Attitude change related to a course in backpacking at the University of Montana, as measured by Hendee's Wildernism-Urbanism Attitude Test and Kenyon's Attitude Toward Physical Activity Inventory

Eleanor Vogt Long

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ATTITUDE CHANGE
RELATED TO A COURSE IN BACKPACKING
AT THE UNIVERSITY OF MONTANA,
AS MEASURED BY
HENDEE'S WILDERNISM-URBANISM ATTITUDE TEST AND
KENYON'S ATTITUDE TOWARD PHYSICAL ACTIVITY INVENTORY

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B.A., University of Rochester, 1972
Presented in partial fulfillment of the requirements for the degree of
Master of Science
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1978

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Attitude Change Related to a Course in Backpacking at the University of Montana, as Measured by Hendee's Wildenism-Urbanism Attitude Test and Kenyon's Attitude Toward Physical Activity Inventory (65 pp.)

Director: Joel F. Meier

The purpose of this study was to measure attitude change toward wilderness and outdoor activity as a result of a concentrated experience in backpacking at the university level.

Pre/post responses on Hendee's Wildenism-Urbanism Attitude Test and Kenyon's Attitude Toward Physical Activity Inventory were measured for both an experimental and a control group. The experimental group underwent a week-long course in backpacking at the University of Montana, while the control respondents were separately involved in five other summer pre-session classes. For each group, mean test scores were found, and the Student's t test was applied to measure possible significant differences between pre- and post-test scores for the tests and their clusters. The minimum level for significance was .05.

The experimental and control groups were initially quite different in their measured attitudes, with the experimental group being consistently more wildenist in its views. More change would have been expected with an experimental group initially less positive toward wilderness philosophy.

The control group did exhibit three instances of pre/post change: two in Hendee and one in Kenyon. This fact would tend to invalidate this study's results if it were not for the fact that experimental group change on Hendee's Test was much more frequent and more consistently in the direction of being more conscious of and more susceptible to the values of wilderness use.

The experimental group had five instances of significant change on Hendee's Test; all of these changes were in the wildenist direction, a fact which was not true for the control group. Change on Kenyon's Inventory, because it was found with equal frequency for the control and experimental groups (one instance), had little validity. Either the attitudes measured by Kenyon's test did not fit the experience, or they were too deep to be changed by the conditions of this course.

It can then be concluded that Hendee's Test was sensitive to change in wilderness attitude and measured philosophy or knowledge that was subject to change or strengthening under the conditions of this particular concentrated experience. However, due to the initial positive attitude bias of the experimental group, most observed changes were from wildenist to more wildenist and therefore have no bearing on the ability of a concentrated experience to instill new attitudes.
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Chapter 1

INTRODUCTION

"I won't do that because I don't like it!" How many times do individuals refuse to try something new because of a negative attitude. As far back as 1885, attitude was viewed as a particular mental set (Kiesler, et. al., 1969:5). Learning was known to be dependent on a positive mental set, or in other words, dependent on interest in the subject matter. "Guidance experiences show that attitude and emotion, if they are of an undesirable type, actually may inhibit learning in the classroom and prevent satisfactory adjustment in social relationships" (Gustad, 1951:88). Because of this potentially great influence on learning, the concept of attitude and the possibility of attitude change have become important.

The Outdoor Recreation Resources Review Commission's statistics on the increasing use of the outdoor environment (U.S. Government, 1962) have been a sign of a revolt against attitudes dictated by a "man-made, work-oriented, mechanistic culture" (Gibson, 1966:2). But wise and appreciative use of our resources needs direction-oriented education. For this education to have effect, negative or unconcerned attitudes must be overcome. This cannot happen until we know what types of experiences can cause an attitude change.

STATEMENT OF THE PROBLEM

The purpose of this study was to determine whether an attitude change occurred as a result of a concentrated experience in backpacking.
The experience has been termed "concentrated" because the backpacking course was a week-long, full-day, classroom commitment, with an additional weekend trip consisting of more than 48 consecutive hours of participant involvement.

The attitudes were measured by Hendee's Wildernism-Urbanism Attitude Test (Appendix A) and Kenyon's Attitude Toward Physical Activity Inventory (Appendix B). Comparison was made with a control group which did not undergo the backpacking experience.

HYPOTHESES

The following null hypotheses are stated for ease of statistical analysis:

1. There was no significant change between the pre- and post-test scores on Hendee's Test and its clusters for the experimental or the control group.

2. There was no significant change between the pre- and post-test scores on Kenyon's Inventory and its clusters for the experimental or the control group.

SIGNIFICANCE OF THE PROBLEM

The problem had significance in relation to other attitude studies because of the attempt to isolate a condition of measured change. On an educational level the efficacy of teaching procedures and methods depends on results. However, results are not obtainable if attitudes cannot be changed because the response set of those individuals who are indifferent or opposed to the subject matter will not allow learning to take place.
This project attempted to evaluate the possibility of an attitude change toward the out-of-doors. If change could be determined to occur, an effective method might be developed for individual and societal acceptance of and association with nature-oriented values. Further, there is some evidence that these values toward nature, life, and self are needed if alienation is to be reversed and if personal satisfaction is to be increased.

DELIMITATIONS

The following delimitations should be recognized in this study:

1. The experimental subjects for this study were delimited to the 1973 summer school pre-session and second session classes in backpacking at the University of Montana.

2. The control subjects were delimited to a random sample of 1973 pre-session classes at the University of Montana.

3. The application of the results did not extend beyond the particular University of Montana graduates and undergraduates studied.

4. The study was delimited to attitudes in one specific circumstance, not predictions of future situational behavior.

LIMITATIONS

Following are the limitations which were inherent in this study:

1. A random experimental group was unobtainable; thus it is possible that the experimental group had attitudes initially biased in favor of the backpacking experience. Negative attitudes in the experimental group would have been unlikely since students with such negative attitudes probably would not have registered for the course.
2. A completely random control group was not possible, nor was it possible to use a control group unrelated to any concentrated experience. The control respondents in this study each underwent a concentrated experience--one of five all-day, week-long pre-session classes. These classes could possibly have caused control group change on the attitude tests.

3. Sample sizes were small, creating the possibility of deviation from the population statistics.

4. Observation of respondents' attitudes was limited to pencil-and-paper attitude scales, with no direct analysis of behavior during or as a consequence of the experience.

5. In measuring attitudes, unknown individual characteristics or personality differences may have obscured the results of the experiment.

6. Unknown occurrences to particular individuals during the week-long experience were not controlled. These might have caused or inhibited changes in attitude unrelated to the treatment.

7. Environmental conditions, such as the effect of the weather, were not controlled in this experiment. Such uncontrolled conditions can often ruin or improve an outdoor experience.

8. There was no way to control experimenter effect or bias or teacher effect. Pre- and post-test instructions were brief, and care was taken in the interpretation of the data. Positive teacher effect was in fact desired. This is one of the major factors causing attitude change in students. However, in this experiment there was no way of determining whether this effect was positive or negative or which participants, if any, were affected.
9. In order to ensure an adequate size for the experimental group, backpacking classes held two months apart and taught by different instructors were used. Both classes covered such topics as equipment, map and compass reading, and emergency survival; and both terminated with a three-day backpacking experience in the Mission Mountains Wilderness Area. Subject matter was similar, but not identical, presenting the possibility of varying effectiveness in the different teaching methods and in the different student-teacher interactions. Also, the second backpacking course had an additional overnight in the middle of the week in order to check physical abilities and equipment.

BASIC ASSUMPTIONS

Certain basic assumptions were made in this study:

1. It was assumed that something as intangible as an attitude could be measured, and that elicited responses were related to the desired attitude.

2. It was assumed that an attitude change could occur without the traditionally associated behavior, i.e., the respondents' attitudes would change without causing the respondents to become avid, lifelong wilderness users or supporters.

