by analysis of variance in a repeated measure design eliminating extraneous variables not controlled in previous studies.

Therefore, it was the intent of this investigation to examine the hypotheses that health locus of control moves toward a more internal orientation and health value and wellness behaviors increase in a positive direction with participation in an Outward Bound program.
CHAPTER III
METHODS AND PROCEDURES

Chapter Three contains a description of (a) the Pilot Study, (b) the research design, (c) the subjects and the research setting, (d) research instruments, (e) procedures, and (f) null hypotheses.

The Pilot Study

A pilot study was conducted by the researcher in the spring of 1988. The purpose of the study was to assess the validity and reliability of the 24-item Wellness Behavior Index (WBI) which was used to test one of the dependent variables in this research project.

Several researchers (Williams, 1977; Beier, 1979; Graff, 1980; and Pierce, 1982) have suggested that wellness inventories with established validity and reliability ratings are difficult, if not impossible, to find. This may be due, in part, to the relatively infantile stage of wellness education research. For this reason, the instrument tested in the pilot study and used in this research project is an adaptation of Travis and Ryan's (1988) Wellness Index, Ardell's (1986) Wellness Index, and Healthstyles Self-Test. The WBI is designed to tap five dimensions of wellness. These five dimensions include nutritional awareness, physical fitness, stress management, environmental sensitivity, and self-responsibility.
The decision to use these particular dimensions was made by reviewing four wellness models (Ardell, 1986) and extracting common dimensions from all four. The result was the five aforementioned dimensions of wellness.

After development of the WBI it was reviewed by a panel of ten experts to determine content validity. The panel of experts came from a variety of educational settings. The individuals were chosen based on their experience in the field of health and physical education, and English grammar. A list of the panel of experts appears in Appendix I. The fact that the WBI was adapted from several other wellness surveys is also an indication of its content validity.

To establish reliability of the instrument it was given to 34 high school seniors (16 male and 18 female) in a Social Studies class at Springfield Local High School in Northeastern Ohio. The mean age of the sample was 17.647 years. Employing Cronbach’s alpha, the five dimensions of the instrument yielded reliability coefficients ranging from .760 (Nutritional Awareness) to .580 (Stress Management) which indicated an acceptable degree of internal consistency. Overall scale reliability was determined using the same technique and yielded an alpha coefficient of .867. Data on the reliability of the WBI can be found in Table 1.
The Wellness Behavior Index (WBI) consists of 24 items in a 5-point Likert format from "Never" (1) to "Always" (5). The Index contains five dimensions: Items 1 - 5 relate to Stress Management; Items 6 - 10 relate to Environmental Awareness; Items 11 - 14 relate to Self-Responsibility; Items 15 - 19 relate to Nutritional Awareness; and Items 20 - 24 relate to Physical Fitness.

**TABLE 1. WBI (WELLNESS BEHAVIOR INDEX) RELIABILITY COEFFICIENTS**

<table>
<thead>
<tr>
<th>Dimension</th>
<th># of Items</th>
<th>Sub-Scale Mean</th>
<th>SD</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress Management</td>
<td>5</td>
<td>14.324</td>
<td>2.982</td>
<td>.580</td>
</tr>
<tr>
<td>Environmental Sensitivity</td>
<td>5</td>
<td>14.706</td>
<td>3.623</td>
<td>.691</td>
</tr>
<tr>
<td>Self-responsibility</td>
<td>4</td>
<td>17.088</td>
<td>1.975</td>
<td>.649</td>
</tr>
<tr>
<td>Nutritional Awareness</td>
<td>5</td>
<td>14.765</td>
<td>4.120</td>
<td>.761</td>
</tr>
<tr>
<td>Physical Fitness</td>
<td>5</td>
<td>16.765</td>
<td>3.693</td>
<td>.710</td>
</tr>
<tr>
<td>Total Scale</td>
<td>24</td>
<td>77.647</td>
<td>12.195</td>
<td>.867</td>
</tr>
</tbody>
</table>

**Research Design**

The independent variable in this study was participation in a standard 23-day Outward Bound course set in a repeated measure (Time Series) design. Because the Outward Bound program inhibits
random assignment, subjects were an intact group selected on the basis of registration in course NC-348 at the North Carolina Outward Bound School in the summer of 1988. There were three dependent measures for this study; (1) scores on the Internal dimension of health locus of control as measured by the Multi-dimensional Health Locus of Control (MHLC) scale, (2) scores on the Health Value scale developed by Lau, Hartman, and Ware (1986), and (3) scores on wellness behavior as measured by a Wellness Behavior Index developed specifically for this research project.

The research design selected to answer the questions in this study was Campbell and Stanley's (1963) quasi-experimental time series design because the experimental group was naturally assembled and they were tested at four different periods in time.

Early research dealing with Outward Bound and adventure education has been criticized for having small sample size (Shore, 1977; Ewert, 1986b; Iida, 1975). Bacon (1988) suggests that the use of a repeated measure design may have utility in attempting to eliminate this problem which other researchers have encountered.

It has been suggested that programming and course structure at Outward Bound is inhibitive of obtaining large enough sample size in a pretest/posttest control group design to ensure that the problem of having too small a sample will not occur (Bacon, 1988). Furthermore, Borstelmann (1970) suggests that individuals who
come to Outward Bound possess a "readiness to change". This phenomenon increases the difficulty in finding a suitable control group for a design which incorporates a comparison sample. The aforementioned reasons lend support for the repeated measure design chosen for this research project.

The Subjects and the Research Setting

The sample for this study was taken from students in the North Carolina Outward Bound School's course number NC-348, which took place in the Pisgah and Nantahala National Forests of western North Carolina in July, 1988. These Forests are covered with rugged mountains, a network of wild rivers, and extensive backpacking trails and are managed by the National Forest Service.

The subjects were 33 individuals, 14 (42.5%) males and 19 (57.5%) females who ranged in age from 16 to 27 years with a mean age of 17.788 years. These individuals completed the battery of tests at four different time intervals and successfully finished the 23-day Outward Bound course. This sample was also of similar educational level completing a mean of 11.65 years of schooling. Socioeconomically, the sample came from families whose average yearly income was between $35,001 and $45,000. The sample also perceived themselves to have "above average" health with regard to being free from chronic disease or illness.
Research Instruments

Multidimensional Health Locus of Control Scale

Internal health locus of control was measured by the Multidimensional Health Locus of Control (MHL) scale Forms A and B developed by Wallston, Wallston, and DeVellis (1978). The MHL scale Forms A and B is a list of 18 questions set in a Likert-type format from "Strongly Disagree" (1) to "Strongly Agree" (6). Items in Forms A and B are worded in such a way as to address three different locus of control orientations. Items 1, 6, 8, 12, 13, and 17 are worded to address internal health locus of control (IHL) "I am in control of my health." Items 2, 4, 9, 11, 15, and 16 are worded to address chance health locus of control (CHLC) "Most things that affect my health happen to me by accident." Items 3, 5, 7, 10, 14, and 18 are worded to address powerful others locus of control (PHLC) "Health professionals control my health." A copy of the MHL scale Forms A and B can be found in Appendix A. Mean scores are summarized across types of subjects in Table 2.
TABLE 2. MEAN SCORES FOR MHLC (MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL) SCALE SUMMARIZED ACROSS TYPES OF SUBJECTS (Lefcourt, 1981).

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>MHLC</th>
<th>CHLC</th>
<th>PHLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Patients</td>
<td>609</td>
<td>25.78</td>
<td>17.64</td>
<td>22.54</td>
</tr>
<tr>
<td>College Students</td>
<td>749</td>
<td>26.68</td>
<td>16.72</td>
<td>17.87</td>
</tr>
<tr>
<td>Healthy Adults</td>
<td>1287</td>
<td>25.55</td>
<td>16.21</td>
<td>19.16</td>
</tr>
<tr>
<td>Persons Engaged In Preventive Health Behaviors</td>
<td>720</td>
<td>27.38</td>
<td>15.52</td>
<td>18.44</td>
</tr>
</tbody>
</table>

Background of the MHLC scale. Wallston, Wallston, Kaplan, and Maides (1976) constructed one of the first locus of control scales dealing specifically with the area of health. Their original health-related scale consisted of 11 items in a 6-point Likert format. In comparison with other measures of locus of control, the Health Locus of Control scale (HLC) was scored so that high scores indicated agreement with externally worded beliefs. Those individuals who score above the median are labeled "health-externals". Those individuals who score below the median are the "health internals".
Levenson's early work with the multidimensionality of the locus of control concept influenced Wallston, Wallston, and DeVellis (1978) to further refine the HLC Scale. The result is a Multi-dimensional Health Locus of Control (MHLC) Scale which has been used in much research to operationalize the latent variable of health locus of control.

Beginning with the original 11-item HLC Scale, new items were added which reflect three dimensions of health locus of control beliefs. These new dimensions include; internality (IHLC); powerful others (PHLC); and chance (CHLC) externality. New items were calculated at a 5th-6th grade reading level using the Dale-Chall (1948) formula, however, they were generally developed for an eighth grade reading level and are written in the personal mode (Wallston et al., 1978).

**Scoring.** Scoring for the MHLC Scale Forms A and B is the sum of the values (1 - 6) circled for each item in that subscale.

- **Internal Items:** 1, 6, 8, 12, 13, 17
- **Chance Items:** 2, 4, 9, 11, 15, 16
- **Powerful Others Items:** 3, 5, 7, 10, 14, 18
Reliability. Table 3 contains descriptive information for the MHLC scale Forms A and B. As can be seen, alpha reliabilities for the MHLC scale Forms A and B range from .673 to .767 (N= 115).

Validity. As an initial indicator of predictive validity, Wallston et al. (1978) computed correlations between health status and the MHLC scores (N= 115). Data revealed that health status correlated positively with IHLC (r = .403, p< .001), negatively with CHLC (r = -.275, p< .01) and did not correlate with PHLC (r = -.055).

TABLE 3. DESCRIPTIVE DATA ON MHLC (MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL) SCALE (Lefcourt, 1981).

<table>
<thead>
<tr>
<th>Scale</th>
<th># of Items</th>
<th>Mean</th>
<th>sd</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHLC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form A</td>
<td>6</td>
<td>25.104</td>
<td>4.891</td>
<td>.767</td>
</tr>
<tr>
<td>Form B</td>
<td>6</td>
<td>25.304</td>
<td>4.646</td>
<td>.710</td>
</tr>
<tr>
<td>PHLC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form A</td>
<td>6</td>
<td>19.991</td>
<td>5.221</td>
<td>.673</td>
</tr>
<tr>
<td>Form B</td>
<td>6</td>
<td>20.974</td>
<td>5.487</td>
<td>.715</td>
</tr>
<tr>
<td>CHLC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form A</td>
<td>6</td>
<td>15.574</td>
<td>5.751</td>
<td>.753</td>
</tr>
<tr>
<td>Form B</td>
<td>6</td>
<td>15.461</td>
<td>5.204</td>
<td>.691</td>
</tr>
</tbody>
</table>
Uses of the MHLC scale. To a great extent, the MHLC scale has been used as a predictor of health-related behavior, with varying results, in both relatively healthy people and those having a chronic disease. Fewer studies have used the MHLC scale to test the efficacy of an intervention in changing health-related locus of control beliefs. The later increases understanding of the development of locus of control beliefs as well as the effectiveness of treatment. Also, Wallston and Wallston (1981) point out that validity of the MHLC scale appears greater when used as a dependent variable as opposed to its use as an independent variable.

This use of the MHLC scale supports its use in the present investigation to measure changes in health-related locus of control orientations as a result of Outward Bound participation.

Health Value Scale

Health value was measured using the Health Value (HV) scale developed by Lau, Hartman, and Ware (1986). This scale contains four items in a 7-point Likert format from “Strongly Disagree” (1) to “Very Strongly Agree” (7). The scale was tested using a group of students entering college. Mean scores, standard deviation, and alpha reliability were reported to be 20.34, 4.41, and .71 respectively (N= 1,026). A copy of the HV scale can be found in Appendix B.
Scoring. The four item scale is scored by first reversing the two negatively worded items (numbers 2 and 3) and then taking the sum of the responses. The respondents placing a high value on health receive high scores, and those not placing a high value on health receive low scores.

Wellness Behavior Index

Wellness behavior was measured using the Wellness Behavior Index described in the Pilot Study.

Scoring. Scoring for the WBI is the sum of the values (1 - 5) circled for each item on the Index. A copy of the WBI can be found in Appendix C.

The Interview

An interview was conducted with a sub-sample of 23 randomly selected students (12 male and 11 female) from the North Carolina Outward Bound Cedar Rock Basecamp. These students had a mean age of 17.640 years and were selected from the group who completed pretest one and two. The sub-sample was reduced from an n of 25 because one student did not complete the 23-day Outward Bound course and one student declined from answering the interview questions.
The interview was conducted after the students had sufficient time to recuperate from their marathon run on the last day of the course. The interview techniques employed here were those outlined by Benjamin (1981).

The interview was incorporated to ascertain which phase and/or activities of the 23-day Outward Bound course influenced the participants with regard to their health. Interview questions were selected with this objective in mind. A copy of the interview questions can be found in Appendix D.

**Procedures**

The procedures that were followed in this study are listed below in the order in which they occurred for the treatment group.

**Outward Bound Treatment Group**

**Step 1.** The first step for the treatment group was to complete the battery of test (MHLC scale, HV scale, and Wellness Index) in a mailed questionnaire four weeks prior to their arrival at the North Carolina Outward Bound School. This was pretest one of the repeated measure design.

It should be noted that Forms A and B of the Multidimensional Health Locus of Control scale were administered alternately. Form A was administered in pretest one and posttest one. Form B was
administered in pretest two and posttest two. Using the equivalent Forms in this manner helps eliminate test sensitivity in a design that employs repeated measures (Wallston, et al., 1978).

**Step 2.** On day-one of their Outward Bound course students arrived at the Asheville North Carolina Airport. Prior to any activity the second pretest was given. After the testing students were assembled into two groups and transported by bus to one of two Basecamps — Table Rock or Cedar Rock Basecamp.

**Step 3.** Step 3 is the actual 23-day Outward Bound course which was broken down into several phases. These phases did not necessarily occur in the order in which they are presented, however, each Crew experienced every phase. The following information came from interviews with the course director and instructors, and first-hand experience by the researcher.