DEFINITIONS

The following terms are defined as used in this study:

Attitude—a learned or conditioned reaction for or against a certain stimulus which may be subject to change under unspecified conditions.
Backpacking—hiking with a pack and camping overnight "beyond the road".*

Camping—spending the night in a campground accessible by car or boat.*

Hendee's Wildernism-Urbanism Attitude Test and Kenyon's Attitude Toward Physical Activity Inventory have been factored into clusters which are presented and defined here to ensure familiarity with the specialized terms.

Hendee's clusters (Hendee, et. al., 1968:29-31):
1. **Spartanism**--the endorsement of a Spartan way of life and an ethic of ablebodiedness, fortitude and dauntlessness.
2. **Antiartifactualism**--the rejection of the provision of facilities and artifacts to provide for creature comforts and stimulation.
3. **Primevalism**--the desire for satisfaction obtained from perceiving the undisturbed natural environment.
4. **Humility**--the desire for humility in man's relation to the natural environment.
5. **Outdoorsmanship**--the desire for the craft aspects of wilderness visits and for life in the natural environment.
6. **Escapism**--the desire to seek temporary respite from human involvement.

Kenyon's clusters (Kenyon, 1968a:98-101):
1. **Social**--physical activity for social purposes.

* These definitions are courtesy of Dr. Robert C. Lucas, Principal Research Social Scientist at the Forestry Sciences Laboratory, Missoula, Montana.
2. Health and fitness—physical activity for health and fitness.
4. Aesthetic—physical activity for aesthetic experiences.
5. Catharsis—physical activity for recreation and relaxation.
6. Ascetic—physical activity to meet a physical challenge.
Definitions of Attitude

Like most words, there exists no one definition of "attitude". Although this fact adds to the variety, mystery, and flavor of language, it makes experimentation and communication more difficult. This word first developed because of a need for a concept to express similarities in feelings and actions. An attitude is a "state of readiness, a tendency to act or react in a certain manner . . ." (Oppenheim, 1966:105). Opposing this behavioral definition is the view that an attitude is a finite state in itself, a disposition, which may or may not be a preliminary to a further action.

In spite of this disagreement, there are a few generally agreed upon characteristics of attitudes. Direction, for or against the attitude object, is a primary characteristic of an attitude. An attitude is always "favorable or unfavorable to some situation" (Kirkpatrick, 1936:76). Adding the facet of intensity, Kenyon (1968b:567) defined attitude as "a latent or nonobservable, complex but relatively stable, behavioral disposition reflecting both direction and intensity of feeling toward a particular object, whether it be concrete or abstract." Further, the attitude object is the stimulus or the point of application (Cattell, 1947:221-222).

In addition to an attitude having direction, intensity, and stimulus, an additional consensus has been stated as follows (Fuson, 1942:856):
1. An attitude is a state of the organism.
2. An attitude is expressed by certain behaviors or opinions.
3. An attitude is the end product of a social experience.
4. An attitude is a motive factor in subsequent conduct.

**Further Characteristics of Attitudes**

Attitudes are understood to be surface developments of personality. Just as aspects of one's personality are environmentally developed, so the primary characteristic of an attitude is that it is acquired, not innate. That attitudes are "forged out of previous experience is perhaps the least controversial issue in American social psychology" (Kiesler, et. al., 1969:4). Attitudes may be personally or vicariously acquired by accretion of experience, through a traumatic or dramatic experience, or by the adoption of a ready-made group or individual attitude (Kiesler, et. al., 1969:84-85). If certain experiences cause the acquisition of related attitudes, it follows that if experiences can change, so may attitudes. There are four possible methods for inducing attitude change (Kiesler, et. al., 1969:306): (1) threat, deprivation, or termination of the need which the object serves; (2) creation of a new need or a new level of aspiration; (3) shifting the contingency of rewards and punishments; and (4) propagandizing new and better paths for need satisfaction.

However, just as it is true that attitudes can change, it is also just as true that they may remain relatively fixed. The stronger the emotional tone of the attitude, the less likely is an occurrence of change. Yet it is also known that "less committed and less involved persons are . . . more susceptible to changing their stands as a result of communication . . . " (Sherif, et. al., 1965:16). There are many
studies that have tested attitude at some point in time, yet such studies "do not provide a sufficient basis for conclusions about an individual's susceptibility to change" (Sherif, et. al., 1965:8).

The Measurement of Attitude

The measurement of attitude can be done in one of four ways (Kiesler, et. al., 1969:9-10): (1) self-reports such as pencil-and-paper attitude scales or oral interviews; (2) observation of on-going behavior in a natural setting; (3) projective methods such as reaction to ambiguous stimuli, role playing, or picture interpretation; and (4) physiological reactions such as galvanic skin response and pupillary dilation.

The most commonly used method is the attitude scale. Its objective is to "assign an individual a numerical position along a scale that extends from one extreme of approval . . . to the other extreme of disapproval" (Bristor, 1971:23). If each individual's reference scale were unique, the task of measurement would be hopeless. However, the limits used "reflect the consensus, defined by social norms, prevailing among given people in a particular historical period" (Sherif, et. al., 1965:10).

Scales measure verbal or written opinion which is assumed to be the expression of the attitude under study. All developed scales stress one or more of the following possible criteria (Oppenheim, 1966:121-122): (1) unidimensionality—the measurement of only one thing at a time; (2) linearity and equal appearing intervals which allow statistical manipulation; (3) reliability—using several different items which are assumed to be indicators of the same underlying construct; (4) validity—measuring what is supposed to be measured; and (5) reproducibility—approximating a
near perfect measure from which an individual's response to each item is perfectly predictable from a given score.

Over the past 40 years many different types of scales have been developed, each stressing one or more of the above experimental conditions. Osgood with his semantic differential technique divided the distance between two opposites such as "good" and "bad" into seven equal-appearing intervals (Oppenheim, 1966:205). Guttman's (1944:150) scalogram analysis attempted to assign perfect linear order to a series of statements; however, his test is only applicable to dichotomous data. Thurstone, although not providing for intensity of agreement or disagreement, attempted to increase unidimensionality by using a group of judges, while the Likert technique allowed a divisible scale of intensity, originally using five points of intensity: strongly approve, approve, undecided, disapprove, and strongly disapprove (Kiesler, et. al., 1969:11-13).

All scales have in common the attempt to create clear statements by the use of short, colloquial sentences, and the attempt to balance the attitude scale by the randomization of the order of statements and by the equalization of positive and negative alternatives for both extremes (Oppenheim, 1966:115-117). Most use closed statements that are statistically easy to handle, mentally easy to answer, and more capable than an open statement or a free-form situation of narrowing the respondents' answers to the area of the desired attitude object. Also, most scales use a series of questions relating to the same specific aspect of the attitude in order to maximize the more stable components of the testing procedure (reliability) while reducing the instability due to the emphasis or wording of a single entry (Oppenheim, 1966:74).
In most tests a single numerical score can be achieved through many different combinations, so the pattern of response is often more interesting than the total score (Oppenheim, 1966:104).

No matter which attitude scale is used, extreme care must be taken to avoid the constant dangers present in the use and interpretation of such tests.

**Pitfalls in the Use of Attitude Scales**

It is possible that an attitude may be temporary, changeable, and subject to test rationalization and deception. It is also possible that results of tests do not show the "true" attitude. Lord Kelvin once said that "when you can measure what you are speaking about and express it in numbers, you know something about it" (Cattell, 1947:221). However, rating scales are dangerous primarily because the results do look like hard data. It is questionable whether "qualitatively unlike values are quantitatively commensurable" (Catton, 1954:49). In other words, it is possible that something of the essence and variety of attitudes is lost by fitting them to a linear number scale.

Pencil-and-paper scales allow little probing to overcome the barriers of wording, participant awareness, or politeness. Further, unlike the open answer, the closed question allows no freedom or flavor to individual responses.

If not carefully constructed and administered, attitude scales are subject to many response sets that can bias the results. "A response set is any tendency causing a person to give different responses to test items than he would when the same content was presented in a different form" (Rundquist, 1950:97). Some response sets are as follows: (1) social
desirability or acceptability—the tendency to do what is accepted as socially correct or proper; (2) conformity—the tendency to be swayed by the current group's beliefs; (3) extremity response bias—the tendency to choose a consistent category and ignore the others; (4) the halo effect—the tendency to be influenced by an overall feeling of like or dislike; and (5) prestige bias—the tendency to claim knowledge or beliefs so as not to seem crude or ignorant.

Additionally, a major danger is the possibility of the "good subject" response in which the participants attempt to validate what they assume to be the experimental hypothesis: i.e., the subjects tell the experimenter what they think he wants to hear. Further, as mentioned under limitations, experimenter bias and effect may be present. Experimenter bias occurs when the experimenter interprets the results according to his own expectations. Experimenter effect is the influencing of the subjects in one direction or the other because of the experimenter's characteristics or personality. Problems are also present because of the fact that any response to the attitude object contains contributions from other elements in the measuring situation.

The results of attitude scales often lack predictive validity with regard to observable behavior. Attitude is only one of the factors influencing behavior, and a strongly held attitude might not be expressed in the expected situation because of intervening factors such as forced group norms (Oppenheim, 1966:152-153).

Finally, any pre-test/post-test situation has another area for error. "[The] mere fact of taking the first attitude test may be sufficient to make the subject aware of his attitudes and consequently cause him to re-examine [them]" (Vygantas, 1956:1). Because of this, the
possibility of a change between pre- and post-test scores for the control
group must be measured. Analysis of the experimental group is then underta­
taken in light of the control group stability or change.

Attitude Tests Used in This Study

The first of the two attitude tests used in this study was
developed by Hendee and his associates and, using a Likert design,
scaled participants along a nine-point wilderness-urbanism continuum
(Appendix A). Major clusters have been factored out (Hendee, et. al.,
1968:29-31): (1) spartanism—the endorsement of a Spartan way of life
and an ethic of able-bodiedness, fortitude and dauntlessness; (2) anti-
artifactualism—the rejection of the provision of facilities and artifacts
to provide for creature comforts and stimulation; (3) primevalism—the
desire for satisfaction obtained from perceiving the undisturbed natural
environment; (4) humility—the desire for humility in man's relation to
the natural environment; (5) outdoorism— the desire for the craft
aspects of wilderness visits and for life in the natural environment; and
(6) escapism—the desire to seek temporary respite from human involvement.
The more wildenist in his views, the higher a respondent would score on
this test, along a continuum from 10 to 90.

Validation of Hendee's Test came from an analysis of the charac­
teristics of the participating groups. When given to wilderness users,
the results predictably tended to be on the wilderness-purist end of the
scale; and when given to a campus sociology class, attitudes as expected
were more urban-oriented (Hendee, et. al., 1968:27).

The other attitude test to be used was Kenyon's Attitude Toward
Physical Activity Inventory (Appendix B). This test also used a Likert-
type design, dividing responses into a seven-point linear scale. Manifest
attitudes were divided into six clusters as follows (Kenyon, 1968a:98-101): (1) social--physical activity for social purposes; (2) health and fitness--physical activity for health and fitness; (3) pursuit of vertigo--physical activity for thrills and excitement; (4) aesthetic--physical activity for aesthetic experiences; (5) catharsis--physical activity for recreation and relaxation; and (6) ascetic--physical activity to meet a physical challenge.

Statistical reliabilities determined for a sample of 353 men and 215 women were lowest (.70-.72) in the social category for men and lowest (.68-.72) in the same category for women. Highest reliabilities appeared in the vertigo category for men (.88-.89) and in the aesthetic category for women (.87) (Kenyon, 1968a:103). In testing validity, Kenyon (1968a:572-573) noted that the validity of the catharsis scale was not well established; however, good stability for overall results was found within the two samples that were compared.

RELEVANT LITERATURE

Gibson (1966:212) studied the effect of one week of school camping on attitudes and social distance. Using Guttman scales and a developed ratio index that compared percent of change to percent of possible change due to the upper numerical limit to possible answers, he found that it was possible to measure change, with girls showing the strongest increase in interest in the outdoors. The percentage of response in the categories of approval which were numerically scored 4 and 5, increased as a result of the experience, allowing for the possibility that change could have been much greater if it were not for these upper limits.

analysis of variance, he found that the four-week camping period caused a change in self-concept to the .01 level of confidence. In addition, the large deviation of scores from the mean change occurred in both directions, indicating that many campers experienced a negative shift in self-concept. This possibility was added reason for using two-tailed statistical tests to determine the direction of change.

Of value to the current study was a week-long period of school camping studied by Stack (1960:94). She showed that 90% of the students made new post-camp sociometric choices, possibly hinting at underlying social attitude changes.

In addition to the studies previously mentioned, others in a variety of fields have documented statistically significant attitude changes over relatively short periods of time. Stevens (1970:6417-A) noted studies that "indicated that definite changes in view of self can and do occur as a result of the college experience, that they can be the result of a short-term exposure, and that they can be enduring." She found self-concept change using Edwards' Personality Inventory significant to the .05 level of confidence. Participants underwent a college compensatory education program.

Primack (1972:1594-1595-A) found significant gains in experimentalism due to a course in the philosophy of education on the basis of changes in five of six standardized personality tests.

Washington (1970) documented the harmful effect of a negative attitude on learning. Using the Osgood Semantic Differential Scale, he found only slight directional change in attitude toward inner-city schools due to a pre-service education program. However, he felt that a strengthening of the treatment would have yielded more significant results. A
more positive view on the part of prospective teachers could overcome
"the findings of many noted researchers which suggested that negative
attitude toward the inner-city school has a harmful effect on the learn-
The experimental group in this study was composed of voluntary graduate and undergraduate registrants for two separate courses in backpacking held at the University of Montana. One class was held during summer school pre-session, June 11-17, 1973, and the other during the second session of summer school, August 6-12, 1973. It was necessary to use both classes because of low summer school enrollment. The first backpacking class was composed of 8 students and the second had an enrollment of 18, making a total sample of 26 for the experimental group.

The control group consisted initially of a random sample of one-half of the pre-session classes offered at the University of Montana during the week of June 11-15. Two of the ten professors contacted were not willing to take time from an already short teaching week in order to give the pre- and post-tests. The eight remaining classes, which varied in size from 3 to over 50 students, were tested. Due to time conflicts, it was not possible to administer the tests to each class personally. However, clear instructions (Appendix C) were given to each professor. In spite of the precautions, three classes were subsequently dropped because of inequalities in the testing procedures or because of improper administration of the examinations. As a result, the total initial control group consisted of 59 students from five classes. A further random sampling of these respondents was taken to form a final control
group numbering 26, equal to the experimental group. Groups of the same size facilitated the statistical applications in this study.

THE DATA

Attitude Tests

Hendee's improved form of the Wildernism-Urbanism Attitude Test and Kenyon's Attitude Toward Physical Activity Inventory (Appendices A and B, respectively) were administered to the control and experimental groups. Only the experimental group received the backpacking treatment, although the control group underwent separate and different concentrated experiences, corresponding to the five different pre-session classes from which the control group was taken.

Because Kenyon's Inventory had a separate form for women, the tests were color coded: blue for men and green for women. Instructions to those tested were kept simple (Appendix C) and the participants were told as little as possible about the study in order to keep their guesswork random and possible unconscious or conscious test validation to a minimum.

In addition to the attitude scale, a brief sheet requesting demographic data was given to all respondents (Appendix D). The pre-test demographic sheet requested data on sex, previous backpacking experience, and approximate home community size. The post-test sheet (given to the experimental group only) sought possible reasons why a participant's future behavior might not include backpacking. However, all respondents said that they expected to continue backpacking, so the question was of no value in seeking negative reactions.
The scoring of both tests was similar. For Kenyon the following numbers were assigned to the responses: Very Strongly Agree--7; Strongly Agree--6; Agree--5; Undecided--4; Disagree--3; Strongly Disagree--2; and Very Strongly Disagree--1. Scoring was reversed on negative questions. Scores on the questions were summed by clusters and divided by the number of questions in each cluster. The result was then multiplied by ten to give the final value for each cluster.