(a) **Course director's introduction.** Upon arrival at their respective basecamp in the Southern Appalachian Mountains, students were gathered as a group for a talk by the course director. He/she explained the rationale and philosophy of the Outward Bound process and made general remarks about the kinds of activities the students would be experiencing in the next 22 days.

Students were then introduced to the Outward Bound instructors and grouped into "Crews" of between ten and twelve males and females, plus an instructor and assistant instructor.
These Crews remained together as an intact group for most of the 23 days.

(b) **Training phase.** The first several days of the course made-up the training phase. During these days the Crews backpacked through forested areas and across mountain ridges. As the students traveled, the instructors were teaching them skills in first aid and safety, campcraft, orienteering, and knot tying and rope handling. This phase is designed to enhance responsibility of the Crew for their own survival and increase physical fitness.

It was here that the activities of white-water canoeing, rock climbing, and rappelling took place. As the demands placed on the Crew increased, so too did the demand for increased responsibility and decision-making.

(c) **Resupply.** After the first several days, all Crews were resupplied with fresh food at a pre-determined location. This is also a time to repair or replace damaged equipment, and receive and/or send mail.

(d) **Solo.** Each student experienced three days and three nights in solitude without food, and a minimum of equipment to insure comfort and safety. The purpose of solo is for each individual to spend time alone with ones’ self and reflect on his/her life and the experience at hand.
(e) **Final expedition phase.** Three days toward the end of the course was spent traveling through the mountains without the aid of an instructor. The Crew had total responsibility for traveling safely and arriving at an established destination. This phase is designed to place additional responsibility on the Crew and allow students to use the skills and knowledge they had been taught in the previous phases.

(f) **Service Project.** At some point in their course, each Crew engaged in a service project. These service projects included such activities as trash collection, grass planting, planting trees, and a host of others.

(g) **Conclusion.** At the conclusion of the final expedition, the Crews were brought together to run a 15-mile marathon. At the conclusion of the run and after having sufficient time to rest and rehydrate, a random sample of students from the Cedar Rock basecamp were asked five questions in the interview portion of this research project. This interview was conducted by the researcher and his associate. The remainder of the afternoon was devoted to cleaning and returning equipment, having interviews with their instructor concerning the meaning of the course to them, and completing written course evaluations.
That evening the Outward Bound Staff prepared a barbecue for the students. After dinner, the course directors called all students together for the closing ceremony in which they offered thoughts on how the whole Outward Bound experience could be integrated into their life at home. The closing ceremony also included awarding of Outward Bound lapel pins and certificates of completion.

Early the next morning, students boarded buses for the return trip to the Asheville North Carolina Airport where further transportation connections would take them home.

It should be noted that much more took place in this Outward Bound course than appears here. Throughout the 23 days students experienced nature in a way they probably never have, interpersonal relationships grew, and personal growth became evident. Unfortunately, these intrinsic activities are difficult, if not impossible, to document. Nonetheless, they were important and integral aspects of the Outward Bound process.

Along with these intrinsic activities were informal group and individual tasks. Such tasks might have included food preparation, personal hygiene, camp sanitation, transporting a heavy pack, and a wide array of tangibles and intangibles that could very likely have had an effect on students' level of health-related locus of control, health value, and wellness behaviors. It is for this reason that an individual interview was conducted with a random sample of
students. The interview was incorporated in an attempt to ascertain which phase or activity of the course may have been responsible for effecting attitudinal changes concerning an individuals' health.

**Step 4.** Physical challenge was an integral part of the Outward Bound process and typically students are physically fatigued after 23 days of backpacking, rock climbing and the multitude of other demanding activities. It is for this reason that the battery of tests was not given upon immediate completion of the course. It was suspected that because health-related measures were being administered, students' completing them immediately following physically demanding activities may have biased the results. Therefore, students were given posttest one 4 - 5 days after returning home using a mailed questionnaire the same as for pretest one.

**Step 5.** In posttest two, students were asked to complete the battery of instruments for the final time. Again, this was accomplished using a mailed questionnaire. This final mailing took place four weeks after posttest one.

The procedures as outlined in this section are summarized in Table 4.
TABLE 4. PROCEDURE FOR THE OUTWARD BOUND TREATMENT GROUP.

<table>
<thead>
<tr>
<th>Day Number</th>
<th>Outward Bound Treatment Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pretest one mailed to treatment group</td>
</tr>
<tr>
<td>12</td>
<td>Last day pretest one accepted from treatment group</td>
</tr>
<tr>
<td>30</td>
<td>Pretest two administered to treatment group -- Beginning of Outward Bound course NC-348</td>
</tr>
<tr>
<td>53</td>
<td>Outward Bound course NC-348 ends -- Interview administered to random sub-sample</td>
</tr>
<tr>
<td>57</td>
<td>Posttest one mailed to treatment group</td>
</tr>
<tr>
<td>58</td>
<td>Follow-up postcard mailed to increase response rate of posttest one</td>
</tr>
<tr>
<td>69</td>
<td>Last day posttest one accepted from treatment group</td>
</tr>
<tr>
<td>87</td>
<td>Posttest two mailed to treatment group</td>
</tr>
<tr>
<td>88</td>
<td>Follow-up postcard mailed to increase response rate of posttest two</td>
</tr>
<tr>
<td>99</td>
<td>Last day posttest two accepted from treatment group</td>
</tr>
</tbody>
</table>
**Null Hypotheses**

The intent of this study was to examine the hypotheses that health locus of control moves toward a more internal orientation and health value and wellness behavior would increase as a result of participation in an Outward Bound course. The null hypotheses to be tested follow:

1. There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the internal dimension of the Multidimensional Health Locus of Control scale.

2. There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the Wellness Behavior Index.

3. There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the Health Value scale.

**Summary**

An Outward Bound treatment group of 33 students was tested at four different times in a repeated measure design to determine the changes in internal health locus of control, health value, and wellness behavior. The instruments used in this study consisted of
the Multidimensional Health Locus of Control scale Forms A and B, the Health Value scale, and the Wellness Behavior Index adapted from three other wellness indexes and described in the Pilot Study. The Outward Bound course took place in the Southern Appalachian Mountains of North Carolina and was run by the North Carolina Outward Bound School. Three hypotheses were tested to determine if there were significant changes on the variables mentioned.
CHAPTER IV
STATISTICAL TREATMENT, RESULTS AND DISCUSSION

Chapter Four contains a description of the statistical treatment used to analyze the data and the results of the study and discussion of the findings in order of the hypotheses.

Statistical Treatment

The three hypotheses of the present study were tested statistically using analysis of variance for repeated measures. This method provides a way to determine whether the differences among two or more means are greater than would be expected by chance alone (Hopkins and Glass, 1978). The present study meets the above criteria in that it is concerned with the effects of the experimental treatment on three dependent variables at four different test times.

The main effects of this experiment were determined using the analysis of variance sub-program of the Statistical Package for the Social Sciences (SPSSx) at The Ohio State University, Columbus, Ohio. The .05 level was selected for significance.
Results and Discussion

The results are reported in order of the hypotheses. Hypothesis One was analyzed using Internal Health Locus of Control (IHLC), with posttest one and posttest two mean scores as the criterion variable. Hypothesis Two concerns difference on wellness behavior and was analyzed using the Wellness Behavior Index (WBI), with posttest one and posttest two mean scores as the criterion measure. Hypothesis Three concerns difference in health value and was analyzed using the Health Value scale (HV), with posttest one and posttest two mean scores as the criterion measure.