Analysis of the Hendee test was similar except that the individual entry scores had values ranging from 1 to 9. Also, the six cluster scores were summed for the total Hendee score used in the calculations. Kenyon's Inventory was not designed to give one final score, so those results were available in cluster only.

Data Collection

The pre-test for both groups was given by the individual class professors at the beginning of the first class session, either Monday, June 11, for the control groups and the first backpacking class, or Monday, August 6, for the second backpacking class. The post-test for the control group was given as late as possible on Friday, June 15. The backpacking classes were given the post-test immediately upon their return from the wilderness trip on Sunday evening, June 17 or August 12.

There was a two-day discrepancy in the length of time between pre- and post-tests for the experimental and the control groups. However, rather than subject the control group to possible extraneous week-end influences, their post-test was given immediately following the concentrated experience (i.e., their classes), just as it was for the experimental group. By giving the post-test immediately following the
experience, it was necessary to ignore the possibility that reflection might have had as much to do with attitude change as did the immediate experience. Also, it must be noted that for both groups tiredness and an eagerness to leave the testing situation might have influenced the mental set under which the post-test was taken.

**Statistical Treatment**

Data analysis was begun by computing means ($\bar{X}$) and standard deviations ($s$) for the Hendee test as a whole and for Hendee's and Kenyon's clusters for the control and the experimental groups. To test the null hypotheses, a comparison of means was needed to measure possible significant change. Since this study dealt with a small sample ($N<30$), the Student's $t$ was the most appropriate statistic.

Like the $z$ score, the $t$ test is used to test the differences between means, but is based on degrees of freedom instead of sample size to allow for the fact that the $t$ statistic is not normally distributed when $N$ is small (Downie and Heath, 1968:178). Also, for a sample greater than 25 the $t$ test is accurate even when assumptions about the relation of the samples to the underlying population are untenable (Downie and Heath, 1968:182). Therefore, a high degree of confidence can be placed in the results. The $t$ test also was ideal for the purposes of this study because it is a two-tailed test which allows the direction of change to be determined (Hamburg, 1974:402).

Two different $t$ test formulas (Appendix E) were used, depending on whether the comparison was between the pre- and post-test scores for each group (a correlated test) or whether the analysis was between the groups themselves (uncorrelated). Once a $t$ score was computed, it would
be compared to the score necessary for significance to the .05, .01, or .001 level of confidence for that particular degree of freedom.
Chapter 4

PRESENTATION AND ANALYSIS OF THE DATA

CHARACTERISTICS OF THE SAMPLE

The experimental group (N=26) was composed of 17 men and 9 women, with a mean age of 25.577 years (s=5.911). The academic majors and occupations (Appendix F) for both the experimental and the control groups were influenced by the classes sampled, i.e., physical education, business administration, and home economics. For the experimental group, 13 were undergraduates and 7 professional teachers. One-half of the members of the experimental group listed Montana as their home state (Appendix F). More than half of the experimental group had previously backpacked, with half of those being in the highest experience category of more than three days per year for the past three years. None of the experimental group was without some outdoor experience, camping or backpacking.

The control group (N=26) was composed of more women (16) and fewer men (10) than the experimental group. The mean age for this group was 34.087 years (s=7.596), a difference from the experimental group's mean age that was significant to the .05 level of confidence (t=3.837). Only 2 of those in the control group were undergraduates, a logical consequence of the age differences. More than half were teachers and the most common home state was found again to be Montana (Appendix F).

Backpacking and camping experience for the experimental and the control groups has been summarized in Figure 1 on the following page. The
experimental group tended to be slightly more experienced in backpacking, with the control group having had more camping experience.

Figure 1
Backpacking or Camping Experience
For the Experimental and the Control Groups

Number of Respondents

- Never backpacked or camped: 0 (5 respondents)
- Only camped: 5 (10 respondents)
- Backpacked <3 days per year for the last 3 years: 8 respondents
- Backpacked ≥3 days per year for the last 3 years: 13 respondents

Key:

Figure 2, on the following page, compared home town size for the experimental and the control groups. There was a general tendency for the experimental group to have come from larger cities, with the control group being more rural in its background.
One final comparison between the two groups was based on the types of outdoor experiences each had previously undergone. The respondents were asked to describe their most significant camping or backpacking experience and to list the duration of the outing and the number in the party.

In the experimental group, 15 of the 26 respondents reported that their most significant outdoor experience had been in a small party of less than five people. Only 4 control respondents claimed such experiences.
Similarly, 12 in the experimental group mentioned long backpack trips of five days of more, yet only 3 respondents in the control group mentioned backpacking for such lengths of time. One-half of the control group, however, did mention long camping trips as did 6 members of the experimental group.

THE t TEST

Table 1 presents the initial differences between the control and the experimental groups. Five entries exhibited significant differences between the two groups, showing that the groups were quite different in their attitudes toward wilderness and physical activity. Significance to the .001 level of confidence was found initially on Hendee's Test as a whole between experimental and control respondents. Further, significant differences on Hendee's clusters were found in the areas of antiartifactualism (.001 level of confidence) and outdoorsmanship (.01), with the experimental group ranking higher (more wildernist) in both cases.

Two of Kenyon's clusters showed significant differences between the experimental and the control groups when comparing pre-test scores. The difference in the social category was significant to the .05 level of confidence, with the control group ranking this aspect more important in relation to outdoor activity. Using the t test, significance to the .001 level was found in the vertigo cluster, with the experimental group placing more importance on this than did the control group.

The goal of this study was to test for significant changes in attitude in the experimental respondents. It was therefore assumed that the control group, not having undergone the backpacking experience, would show no change.
Table 1

Differences in Pre-Test Scores Between the Experimental and Control Groups On Hendee's Test and Kenyon's Inventory

<table>
<thead>
<tr>
<th>Test and/or Cluster</th>
<th>Experimental $\bar{X} \pm s$</th>
<th>Control $\bar{X} \pm s$</th>
<th>t Score $t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hendee's Test:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spartanism</td>
<td>76.731 ± 9.297</td>
<td>77.115 ± 7.866</td>
<td>-0.158</td>
</tr>
<tr>
<td>Antiartifactualism</td>
<td>56.748 ± 7.422</td>
<td>44.245 ± 7.559</td>
<td>+4.173***</td>
</tr>
<tr>
<td>Primevalism</td>
<td>79.936 ± 6.864</td>
<td>78.333 ± 10.419</td>
<td>+0.642</td>
</tr>
<tr>
<td>Humility</td>
<td>59.231 ± 21.470</td>
<td>46.800 ± 23.617</td>
<td>+1.935$^2$</td>
</tr>
<tr>
<td>Outdoorsmanship</td>
<td>75.705 ± 7.862</td>
<td>64.615 ± 16.201</td>
<td>+3.093**</td>
</tr>
<tr>
<td>Escapism</td>
<td>78.750 ± 7.666</td>
<td>73.814 ± 12.432</td>
<td>+1.690</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenyon's Inventory:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>42.503 ± 5.122</td>
<td>45.894 ± 6.666</td>
<td>-2.017*</td>
</tr>
<tr>
<td>Health and Fitness</td>
<td>39.581 ± 7.482</td>
<td>42.696 ± 8.023</td>
<td>-1.420</td>
</tr>
<tr>
<td>Vertigo</td>
<td>47.474 ± 10.209</td>
<td>35.658 ± 7.818</td>
<td>+4.594***</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>42.957 ± 9.181</td>
<td>42.859 ± 7.724</td>
<td>+0.041</td>
</tr>
<tr>
<td>Catharsis</td>
<td>45.769 ± 8.651</td>
<td>44.658 ± 7.574</td>
<td>+0.483</td>
</tr>
<tr>
<td>Ascetic</td>
<td>35.404 ± 10.283</td>
<td>35.663 ± 9.395</td>
<td>-0.093</td>
</tr>
</tbody>
</table>

* Significant to .05 level of confidence (df=50, t=2.009).

** Significant to .01 level of confidence (df=50, t=2.678).

*** Significant to .001 level of confidence (df=50, t=3.497).

$^1$ "+" means experimental higher than control; "-" means experimental lower than control.

$^2$ Based on df=49, t=2.007.
However, from Table 2 it appears that significant change in the control group scores was evident in three cases. Using the t test, Hendee's cluster of spartanism and Kenyon's catharsis both showed a negative change that was significant to the .01 level of confidence. Hendee's antiartifactualism showed positive change to the .05 level of confidence.

Table 3 presents the results of these same pre/post comparisons for the experimental group. Spartanism underwent the same degree of significant change as the control group (.01 level of confidence), but instead of less, the experimental group placed more importance on this facet of outdoor activity. Both antiartifactualism and catharsis showed a tendency to change as they did for the control group, but the changes were not significant.

A further study of Table 3 shows that the difference between the pre- and post-tests for Hendee's Wildernism-Urbanism Attitude Test was significant beyond the .001 level of confidence. This change was in a positive or wildernist direction. Hendee's clusters of spartanism, primevalism, and escapism changed positively to the .01 level of confidence. Outdoorismanship had a positive change to the .05 level. The only significant change in Kenyon's test was in the aesthetic cluster which changed in the negative direction (.05).
Table 2
Changes Between Pre-Test and Post-Test Scores
On Hendee's Test and Kenyon's Inventory
For the Control Group

<table>
<thead>
<tr>
<th>Test and/or Cluster</th>
<th>Pre-Test Score $\bar{X} \pm s$</th>
<th>Post-Test Score $\bar{X} \pm s$</th>
<th>t Score $^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hendee's Test:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spartanism</td>
<td>$77.115 \pm 7.866$</td>
<td>$71.538 \pm 12.692$</td>
<td>$-3.091^{**}$</td>
</tr>
<tr>
<td>Antiartifactualism</td>
<td>$44.245 \pm 7.559$</td>
<td>$47.378 \pm 7.564$</td>
<td>$+2.384^{*}$</td>
</tr>
<tr>
<td>Primevalism</td>
<td>$78.333 \pm 10.419$</td>
<td>$76.077 \pm 13.723$</td>
<td>$-1.291$</td>
</tr>
<tr>
<td>Humility</td>
<td>$46.800 \pm 23.617$</td>
<td>$50.800 \pm 22.964$</td>
<td>$+1.921^2$</td>
</tr>
<tr>
<td>Outdoorsmanship</td>
<td>$64.615 \pm 16.201$</td>
<td>$63.718 \pm 17.958$</td>
<td>$-0.494$</td>
</tr>
<tr>
<td>Escapism</td>
<td>$73.814 \pm 12.432$</td>
<td>$72.404 \pm 11.838$</td>
<td>$-0.741$</td>
</tr>
<tr>
<td>Kenyon's Inventory:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>$45.894 \pm 6.666$</td>
<td>$45.317 \pm 6.440$</td>
<td>$-0.640$</td>
</tr>
<tr>
<td>Health and Fitness</td>
<td>$42.696 \pm 8.023$</td>
<td>$42.213 \pm 7.612$</td>
<td>$-0.543$</td>
</tr>
<tr>
<td>Vertigo</td>
<td>$35.658 \pm 7.818$</td>
<td>$34.551 \pm 7.539$</td>
<td>$-1.375$</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>$42.859 \pm 7.724$</td>
<td>$42.111 \pm 8.160$</td>
<td>$-0.942$</td>
</tr>
<tr>
<td>Catharsis</td>
<td>$44.658 \pm 7.574$</td>
<td>$42.564 \pm 7.503$</td>
<td>$-3.207^{**}$</td>
</tr>
<tr>
<td>Ascetic</td>
<td>$35.663 \pm 9.395$</td>
<td>$34.288 \pm 9.194$</td>
<td>$-1.915$</td>
</tr>
</tbody>
</table>

* Significant to .05 level of confidence (df=25, t=2.060).

** Significant to .01 level of confidence (df=25, t=2.787).

1 "+" means post-test higher than pre-test; "-" means post-test lower than pre-test.

2 Based on df=24, t=2.064 for .05 level of confidence.
### Table 3
Changes Between Pre-Test and Post-Test Scores
On Hendee's Test and Kenyon's Inventory
For the Experimental Group

<table>
<thead>
<tr>
<th>Test and/or Cluster</th>
<th>Pre-Test Score $\bar{X} \pm s$</th>
<th>Post-Test Score $\bar{X} \pm s$</th>
<th>t Score $^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hendee's Test:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spartanism</td>
<td>76.731 ± 9.297</td>
<td>81.731 ± 7.838</td>
<td>+3.605**</td>
</tr>
<tr>
<td>Antiartifactualism</td>
<td>56.748 ± 7.422</td>
<td>57.657 ± 8.420</td>
<td>+0.651</td>
</tr>
<tr>
<td>Primevalism</td>
<td>79.936 ± 6.864</td>
<td>84.039 ± 6.222</td>
<td>+2.924**</td>
</tr>
<tr>
<td>Humility</td>
<td>59.231 ± 21.470</td>
<td>63.462 ± 23.029</td>
<td>+1.742</td>
</tr>
<tr>
<td>Outdoorsmanship</td>
<td>75.505 ± 7.682</td>
<td>79.231 ± 9.927</td>
<td>+2.355*</td>
</tr>
<tr>
<td>Escapism</td>
<td>78.750 ± 7.666</td>
<td>83.365 ± 6.932</td>
<td>+3.285**</td>
</tr>
<tr>
<td>Kenyon's Inventory:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>42.503 ± 5.122</td>
<td>42.120 ± 5.608</td>
<td>-0.430</td>
</tr>
<tr>
<td>Health and Fitness</td>
<td>39.581 ± 7.482</td>
<td>38.406 ± 8.519</td>
<td>-1.171</td>
</tr>
<tr>
<td>Vertigo</td>
<td>47.474 ± 10.209</td>
<td>48.325 ± 9.772</td>
<td>+1.053</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>42.957 ± 9.181</td>
<td>40.774 ± 10.917</td>
<td>-2.438*</td>
</tr>
<tr>
<td>Catharsis</td>
<td>45.769 ± 8.651</td>
<td>43.932 ± 8.259</td>
<td>-2.038</td>
</tr>
<tr>
<td>Ascetic</td>
<td>35.404 ± 10.283</td>
<td>34.567 ± 10.295</td>
<td>-1.294</td>
</tr>
</tbody>
</table>

* Significant to .05 level of confidence (df=25, t=2.060).

** Significant to .01 level of confidence (df=25, t=2.787).

*** Significant to .001 level of confidence (df=25, t=3.725).

$^1$ "+" means post-test higher than pre-test; "-" means post-test lower than pre-test.
Chapter 5

SUMMARY

The purpose of this study was to measure attitude change toward wilderness and outdoor activity as a result of a concentrated experience in backpacking at the university level. With the continued citification of the world, our wilderness areas need to be preserved. They must be considered vital, not only as a material resource, but as a spiritual resource as well. For this, attitude change is necessary. The ability to shape and alter attitudes can be seen as an important issue for the future, and an area in which more definitive results are needed.

Hendee's Wildenism-Urbanism Attitude Test and Kenyon's Attitude Toward Physical Activity Inventory were administered to a control and an experimental group before and after a week-long concentrated experience. The control group was composed of a random sample of 26 members of five pre-session classes which ranged from business to home economics. The experimental group was composed of 8 members of the pre-session backpacking class and 18 members of the backpacking class held during the second session of the 1973 summer school at the University of Montana. For each group, mean test scores were found; and the t test was applied to measure possible significant differences between pre- and post-test scores.

FINDINGS

Findings were based on the statistics presented in the body of this report.
1. The experimental and control groups were initially quite different in their measured attitudes. The experimental group was consistently more wilderness in its views, with the difference on Hendee's Test significant to the .001 level of confidence. This significance was due to significant differences in the categories of anti-artifactualism and outdoorsmanship. On Kenyon's Inventory the experimental group placed more importance than did the control group on the element of vertigo (.001 level of confidence) and less importance on the social aspect (.05 level of confidence).

2. Three clusters did show significant pre/post change for the control group. These were the clusters of spartanism and antiartifactualism in Hendee and catharsis in Kenyon.