The Effects of Treatment on Internal Health Locus of Control

Changes in Outward Bound participants' level of internal health locus of control was measured by the Multidimensional Health Locus of Control scale Forms A and B (Wallston, et al, 1978). The dimension of interest in the present study was internal health locus of control. High scores on this dimension indicate greater internal health orientations. Hypothesis One is stated, then descriptive data on the group is presented, followed by a presentation of related normative data obtained by Wallston and Wallston (Lefcourt, 1981) on a sample of undergraduate college students.
**Null hypothesis 1 data.**

1. **$H_0$:** There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the internal dimension of the Multidimensional Health Locus of Control scale.

A comparison of the treatment group on the internal dimension of the Multidimensional Health Locus of Control scale for two pretests and two posttests descriptive data is presented in Table 5.

**TABLE 5. COMPARISON OF TREATMENT GROUP ON MHLC (MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL) SCALE INTERNAL DIMENSION SCORES ACROSS TEST TIMES.**

<table>
<thead>
<tr>
<th>Group</th>
<th>$N$</th>
<th>Pretest 1</th>
<th>Pretest 2</th>
<th>Posttest 1</th>
<th>Posttest 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Treatment</td>
<td>33</td>
<td>28.515</td>
<td>4.169</td>
<td>28.212</td>
<td>4.350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29.667</td>
<td>4.166</td>
<td>29.091</td>
<td>4.369</td>
</tr>
</tbody>
</table>

The above data can be compared with the normative data on the internal dimension of the Multidimensional Health Locus of Control scale for a population of similar age to the subjects in the present study as presented in Table 6.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Form</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate College Students</td>
<td>85</td>
<td>A</td>
<td>25.580</td>
<td>4.710</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>25.790</td>
<td>4.710</td>
</tr>
</tbody>
</table>

It can be seen that all of the IHLC means of the present study are within one normative standard deviation of the means of the norm group. This indicates that the instrument used to assess the Internal Health Locus of Control of the treatment group is appropriate in the present study.

The results of the analysis of variance are presented in Table 7.
TABLE 7. ANALYSIS OF VARIANCE REPEATED MEASURES FOR IHLC (INTERNAL HEALTH LOCUS OF CONTROL) ACROSS TEST TIME.

<table>
<thead>
<tr>
<th>Source</th>
<th>df**</th>
<th>SS***</th>
<th>MS****</th>
<th>E</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>3</td>
<td>40.99</td>
<td>13.66</td>
<td>1.89</td>
<td>.137</td>
</tr>
<tr>
<td>Between Subjects</td>
<td>32</td>
<td>1633.06</td>
<td>51.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within (Residual)</td>
<td>96</td>
<td>694.76</td>
<td>7.24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*degrees of freedom  **Sum of Squares  ***Mean Square

Inspection of the results in Table 7 shows an E-ratio which is less than that required for the .05 level of significance. It can be concluded that the difference between test times on internal health locus of control was not enough to be statistically significant. The treatment group did not become significantly more internally oriented with regard to health across four test times. In this case, null hypothesis one cannot be rejected.

It can be noted from Figure 3 that group mean scores across the four test times did increase. It is interesting to note that the greatest increase occurred between pretest one and posttest one, and pretest two and posttest one.
As can be seen in Figure 3 the intercept between the data points of pretest one and posttest one indicate that some change did take place in the treatment group with regard to internal health locus of control; however, this change was not enough to be statistically significant. One possible explanation for this may be that the 23-day Outward Bound course did not contain programmed elements that would significantly effect domain-specific locus of control.
control in the area of health.

The Effect of Treatment on Wellness Behavior

Changes in Outward Bound participants' wellness behavior was measured using the Wellness Behavior Index (WBI) developed for this study and described in the Pilot Study (Chapter 3, p. 46). High scores on the WBI indicate more positive wellness behavior.

Null hypothesis 2 data.

2. $H_0$: There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the Wellness Behavior Index.

A comparison of the treatment group on the Wellness Behavior Index for two pretests and two posttests descriptive data is presented in Table 8.
TABLE 8. COMPARISON OF TREATMENT GROUP ON TWO PRETEST AND TWO POSTTEST SCORES OF THE WELLNESS BEHAVIOR INDEX.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest 1 M</th>
<th>Pretest 1 SD</th>
<th>Pretest 2 M</th>
<th>Pretest 2 SD</th>
<th>Posttest 1 M</th>
<th>Posttest 1 SD</th>
<th>Posttest 2 M</th>
<th>Posttest 2 SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>83.788</td>
<td>7.889</td>
<td>86.333</td>
<td>9.456</td>
<td>91.909</td>
<td>9.275</td>
<td>91.970</td>
<td>11.523</td>
</tr>
</tbody>
</table>

The above data can be compared with normative data on the Wellness Behavior Index from the pilot study as presented in Table 9.

TABLE 9. WELLNESS BEHAVIOR INDEX SCALE NORMS (Pilot Study, p. 46).

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Social Studies Class</td>
<td>34</td>
<td>77.647</td>
<td>12.195</td>
</tr>
</tbody>
</table>
It can be seen that all WBI means, except the two posttest means, are within one normative standard deviation from the means of the norm group. The two posttest group means are different by slightly more than one normative standard deviation. However, this difference is not statistically significant since it is less than 1.96 standard deviations. This indicates that the instrument is appropriate to adequately measure wellness behavior with the treatment group of the present study.

The results of the analysis of variance are presented in Table 10.

TABLE 10. ANALYSIS OF VARIANCE REPEATED MEASURES FOR WBI (WELLNESS BEHAVIOR INDEX) ACROSS TEST TIME.

<table>
<thead>
<tr>
<th>Source</th>
<th>df*</th>
<th>SS**</th>
<th>MS***</th>
<th>E</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>3</td>
<td>1668.45</td>
<td>556.15</td>
<td>16.24</td>
<td>.001</td>
</tr>
<tr>
<td>Between Subjects</td>
<td>32</td>
<td>8567.00</td>
<td>267.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within (Residual)</td>
<td>96</td>
<td>3287.55</td>
<td>34.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*degrees of freedom  **Sum of Squares  ***Mean Square
Inspection of the results in Table 10 shows an F-ratio which is greater than required for the .05 level of significance. It can be concluded that the difference between test times on wellness behavior was significant, therefore, null hypothesis two was rejected.

Figure 4 illustrates the group mean scores on wellness behavior across test times.
In calculating Fisher's Least Significant Difference formula, it was found that pretest one was significantly different from posttests one and two. Also, pretest two was significantly different from posttests one and two. Table 11 illustrates this post hoc analysis.

TABLE 11. FISHER'S LEAST SIGNIFICANT DIFFERENCE POST HOC ANALYSIS ON WELLNESS BEHAVIOR ACROSS TEST TIMES.

<table>
<thead>
<tr>
<th></th>
<th>Pretest one</th>
<th>Pretest two</th>
<th>Posttest one</th>
<th>Posttest two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest one</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Pretest two</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* Significant at .05

This result clearly indicates that participation in the 23-day Outward Bound course of this study increased wellness behavior. This is consistent with the Outward Bound objective of having its participants experience personal growth through physical and mental challenge.
This finding along with the increase in internal health locus of control is what would be expected and is consistent with other research suggesting a positive association between internal health locus of control and preventive health behaviors. Other evidence of the relationship of the two aforementioned variables is the moderate correlation found between internal health locus of control and wellness behavior in the present study ($r = .30$).

It is impossible to specify whether any particular phase or activity had more impact than another in effectuating this positive change in wellness behavior. It can be stated, however, that the 23-day experience of backpacking in a wilderness setting, of acquiring and using various outdoor survival skills, of negotiating white-water in a canoe, of participating in the risk activities of rock climbing and rappelling, and of spending three days and nights on solo appeared to increase positive wellness behavior.

**The Effects of Treatment on Health Value**

Changes in Outward Bound participants' health value was measured using the Health Value scale developed by Lau, Hartman, and Ware (1986). High scores on this scale indicate that the individual values health more highly than other matters in life.
Null hypothesis 3 data.

3. H₀: There will be no significant difference at the .05 level, on mean scores of two pretests and two posttests for the Outward Bound treatment group on the Health Value scale.

A comparison of the treatment group on the Health Value scale for two pretests and two posttests descriptive data is presented in Table 12.

TABLE 12. COMPARISON OF TREATMENT GROUP ON TWO PRETEST AND TWO POSTTEST SCORES OF THE HEALTH VALUE SCALE.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Pretest 1</th>
<th></th>
<th>Pretest 2</th>
<th></th>
<th>Posttest 1</th>
<th></th>
<th>Posttest 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
</tbody>
</table>

The above data can be compared with normative data on the Health Value scale as presented in Table 13.
TABLE 13. HEALTH VALUE SCALE NORMS (Lau, Hartman, and Ware, 1986).

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students Entering College</td>
<td>1,026</td>
<td>20.340</td>
<td>4.41</td>
</tr>
</tbody>
</table>

It can be seen that all of the Health Value scale means of the present study are within one normative standard deviation of the means of the norm group. This indicates that the instrument used to assess the value placed on health of the treatment group is appropriate in the present study.

The results of the analysis of variance are presented in Table 14.
TABLE 14. ANALYSIS OF VARIANCE REPEATED MEASURES FOR HV (HEALTH VALUE) ACROSS TEST TIME.

<table>
<thead>
<tr>
<th>Source</th>
<th>df*</th>
<th>SS**</th>
<th>MS***</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>3</td>
<td>13.03</td>
<td>4.34</td>
<td>.69</td>
<td>.591</td>
</tr>
<tr>
<td>Between</td>
<td>32</td>
<td>1676.00</td>
<td>52.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>96</td>
<td>604.97</td>
<td>6.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Residual)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*degrees of freedom  **Sum of Squares  ***Mean Square

Inspection of the results in Table 14 shows an E-ratio which is less than that required for the .05 level of significance. It can be concluded that the difference between test times on health value was not enough to be statistically significant. The treatment group did not place any greater value on health across four test times. Therefore, null hypothesis three cannot be rejected.

It can be seen in Figure 5 that the intercept of the data points between pretest one and pretest two shows the greatest change prior to the occurrence of the treatment. This may have taken place because of the natural increase in value placed on health that occurs with age. This increase apparently stops by late adolescence prior to adult levels of health value being achieved (Lau, et al, 1986).
Stremba (1977) and Bacon (1988) suggest that an effort should be made to develop an Outward Bound assessment program based on personal interviews with the participants. For this reason the interview was incorporated into this study in an attempt to ascertain which activities engaged in during the course may have been responsible for affecting the students' self-perceptions regarding their health status. Interview data was treated as
frequency distributions. Each of five interview questions is presented in the order that they were asked, then a table is presented describing the response, its frequency, and the percentage of that particular response.

Question 1: In your opinion, which phase of the Outward Bound course had a positive influence on your health status?

The frequency distribution for question one appears in Table 15.

**TABLE 15: FREQUENCY DISTRIBUTION OF RESPONSES FOR INTERVIEW QUESTION ONE.**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every phase, cannot separate</td>
<td>10</td>
<td>43.478</td>
</tr>
<tr>
<td>Expedition Phase</td>
<td>8</td>
<td>34.782</td>
</tr>
<tr>
<td>Solo Phase</td>
<td>3</td>
<td>13.043</td>
</tr>
<tr>
<td>Marathon Run</td>
<td>2</td>
<td>8.695</td>
</tr>
</tbody>
</table>

\[ ^{a}N = 23 \]

It can be seen in Table 15 that the students' perception of which phase of the Outward Bound course had the most positive influence on health status was the expedition phase. More importantly, more than 43% said that they could not separate the phases of the course as to which played a more important role in influencing positive
health status. This finding suggests that every phase of the Outward Bound course was important in influencing the health status of the treatment group of the present study.

Question 2: Which activities that you engaged in during the course had an influence on your health status? Were these influences positive or negative?

The frequency distribution for question two appears in Table 16.

TABLE 16: FREQUENCY DISTRIBUTION OF RESPONSES FOR INTERVIEW QUESTION TWOa.

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking with Pack</td>
<td>18</td>
<td>78.261</td>
</tr>
<tr>
<td>Ropes Course</td>
<td>3</td>
<td>13.043</td>
</tr>
<tr>
<td>15 Mile Marathon</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Canoeing</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Positive Influences</td>
<td>23</td>
<td>100.000</td>
</tr>
</tbody>
</table>

aN = 23

It can be seen in Table 16 that the activity the students perceived had the most influence on their health status was hiking with a pack.
Question 3: What personal experiences that you encountered during the course had an influence on your health status? Were these influences positive or negative?

The frequency distribution for question three appears in Table 17.

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POSITIVE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendship with other Crew members</td>
<td>5</td>
<td>21.739</td>
</tr>
<tr>
<td>Teamwork of Crew</td>
<td>4</td>
<td>17.391</td>
</tr>
<tr>
<td>Interaction with Instructor</td>
<td>2</td>
<td>8.695</td>
</tr>
<tr>
<td>Marathon Run</td>
<td>2</td>
<td>8.695</td>
</tr>
<tr>
<td>Meal Time</td>
<td>2</td>
<td>8.695</td>
</tr>
<tr>
<td>Personal Hygiene</td>
<td>2</td>
<td>8.695</td>
</tr>
<tr>
<td>Social Interaction with Crew</td>
<td>2</td>
<td>8.695</td>
</tr>
<tr>
<td>Experience on Ropes Course</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Solo Experience</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Personal Bout with Illness</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Relying on others</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Finishing the 23-Day Course</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>The Entire Course</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td><strong>NEGATIVE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solo Experience</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Social Interactions Causing Stress</td>
<td>1</td>
<td>4.348</td>
</tr>
</tbody>
</table>

aN = 23

bstudents could give more than one answer
It can be seen from the data in Table 17 that there were a variety of responses to question three. However, the data suggests that the forming of friendships among the Crew members was the personal experience that had the most positive influence on the individual's health status.

Question 4: Do you feel that there was any part of the course that had a negative influence on your health status? If yes, which part?

The frequency distribution for question four appears in Table 18.

TABLE 18: FREQUENCY DISTRIBUTION OF RESPONSES FOR INTERVIEW QUESTION FOUR.