3. The experimental group exhibited twice as much change as did the control group. On Hendee's Test all changes were in the wilderness direction, and antiartifactualism and humility were the only clusters not to show significant change. The only significant change on Kenyon's Inventory was in the aesthetic category which lost importance in relation to physical activity.

DISCUSSION

The first problem encountered was an initial positive wilderness attitude held by the experimental group. More change would have been expected with an experimental group initially less wilderness in its views. In this study all changes appear as a strengthening of already held values.

Further, almost all changes were limited to values measured by Hendee's Test. This was not surprising because this test was specifically
formulated to measure attitude toward wilderness experiences. However, Kenyon's vertigo and social clusters are normally thought to have definite positive and negative relationships, respectively, to the wilderness ethic. Change would have been expected in these clusters, which was not the case.

A possible explanation of this deals with test reliability. Unlike Kenyon's Inventory, with its well established reliabilities, changes on Hendee's Test could be due to the lack of statistically measured reliability and to the fact that the number of questions relating to the different clusters varied greatly (from 1 to 11). However, the clusters least subject to change, antiartifactualism and humility were the clusters composed of the most (11) and the fewest (1) items, respectively. Further, the fact that all changes were in the wilderness direction for the experimental group, but not for the control respondents, serves as a basis for belief in the reliability of this test.

A further unsolved problem was the amount of significant control group change between the pre- and post-tests. One instance of change occurred on Kenyon and two on Hendee. Not enough data is available to decide why these changes occurred, but they could be attributed to: (1) the learning effect of having remembered the pre-test; (2) the lack of cluster reliability from one testing situation to the next; or (3) the fact that members of the control group were separately involved in five different academic courses during the testing period.

If the learning effect was involved, it appears that the experimental group "learned" differently from the control group; i.e., the same categories were not consistently affected. Cluster reliability, as previously mentioned, has been well analyzed for Kenyon's test and only
experientially proven for Hendee's. It was noted that the reliability for Kenyon's catharsis was not well established, possibly accounting for the control group change in this category. The separate effects on the control group caused by the other pre-session classes were not measured and have to remain a possibility.

The instances of control group change would tend to invalidate this study's results if it were not for the fact that experimental group change on Hendee's Test was much more frequent and more consistently in the direction of being more conscious of and more susceptible to the values of wilderness use. However, change on Kenyon, because it was found with equal frequency for the control group, has little definite importance, at least as far as being determined to be the result of the concentrated experience of backpacking.

CONCLUSIONS

1. In spite of questions about the reliability of Hendee's Wildenism-Urbanism Attitude Test, the numbers of changes and their exclusively wildenist direction for the experimental group seem to show that the test was sensitive to change in wilderness attitude and measured philosophy or knowledge that was subject to change or strengthening under the conditions of this particular concentrated experience.

2. However, due to the initial positive attitude bias of the experimental group, most observed changes were from wildenist to more wildenist and therefore have no bearing on the ability of a concentrated experience to instill new attitudes. The backpacking experience only had the effect of strengthening wilderness values.
3. The clusters of antiartifactualism and humility were the aspects of Hendee's Test least subject to change for the experimental group and might be least important to wilderness philosophy.

4. Experimental and control group scores on Kenyon's Attitude Toward Physical Activity Inventory showed little significant change. Either the attitudes measured by Kenyon's Inventory did not fit the experience or they were too deep to be changed by the conditions of this course.

5. Based on initial group differences on Kenyon's Inventory, vertigo was the only cluster with a significant positive relationship to wilderness activity, while the social category was negatively associated with wildernist philosophy. Neither showed significant change.

RECOMMENDATIONS

Recommendations for further study are as follows:

1. Physiological reactions to the attitude object might be a more reliable and easier to analyze method of accumulating data than a pencil-and-paper attitude scale.

2. All attitude tests need to have statistically established reliabilities so that if change is found it cannot be attributed to the tests themselves.

3. Complete randomness is needed in selecting members for both the experimental and control groups. This would reduce the positive attitude bias on the part of the experimental group and would ensure that the two samples would be more nearly alike initially.

4. Even better, respondents neutral or opposed to wilderness ideas would make the ideal subjects for a study of attitude change.
5. It is possible that respondents drawn from an area not accessible to prime wilderness land would be initially more urbanist or neutralist in their views of the wilderness, allowing more room for change.

6. A control group is needed that does not undergo any type of concentrated experience, perhaps reducing control change.

7. Multiple post-test measurements are needed to see if the demonstrated changes are real attitude changes or are merely a short-term absorption of the philosophy of the course which could easily be forgotten.

8. An effort is needed to isolate the variables of an experience that might cause change. Is the outdoor experience itself necessary or could a thorough lecture class accomplish the same thing. This knowledge is necessary for practical application to program design.
REFERENCES CITED


APPENDIX A

HENDEE'S WILDERNISM-URBANISM ATTITUDE TEST

(IMPROVED FORM)
HENDEE'S WILDERNISM-URBANISM ATTITUDE TEST
(IMPROVED FORM)

NUMERICAL KEY

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Spartanism</td>
<td>2</td>
</tr>
<tr>
<td>(2) Antiartifactualism</td>
<td>11</td>
</tr>
<tr>
<td>(3) Primevalism</td>
<td>6</td>
</tr>
<tr>
<td>(4) Humility</td>
<td>1</td>
</tr>
<tr>
<td>(5) Outdoorsmanship</td>
<td>3</td>
</tr>
<tr>
<td>(6) Escapism</td>
<td>4</td>
</tr>
</tbody>
</table>

SCORING

A positive or negative sign (found after the numerical key designation) shows whether the response is added to or subtracted from the total and cluster score.

CLASSIFICATION

Urbanists 10-54
Neutralists 55-64
Weak Wildernists 65-74
Moderate Wildernists 75-84
Strong Wildernists 85-90
<table>
<thead>
<tr>
<th>QUESTIONNAIRE ITEM</th>
<th>STRONGLY DISLIKE</th>
<th>NEUTRAL</th>
<th>STRONGLY FAVOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camping (backpacking) (5)+</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tranquility (6)+</td>
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<tr>
<td>Sleeping outdoors (5)+</td>
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<tr>
<td>Hiking (5)+</td>
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<tr>
<td>Solitude (6)+</td>
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<tr>
<td>Enjoyment of nature</td>
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<tr>
<td>Awareness of beauty</td>
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<tr>
<td>Alpine meadows (3)+</td>
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<tr>
<td>Absence of manmade features (6)+</td>
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<tr>
<td>Drinking mountain water</td>
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<tr>
<td>Virgin forest (3)+</td>
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<td>Lakes (natural) (3)+</td>
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<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Vast area and enormous vistas (3,6)+</td>
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<tr>
<td>Physical exercise (1)+</td>
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<tr>
<td>Rugged topography (3)+</td>
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<tr>
<td>Native wild animals (3)+</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>Looking at scenery</td>
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<tr>
<td>Emotional satisfaction (1)+</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>Cutting Christmas trees (4,2)-</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Camps for organizations (2)-</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>Gravel roads (2)-</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>Private cottages (2)-</td>
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<td>Purchasing souvenirs (2)-</td>
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<td>Camping (with car) (2)-</td>
<td>1 2 3 4 5 6 7 8 9</td>
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<td>1 2 3 4 5 6 7 8 9</td>
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<td>1 2 3 4 5 6 7 8 9</td>
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<tr>
<td>Campsites with plumbing (2)-</td>
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<td>Developed resort facilities (2)-</td>
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APPENDIX B

KENYON'S ATTITUDE TOWARD PHYSICAL ACTIVITY

INVENTORY
### NUMERICAL KEY

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<thead>
<tr>
<th>Cluster</th>
<th>Men</th>
<th>Women</th>
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<tbody>
<tr>
<td>(1) Social experience</td>
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<td>8</td>
</tr>
<tr>
<td>(2) Health and fitness</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>(3) Vertigo</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>(4) Aesthetic experience</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>(5) Catharsis</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>(6) Ascetic experience</td>
<td>10</td>
<td>8</td>
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</table>

### SCORING

Responses to each question were marked according to the following scale:

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<tr>
<th>VSA</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
<th>VSD</th>
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</thead>
<tbody>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

A positive or negative sign (found after the numerical key designation) shows whether the response is added to or subtracted from the cluster score.