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>There were no negative influences</td>
<td>14</td>
<td>60.869</td>
</tr>
<tr>
<td>Lack of cleanliness</td>
<td>4</td>
<td>17.391</td>
</tr>
<tr>
<td>Sudden changes in weather</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Lack of sleep</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Not enough food to eat</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Crew not working together</td>
<td>1</td>
<td>4.348</td>
</tr>
<tr>
<td>Insufficient physical challenge</td>
<td>1</td>
<td>4.348</td>
</tr>
</tbody>
</table>

aN = 23
It can be seen in Table 18 that more than 60% of the sample perceived no negative health influences associated with their Outward Bound experience.

Question 5: From a personal health standpoint, what have you gained from this Outward Bound course?

The frequency distribution for question five appears in Table 19.
As Table 19 indicates, more than 56% of the sample perceived physical strength to be the health factor that was gained through participation in the Outward Bound course. This result is not surprising since physical challenge is a medium which Outward
Bound uses to elicit change in the individual. It seems possible that by completing a physical challenge that lasts 23 days, one would perceive increases in physical strength.

**Summary**

Analysis of variance was used to test the three null hypotheses of the present study, to determine the effect of participation in a 23-day Outward Bound course on internal health locus of control, and to assess changes in wellness behavior and health value. Internal health locus of control was measured by the Multidimensional Health Locus of Control scale developed by Wallston, et al (1978). Wellness behavior was measured by the Wellness Behavior Index developed for the present study and reported in the Pilot Study (Chapter 3, p. 46). Health value was measured by the Health Value scale developed by Lau, Hartman, and Ware (1986).

Interview data was collected for the present study using the techniques described by Benjamin (1981). The interview was incorporated to ascertain which phase and/or activities of the Outward Bound course may have had a positive influence on the participants' health status. Interview data was treated in frequency distributions.
The findings of the present study showed a significant difference across test times for the treatment group on wellness behavior. Significant differences were not found on internal health locus of control or health value.

Interview data suggests that in the present study:

1. The phases of the Outward Bound course could not be separated as to which one had a positive influence on health status. Students reported that all phases were of equal importance to them.

2. The activity which had the greatest positive influence on the health status of the participants was hiking with a pack.

3. The personal experience which had the greatest positive influence on the participants health status was establishing friendships with other crew members.

4. The participants felt that there were no negative influences on health status.

5. From a health standpoint, what the participants gained most from the 23-day Outward Bound course was physical strength.
CHAPTER V
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter provides a summary of the problem, procedures, and findings. Also included in this chapter are the conclusions of the study, discussion, and recommendations for further research.

Summary

The Problem

The intent of this investigation was to determine the effect of a standard 23-day Outward Bound course on participants' internal health locus of control, health value, and wellness behavior. The literature has suggested that many benefits can be derived from participation in an Outward Bound course. This study revealed that specific health outcomes may also be derived from participation in an Outward Bound course.

The first hypothesis dealt with health locus of control and stated that there was no significant difference in internal health locus of control between two pretests and two posttests for the Outward Bound treatment group.
The second hypothesis dealt with the concept of wellness and stated that there was no difference in wellness behavior between two pretests and two posttests for the Outward Bound treatment group.

The third hypothesis dealt with the value an individual places on his/her health and stated that there was no difference in health value between two pretests and two posttests for the Outward Bound treatment group. All hypotheses were stated in the null form for testing at the .05 level of significance.

The Procedures

A review of the related literature indicated that although many studies have been done on the expected outcomes of participation in an Outward Bound course, none were found that investigated specific health benefits derived from such an experience for an asymptomatic population.

The sample of the present study consisted of 33 students enrolled in course NC-348 at the North Carolina Outward Bound School. These students participated in a 23-day experience which took place in the Nantahala and Pisgah National Forests of western North Carolina in July of 1988. The 23 days consisted of backpacking in small groups, acquiring various outdoor skills and safety measures with an opportunity for practical application,
white-water canoeing, rock climbing and rappelling, a three-day solo, a final expedition, and a 15 mile marathon.

A sub-sample of 23 students was randomly selected from the Outward Bound School's Cedar Rock basecamp to answer five question in an interview format. The interview was conducted on the last day of the Outward Bound course.

Campbell and Stanley's (1963) time series design was selected to test the hypotheses of the study. The treatment sample was pretested on two different occasions. The first pretest was mailed to the sample 30 days prior to their Outward Bound experience. The second pretest was administered as the students arrived at the Asheville North Carolina airport to begin their course, but prior to engaging in any activities.

The treatment sample was also posttested on two different occasions. The first posttest was mailed to the students three days after their Outward Bound experience ended. The second posttest was mailed 30 days later. To test for differences in the group between test times, analysis of variance was used. Interview data was treated in frequency distributions.
The Findings

Significant differences were found on wellness behavior across the four test times. A significant difference was not found on internal health locus of control, although a positive increase on this measure between pretest two and posttest one is indicative of a tendency toward increased internal health locus of control for the Outward Bound participants in this study. A significant difference was also not found for health value.

In the present study the interview data suggests that, with regard to health status, the Outward Bound participants perceived that: every phase of the Outward Bound experience was important -- they could not be separated; the activity of hiking with a pack had the greatest influence; the personal experience of establishing friendship with other crew members had the most positive influence; there were no negative influences on health status; and, physical strength was the health outcome most often gained by the participants.

Conclusions

The following conclusions are based on the findings of the present study:

1. The Outward Bound experience served to increase wellness behavior.
2. Outward Bound participants showed a tendency toward increased internal health locus of control, but the increase was not enough to be statistically significant. This finding, along with the significant difference in wellness behavior, is consistent with other research which suggests a positive relationship between internal health locus of control and preventive health behaviors.

3. The Outward Bound experience did not serve to increase the value that participants placed on health.

4. The phase of the 23-day experience which had the most positive influence on participants' health status could not be targeted. Participants perceived every phase to be of equal importance.

5. The activity, within the 23-day experience, which had the most positive influence on participants' health status was hiking with a pack.

6. The personal experience, within the 23-day experience, which had the most positive influence on health status was establishing friendship with other crew members.

7. The health outcome perceived to be derived from the 23-day experience by the participants was an increase in physical strength.
Discussion

One of the conclusions of the present study shows that a 23-day Outward Bound experience led participants to increase wellness behavior, one of the variables that has been operationalized for this study. This finding has importance for four reasons. First, it is the first investigation to find statistical significance on a specific health variable for an asymptomatic population. Second, it gives support to the efforts of the entire staff of the North Carolina Outward Bound School as evidence of one of their program outcomes. Third, it is consistent with, and gives support to, existing research that suggests a relationship between internal health locus of control and preventive health behaviors. And fourth, it is one of few studies dealing with the outcomes of an Outward Bound course with a sample size larger than thirty.

Some possible explanations for the lack of significance on internal health locus of control and health value are discussed in Chapter Four. In addition, interview data has significance in that it suggests several important ideas. First, in order to effect positive changes regarding health, the entire course must be experienced in its totality. Second, more emphasis should be placed on hiking with a heavy pack so that participants can internalize the health benefits derived from engaging in this activity. Third, fostering the establishment of positive interpersonal relationships between and
among crew members can add to the positive perceptions a participant has regarding his or her health status. Fourth, the entire 23-day Outward Bound experience has, overall, positive influences on participants health status. And fifth, perceptions of increasing physical strength as one of its health outcomes lends support to the Outward Bound program objective of eliciting change through physical challenge.