### ITEMS AND SCALE DESIGNATION FOR MEN

1. I would gladly put in the necessary years of daily hard training for the chance to try out for the U.S. Olympic Team. (6)+

2. I would prefer quiet activities like swimming or tossing a ball around rather than such activities as automobile or speedboat racing. (3)-

3. Among desirable forms of physical activity are those that show the beauty and form of human movement, such as modern dance and water ballet. (4)+

4. I prefer those sports which require very hard training and involve intense competition such as interscholastic and intercollegiate athletics. (6)+
5. A happy life does not require regular participation in physical activity. (5)-

6. The risk of injury would be well worth it when you consider the thrills that come from engaging in such activities as mountain climbing and bobsledding. (3)+

7. It is important that everyone belong to at least one group that plays games together. (1)+

8. Of all physical activities, those whose purpose is primarily to develop physical fitness, would not be my first choice. (2)-

9. Among the best physical activities are those which represent a personal challenge, such as skiing, mountain climbing, or heavy weather sailing. (3)+

10. I would get by far the most satisfaction from games requiring long and careful preparation and involving stiff competition against a strong opposition. (6)+

11. The degree of beauty and grace of movement found in sports is sometimes less than claimed. (4)-

12. Almost the only satisfactory way to relieve severe emotional strain is through some form of physical activity. (5)+

13. I would usually choose strenuous physical activity over light physical activity, if given the choice. (2)+

14. Physical education programs should place a little more emphasis upon the beauty found in human motion. (4)+

15. There are better ways of relieving the pressures of today's living than having to engage in or watch physical activity. (5)-

16. Frequent participation in dangerous sports and physical activities are alright for other people but ordinarily they are not for me. (3)-

17. I like to engage in socially oriented physical activities. (1)+

18. A large part of our daily lives must be committed to vigorous exercise. (2)+

19. I am not in the least interested in those physical activities whose sole purpose is to depict human motion as something beautiful. (4)-

20. Colleges should sponsor many more physical activities of a social nature. (1)+

21. Being strong and highly fit is not the most important thing in my life. (2)-
22. The least desirable physical activities are those providing a sense of danger and risk of injury such as skiing on steep slopes, mountain climbing, or parachute jumping. (3-)

23. For a healthy mind in a healthy body the only place to begin is through participation in sports and physical activities every day. (5+)

24. A sport is sometimes spoiled if allowed to become too highly organized and keenly competitive. (6-)

25. The time spent doing daily calisthenics could probably be used more profitably in other ways. (2-)

26. I enjoy sports mostly because they give me a chance to meet new people. (1+)

27. Practically the only way to relieve frustrations and pent-up emotions is through some form of physical activity. (5+)

28. Given a choice, I would prefer motor boat racing or running rapids in a canoe rather than one of the quieter forms of boating. (3+)

29. Strength and physical stamina are the most important pre-requisites to a full life. (2+)

30. Of all the kinds of physical activities, I dislike the most those requiring a lot of socializing. (1-)

31. The most enjoyable forms of physical activity are games and sports engaged in on the spur of the moment, rather than those requiring long periods of training. (6-)

32. One of the things I like most in sports is the great variety of ways human movement can be shown to be beautiful. (4+)

33. Most intellectual activities are often just as refreshing as physical activities. (5-)

34. Physical activities that are purely for social purposes, like college dances, are sometimes a waste of time. (1-)

35. I am given great pleasure when I see the form and beauty of human motion. (4+)

36. I believe calisthenics are among the less desirable forms of physical activity. (2-)

37. The self-denial and sacrifice needed for success in today's international competition may soon become too much to ask of a thirteen or fourteen year old. (6-)

38. People should spend twenty to thirty minutes a day doing vigorous calisthenics. (2+)
39. Too much attention is paid to those physical activities that try to portray human movement as an art form. (4)-

40. Sports are fun to watch and to engage in, only if they are not taken too seriously, nor demand too much time and energy. (6)-

41. Of all physical activities, my first choice would be those whose purpose is primarily to develop and maintain physical fitness. (2)+

42. If I had to choose between "still-water" canoeing and "rapids" canoeing, "still-water" canoeing would be the better alternative. (3)-

43. Watching athletes becoming completely absorbed in their sport nearly always provides me with a welcome escape from the many demands of present-day life. (5)+

44. Participating in games and sports can sometimes spoil good friendships. (1)-

45. The idea that every human movement is beautiful is absurd. (4)-

46. Physical activities having a strong element of daring or requiring one to take chances are highly desirable. (3)+

47. I could easily spend an hour watching the graceful and well coordinated movements of a figure skater or modern dancer. (4)+

48. There are better ways of getting to know people than through games and sports. (1)-

49. The fun is sometimes taken out of sports and games when they become too highly organized, overly competitive, and too demanding of the participant. (6)-

50. Among the best forms of physical activity are those which use the body as an instrument of expression. (4)+

51. Since competition is fundamental to American society, sports and athletics need to be much more demanding and competitive than at present. (6)+

52. The best thing about games and sports is that they give people more confidence in social situations. (1)+

53. One of the best forms of physical activity is that which provides a thrilling sense of danger such as sailing in heavy weather or canoeing on river rapids. (3)+

54. Regular physical activity is the major pre-requisite to a satisfying life. (5)+

55. Vigorous daily exercises are absolutely necessary to maintain one's general health. (2)+
56. One of the most desirable forms of physical activity is social dancing. (1)+

57. In this country there is sometimes too much emphasis on striving to be successful in sports. (6)-

58. I would enjoy engaging in those games and sports requiring, to a large extent, the defiance of danger. (3)+

59. Most people could live happy lives without depending upon frequent watching or participating in physical games and exercise. (5)-

ITEMS AND SCALE DESIGNATION FOR WOMEN

1. I would prefer quiet activities like swimming or golf, rather than such activities as water skiing or sail boat racing. (3)-

2. I would gladly put up with the necessary hard training for the chance to try out for the U.S. Women's Olympic Team. (6)+

3. The most important value of physical activity is the beauty found in skilled movement. (4)+

4. Physical education programs should stress vigorous exercise since it contributes most to physical fitness. (2)+

5. The years of strenuous daily training necessary to prepare for today's international competition is asking a lot of today's young women. (6)-

6. The need for much higher levels of physical fitness has been established beyond all doubt. (2)+

7. Item 9 Men's Form (3)+

8. Among the most desirable forms of physical activity are those which present the beauty of human movement such as modern dance and water ballet. (4)+

9. Item 10 Men's Form (6)+

10. Item 8 Men's Form (2)-

11. The best way to become more socially desirable is to participate in group physical activities. (1)+

12. Item 12 Men's Form (5)+

13. Item 16 Men's Form (3)-

14. Physical education programs should place much more emphasis upon the beauty found in human motion. (4)+
15. If given a choice, I sometimes would choose strenuous rather than light physical activity. (2)+

16. Item 15 Men's Form (5)-

17. Item 17 Men's Form (1)+

18. A part of our daily lives must be committed to vigorous exercise. (2)+

19. I am not particularly interested in those physical activities whose sole purpose is to depict human motion as something beautiful. (4)-

20. Item 20 Men's Form (1)+

21. Item 23 Men's Form (5)+

22. Item 22 Men's Form (3)-

23. Being physically fit is not the most important goal in my life. (2)-

24. Item 24 Men's Form (6)-

25. Item 26 Men's Form (1)+

26. Item 27 Men's Form (5)+

27. Item 25 Men's Form (2)-

28. Item 28 Men's Form (3)+

29. Of all the kinds of physical activities, I don't particularly care for those requiring a lot of socializing. (1)-

30. Item 32 Men's Form (4)+

31. Item 33 Men's Form (5)-

32. Item 29 Men's Form (2)+

33. Item 34 Men's Form (1)-

34. The self-denial and sacrifice needed for success in today's international competition may soon become too much to ask of a thirteen or fourteen year old girl. (6)-