Finally, the nature of the Outward Bound Program makes it difficult, if not impossible, to measure all the varied health outcomes of such an experience with a paper-and-pencil test. These health outcomes are in the form of fortitude, new appreciations, and awareness of body, mind, and spirit. As Justice (1987) contends, how and what we think plays a very important role in whether we get sick or stay healthy. A response from one of the Outward Bound participants during the interview process perhaps illustrates this:

I got sick the second day [of the course]. I had the flu and I was throwing up really bad. We had really hard hiking and I had a temperature of 101°. When I was getting over that, I got dehydrated... I decided to stay [on the course]. Once I decided to stay I think I got better pretty quickly, more quickly than I would if I was just being a wimp about it and just complaining all the time... I think it was my attitude toward it [being sick]. I still had a temperature and I was still throwing up and
stuff but I stuck with it and I'm really glad I did...
Physically, I'm really impressed with myself.
Mentally, I have more positive feelings...like I don't want to quit on something, you know, I'll stick with stuff...its more mental, I think, than anything.
When I decided to stay here [on the course] I think I got better more quickly and it [the flu] didn't bother me as much.

Recommendations

As a result of the findings and conclusions presented in the present study, the following recommendations should be considered:

1. Continued efforts should be given to the development of an Outward Bound assessment program based on personal interview. This effort should be designed to ascertain the effects of Outward Bound that can not be assessed with a pencil-and-paper test.

2. Further studies should be conducted which assess real rather than perceived health outcomes.

3. Further studies should be conducted which assess the extent to which Outward Bound effects change on three dimensions of health locus of control -- internal, chance, and powerful others health locus of control and their relationship to each other. This would make it possible to see whether individuals who show an initially high degree of chance or
powerful others health locus of control move more toward an internal health locus of control than do those individuals who are initially more internal.

4. Further studies should be conducted which assess the extent to which Outward Bound effects change on specific dimensions of wellness. These dimensions include, but are not limited to, stress management, environmental awareness, self-responsibility, nutritional awareness, and physical fitness.

5. Further research efforts should be conducted to replicate the present study. This effort should include Outward Bound courses of shorter duration. One possibility is to replicate this study using participants in an Outward Bound 9-day course.

6. Further research efforts should be conducted to assess the health outcomes of Outward Bound over time. This might be done by replicating the present study and incorporating a 6-month follow-up test.

7. Outward Bound and similar programs should increase their efforts to help participants internalize the health benefits of an outdoor adventure experience. This effort would help students better understand the concept of wellness in order to increase the quality of life.
8. Outward Bound should continue to foster the establishment of positive interpersonal relationships between and among crew members. This effort can increase the positive perceptions a participant has regarding his or her health status.

9. Outward Bound should continue efforts to describe to its participants the health benefits that can be derived from physically challenging activities such as hiking with a heavy pack. This effort would help participants internalize the health outcomes that can be derived from such activities.
References


Monographs, 6, 138-148.


Naches, A., & Roberts, J. (1967). An evaluation of several effects of the Title III ESEA "Dare to Care" program on involved students, faculty, parents, and community members. Denver: Adams County School District No. 12.


Strickland, B. (1973). *Locus of Control: Where have we been and where are we going?* Paper presented at the meeting of the American Psychological Association, Montreal Canada.


APPENDIX A
Multidimensional Health Locus of Control Scale
Form A and B
PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

115-120, Multidimensional Health Locus of Control Scale Form A and B
APPENDIX B

Health Value Scale
Health Value Scale

**Directions:** Under each statement is a scale which ranges from **Strongly Disagree** (1) to **Very Strongly Agree** (7). Please read each of the statements carefully and *circle* the number which best indicates how true the statement is for you *at this time*. Please make sure that you answer every statement and that you circle **only one** number per statement.

1. If you don't have your health, you don't have anything.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
<th>Very Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

2. There are many things I care about more than my health.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
<th>Very Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

3. Good health is of only minor importance in a happy life.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
<th>Very Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
4. There is nothing more important than good health.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
<th>Very Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
APPENDIX C

Wellness Behavior Index
**WELLNESS BEHAVIOR INDEX**

**Directions:** Beside each statement is a scale which ranges from *Never* (1) to *Always* (5). Please read each of the following statements carefully and circle the number which best indicates how true the statement is for you at this time. Please make sure that you answer every statement and that you circle only one number per statement.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
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</thead>
<tbody>
<tr>
<td>1. I use a relaxation or meditation technique to reduce my stress.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I take quiet time for myself daily.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</tr>
<tr>
<td>3. I enjoy my school work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
</tr>
<tr>
<td>4. I find whatever I do to manage stress enjoyable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I recognize the situations in my life which are stressful to me and have learned to deal with them in a healthy manner.</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>6. I am aware of the need for conserving natural resources (including water, paper products, and fossil fuels) to the extent of thinking or doing something related to these issues or conservation problems.</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>7. I am aware of how the colors, sounds, smells and other physical conditions in my home (and in other places) affect the way I feel.</td>
<td>1</td>
<td>2</td>
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<tr>
<td>8. I take walks, hikes, and/or outings to actively explore my outdoor surroundings.</td>
<td>1</td>
<td>2</td>
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<td>5</td>
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<tr>
<td>9. I am aware of or take active part in issues concerning solid waste disposal (examples include garbage, chemical, and nuclear waste).</td>
<td>1</td>
<td>2</td>
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<td>10. I avoid noisy areas while working and recreating or take precautions (wear ear plugs) when exposed to extreme noise.</td>
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<td>5</td>
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<tr>
<td>11. I am aware that I have control over my personal choices concerning the use of substances (including tobacco, alcohol, marijuana, and cocaine).</td>
<td>1</td>
<td>2</td>
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<tr>
<td>12. I am satisfied with my general sense of purpose in life.</td>
<td>1</td>
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<tr>
<td>13. I make my own choices regarding the condition of my body and mind (my health status).</td>
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<td>14. I take responsibility for my behavior.</td>
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<tr>
<td>15. I pay attention to the quality and quantity of foods I eat.</td>
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<tr>
<td>16. I am aware of my intake of sugar (including frequent snacks of sticky candy or non-diet soft drinks) to the extent of cutting down on it.</td>
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<td>2</td>
<td>3</td>
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</table>
17. I am aware of my intake of fats (including fat in meat, eggs, butter, cream, shortenings, and liver) to the extent of cutting down on them.  

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18. I eat at least two pieces of raw fruit or vegetables each day.  

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19. I eat three nutritious meals a day (nutritious meals consist of the basic four food groups; dairy products, meats, fish and poultry, fruits and vegetables, and breads, cereals and grains).  

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20. I exercise regularly for 15-30 minutes at least 3 times per week (examples include swimming, brisk walking, jogging, cycling).  

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</table>

22. My daily routine includes some form of stretching exercise.  

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</table>

23. I am comfortable with the appearance of my body to the extent of being proud of it.  

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</table>

24. My leisure time includes participation in activities that increase my level of fitness (examples include brisk walking, skiing, jogging, cycling)  

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APPENDIX D
Interview Questions
INTERVIEW QUESTIONS

Directions: Please answer the questions as clearly and honestly as possible. If you feel uncomfortable answering any questions you may indicate to the interviewer that you would like to pass and go on to the next question. If you do not fully understand the question please feel free to ask the interviewer to repeat or explain the question.

1. In your opinion, which phase of the Outward Bound course had a positive influence on your health status?

2. Which activities that you engaged in during the course had an influence on your health status? Were these influences positive or negative?

3. What personal experiences that you encountered during the course had an influence on your health status? Were these influences positive or negative?

4. Do you feel that there was any part of the course that had a negative effect on your health status? Which part? Please explain.

5. From a personal health standpoint, have you gained anything from your participation in this Outward Bound course? What have you gained?

*Health status is defined as the condition of your body, mind, and spirit.
APPENDIX E

Cover Letter of Explanation: Pretest one
Dear Outward Bound Student:

The North Carolina Outward Bound School in affiliation with The Ohio State University is conducting a research project attempting to discover what some of the effects of Outward Bound are. This questionnaire is the first of four stages of this research project. It will take you about 30-35 minutes to complete. The next three stages of the project will be similar questionnaires each requiring 30-35 minutes of your time. We will ask you to complete the second questionnaire upon your arrival at the Asheville airport the first day of the course. The third and fourth questionnaires will be mailed to you after your course is over and you have returned home. Also, at the end of your course and before you leave for home, you will be asked some questions about your Outward Bound experience in a personal interview. The first page of this questionnaire asks you to supply demographic information. All information that you provide will be kept strictly confidential and will be used for research purposes only. Please understand that you may skip over any questions or withdraw from the study at any time without prejudice to you.

Your participation in this project is voluntary. If you choose to participate please complete the enclosed questionnaire as honestly as possible and mail it within the next 24 hours using the stamped envelope provided. It is very important that we receive a questionnaire from every student. It is also very important that you complete the questionnaire the same day you receive it.

To assure anonymity, your name is not required on the questionnaire. No one at the Outward Bound School will have access to this information including your Outward Bound course instructor. The information in the questionnaire is for research purposes only and will be kept strictly confidential.
Please read the directions carefully. Once an item is completed, try not to return to it. There may be some items you don't fully understand, if so, do the best you can.

Also enclosed are two copies of a Consent to Participate Form. This form is provided for your consent to participate in this research project. Your completing it does not obligate you in any way. Please read it carefully, you and your parent or guardian sign one copy, return it with your questionnaire, and retain the other copy for your records.

The results of this research project will be available to you after October 1, 1988 by writing to The North Carolina Outward Bound School.

Thank you for your participation.
Directions: Please complete the following section by filling in the answer or circling the response that best describes you at this time.

AGE:_______ SEX: Male Female

What is the highest grade you have completed? (Circle one)

1. 7th 7. College Freshman
2. 8th 8. College Sophomore
3. 9th 9. College Junior
4. 10th 10. College Senior
5. 11th 11. Graduate Degree
6. 12th 12. Other_______

Estimated yearly parental income (Circle one).

1. Less than $15,000
2. $15,001 - 25,000
3. $25,001 - 35,000
4. $35,001 - 45,000
5. More than $45,000

How would you describe your current state of health? (Freedom from chronic disease or illness)

1. Poor
2. Fair
3. Good
4. Above average
5. Excellent
APPENDIX F

Cover Letter of Explanation: Pretest two
Dear Outward Bound Student:

Welcome! This questionnaire is the second of four stages of a research project attempting to discover what some of the effects of Outward Bound are. The third and fourth stages of the project will be similar questionnaires to be completed four to six weeks from now. They will be mailed to you.

Please complete this questionnaire as honestly as possible, then return it to one of the Outward Bound Staff. It is very important that we receive a questionnaire from every student who completed the first questionnaire that was mailed to you four weeks ago.

This questionnaire will take about 30-35 minutes to complete and you can use pen or pencil. To assure anonymity, your name is not required. The information in the questionnaire is for research purposes only and will be kept strictly confidential.

Please read the directions carefully. Once an item is completed, try not to return to it. There may be some items you don't fully understand, if so, do the best you can.

The results of this research project will be available to you after October 1, 1988 by writing to The North Carolina Outward Bound School.

Thank you for your participation.
APPENDIX G

Cover Letter of Explanation: Posttest One

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Dear Outward Bound Student:

Congratulations on completing your 23-day Outward Bound course!

This questionnaire is the third of four stages of a research project attempting to discover what some of the effects of Outward Bound are. The fourth and final stage of the project will be a similar questionnaire to be completed four to six weeks from now. It will also be mailed to you.

Please complete this questionnaire as honestly as possible, then mail it within the next 24 hours using the stamped envelope provided. It is very important that we receive a questionnaire from every student. It is also very important that you fill the questionnaire out the same day you receive it.

This questionnaire will take about 30-35 minutes to complete and you can use pen or pencil. To assure anonymity, your name is not required. The information in the questionnaire is for research purposes only and will be kept strictly confidential.

Please read the directions carefully. Once an item is completed, try not to return to it. There may be some items you don't fully understand, if so, do the best you can.

The results of this research project will be available to you after October 1st by writing to the North Carolina Outward Bound School.

Thank you for your participation.
APPENDIX H

Cover Letter of Explanation: Posttest Two
Dear Outward Bound Student:

Hello again! This questionnaire is the fourth and final stage of a research project attempting to discover what some of the effects of Outward Bound are.

Please complete this questionnaire as honestly as possible, then mail it within the next 24 hours using the stamped envelope provided. It is very important that we receive a questionnaire from every person who participated in the three previous stages of this research project. It is also very important that you complete the questionnaire the same day you receive it.

This questionnaire will take about 30-35 minutes to complete and you can use pen or pencil. To assure anonymity, your name is not required. The information in the questionnaire is for research purposes only and will be kept strictly confidential.

Please read the directions carefully. Once an item is completed, try not to return to it. There may be some items you don’t fully understand, if so, do the best you can.

If you are interested in the results of this research it will be available to you after the first week of October by writing to the North Carolina Outward Bound School.

Thank you very much for your participation.
APPENDIX I

Panel of Experts
Dr. Gordon Longmuir, Ed. D. Professor of Health and Physical Education, Youngstown State University, Youngstown, Ohio.

Dr. Mark Kittleson, Ph. D. Professor of Health Education, Youngstown State University, Youngstown, Ohio.

Dr. Cory Bates, Ed. D. Professor of Health Education, The Ohio State University, Columbus, Ohio.

Dr. James Sweeney, Ph. D. Professor of Health and Physical Education, The Ohio State University, Columbus, Ohio.

Dr. Michael Wisnyai, Ph. D. Professor of Health and Physical Education, Unaffiliated.

Dr. Susan Brown, Ph. D. Professor of Health and Physical Education, Western Carolina University, Cullowhee, North Carolina.

Dr. Robert Battista, Ph. D. Professor of Health and Physical Education, Unaffiliated.

Dr. Charles Simonian, Ph. D. Professor of Health and Physical Education, The Ohio State University, Columbus, Ohio.

Mrs. Susan N. Latess, Instructor of Health and Physical Education, Springfield Local High School, Petersburg, Ohio.

Mrs. Robin Chiarello, Instructor of English, Springfield Local High School, Petersburg, Ohio.