35. I am given unlimited pleasure when I see the form and beauty of human motion. (4)+

36. Item 36 Men's Form (2)-

37. Item 43 Men's Form (5)+
38. If I had to choose between "still-water" canoeing and "rapids" canoeing, "still-water" canoeing would usually be my choice. (3)-

39. Item 48 Men's Form (1)-

40. Item 38 Men's Form (2)+

41. There is sometimes an over-emphasis upon those physical activities that attempt to portray human movement as an art form. (4)-

42. Physical activities having an element of daring or requiring one to take chances are desirable. (3)+

43. Since competition is a fundamental characteristic of American society, highly competitive athletics and games should be encouraged for all. (6)+

44. A happy life does not require regular participation in physical activity. (5)-

45. The best form of physical activity is when the body is used as an instrument of expression. (4)+

46. Item 40 Men's Form (6)-

47. Calisthenics taken regularly are among the best forms of exercise. (2)+

48. I could spend many hours watching the graceful and well coordinated movements of the figure skater or modern dancer. (4)+

49. Item 52 Men's Form (1)+

50. Among the best forms of physical activity are those providing thrills such as sailing in heavy weather or canoeing on river rapids. (3)+

51. Item 54 Men's Form (5)+

52. Item 57 Men's Form (6)-

53. I would enjoy engaging in those games and sports that require a defiance of danger. (3)+

54. Item 59 Men's Form (5)-
APPENDIX C

TEST INSTRUCTIONS
PRE-TEST INSTRUCTIONS
TEST ADMINISTRATOR

1. Blue packets go to men and green to women.

2. Please give the test as early as you can on Monday morning.

3. Only run the tests if you plan to continue class for the whole week.

4. Use as many of the test forms as you have students. If there are not enough forms, give to as many as you can.

5. The test should take 20 to 30 minutes. I will pick up the completed forms Monday afternoon.

To Tell the Student:

1. You are part of an experiment which is attempting to measure attitude change as the result of a concentrated experience. This consists of a pre-test which you are now taking, and a post-test to be given at the end of class this week.

2. Honest answers are the right ones.

3. Anonymity is assured, but to facilitate control procedures, your first name and last initial are needed in the space provided at the top of the first page.

Thank you for your cooperation,

Eleanor A. Vogt
Graduate Assistant
Department of Health, Physical Education and Recreation
POST-TEST INSTRUCTIONS
TEST ADMINISTRATOR

1. Blue packets go to men and green to women.

2. The post-test should be given as late on Friday afternoon as possible (Sunday upon returning for the backpacking class).

3. Give only to those students who completed the pre-test.

4. The post-test should take only 15-20 minutes. Collect the forms, place in envelope, and leave with your department secretary. I will pick up the packets on Monday morning.

To Tell the Student:

1. This is the second part of an experiment dealing with concentrated learning. This post-test should be taken in the same manner as the pre-test which you took earlier this week.

2. Honest answers are the right ones.

3. Anonymity is assured, but to facilitate control procedures, your first name and last initial are needed in the space provided at the top of the first page.

Thank you for your cooperation,

Eleanor A. Vogt
Graduate Assistant
Department of Health, Physical Education and Recreation
KENYON'S ATTITUDE TOWARD PHYSICAL ACTIVITY
INVENTORY
PARTICIPANT INSTRUCTIONS

INTRODUCTION

The following is part of a research project designed to ascertain the opinions of college students about certain aspects of our society. The statements on the pages that follow are concerned with physical activity. We are asking you to express what you think or feel about each. The best answer is your personal opinion. Many different and opposing points of view are presented; you may find yourself agreeing strongly with some of the statements and disagreeing just as strongly with others.

INSTRUCTIONS

1. Express your agreement or disagreement by circling the appropriate symbol at the left of each statement, according to the following:

   VSA: very strongly agree
   SA: strongly agree
   A: agree
   U: undecided
   D: disagree
   SD: strongly disagree
   VSD: very strongly disagree

   For example, if you strongly disagree with a statement you circle the symbol SD as follows:

   VSA  SA  A  U  D  SD  VSD  a. The United Nations should be abolished.

2. You should rarely need to use U (undecided).

3. Work independently of others.

4. Do not spend too much time on any one statement; try to respond, then go on to the next.

5. Respond to ALL statements.

IMPORTANT

1. Respond to the statements IN THE ORDER GIVEN. (Do not go on to page 2 until you have finished page 1, etc.)

2. The significance of this research depends upon the degree to which you express your own opinion.
HENDEE'S WILDERNISM-URBANISM ATTITUDE TEST
PARTICIPANT INSTRUCTIONS

For each item in the following list of possible features, activities or benefits associated with wilderness-type recreation, circle one number that best expresses your attitude—how positive or how negative you feel toward having that feature, participating in that activity, or receiving that alleged benefit from such experience.
APPENDIX D

PERSONAL DATA SHEETS
PERSONAL DATA SHEET  
(pre-test)

1. Sex  
Circle M or F

2. Age  

3. Year in School  

4. Major  

5. If not in school full-time, state business  

6. Check the box that best describes your previous outdoor experience:

   A. Backpacking  
   (hiking with pack and camping overnight beyond the road)  

   B. Camping  
   (camping in road or boat accessible campgrounds)  

If you have never camped or never backpacked, state why  

7. Check the category that represents the background which has played the most significant part in your life or the one where you have lived most of your life.

   Rural--population less than 2500  
   Town--population between 2500 and 9999  
   Small City--population between 10,000 and 49,999  
   Large City (outside a metropolitan area)--population between 50,000 and 99,999  
   Metropolitan Area--population greater than or equal to 100,000
8. In which state have you spent the largest part of your life?

9. Describe your most significant camping or backpacking experience. List location, duration, type, purpose, and number in party.
1. Do you think you will do more backpacking in the future?

☐ Yes  ☐ No  ☐ Not sure

If "no" or "not sure", why? ________________________________
APPENDIX E

THE t TEST
THE \( t \) TEST

All equations are from Downie and Heath (1968):

1. The \( t \) test for correlated data: \( df = N-1 \)

\[
t = \frac{\bar{D}}{s_{\bar{D}}}
\]

where \( N \) = the number of subjects
\( df \) = degrees of freedom
\( \bar{D} \) = the mean difference between two correlated measures
\( s_{\bar{D}} \) = the standard error of the mean difference

2. The \( t \) test for uncorrelated data: \( df = N_1+N_2-2 \)

a. When \( N_1 = N_2 \)

\[
t = \frac{\bar{x}_1-\bar{x}_2}{\sqrt{\frac{\Sigma x_1^2+\Sigma x_2^2}{N(N-1)}}}
\]

b. When \( N_1 \neq N_2 \)

\[
t = \frac{\bar{x}_1-\bar{x}_2}{\sqrt{\left(\frac{\Sigma x_1^2+\Sigma x_2^2}{N_1+N_2-2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}
\]

where
\( N \) = the number of subjects
subscript 1 = the first sample
subscript 2 = the second sample
\( df \) = degrees of freedom
\( \bar{x} \) = the mean score
\( \Sigma x^2 \) = the sum of the squares
\( x \) = the deviation of a score from the mean score
APPENDIX F

DEMOGRAPHIC DATA
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<tr>
<td>1. recreation</td>
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<tr>
<td>2. teacher</td>
<td>2. teacher</td>
</tr>
<tr>
<td>3. supervisor, United Air Lines</td>
<td>3. education</td>
</tr>
<tr>
<td>4. pilot</td>
<td>4. teacher</td>
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<tr>
<td>5. business administration</td>
<td>5. business administration</td>
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<td>6. forestry</td>
<td>6. administration</td>
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<td>7. pre-physical therapy</td>
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<td>11. business administration</td>
<td>11. housewife/home economics</td>
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<td>12. recreation/teacher</td>
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<td>13. speech pathology</td>
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<td>18. forestry</td>
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<td>25. speech pathology</td>
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### STATE BACKGROUND

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<td>15. Canada/Alberta</td>
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