

THE PERSONALITY TRAITS OF WILDERNESS LEADERSHIP INSTRUCTORS
AT NOLS: THE RELATIONSHIP TO PERCEIVED INSTRUCTOR
EFFECTIVENESS AND THE DEVELOPMENT OF
SELF-CONCEPT IN STUDENTS

by

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(ABSTRACT)

The objectives of this research were to determine if the personality traits of instructors at the National Outdoor Leadership School were related to instructor effectiveness as perceived by their students, and to determine if instructor effectiveness was related to changes in the self-concept of students who complete a NOLS course.

The research used a pre-treatment/post-treatment administration of the Tennessee Self-Concept Scale (TSCS) to 355 students in the treatment group, where the treatment was a NOLS course. A control group of 50 students consisted of students scheduled to take a NOLS course. Significant gains in self-concept were found, using ANCOVA analysis procedures, on 7 of the 10 TSCS scales. The only scales not showing significant change were satisfaction, personal self and self-criticism.

Instructor personality traits were determined using the Cattell 16PF self-report instrument and by a post-course evaluation instrument which asked for student attributions of instructor personality on a semantic differential scale. Students also rated the overall effectiveness of each instructor on their course. The student effectiveness ratings for the instructors had significant but low predictive ability when regressed against changes in self-concept.

The objective 16PF personality instrument produced no significant trait differences between instructors who had effectiveness ratings above the median and those with scores below the median. The 16PF factors, as independent variables, showed significant but low predictive ability on the dependent effectiveness scores.

The student-rated personality traits, however, produced very different profiles between high effectiveness instructors and lower effectiveness instructors. The student attributions of instructor personality traits produced an R^2 of .513 when regressed against effectiveness ratings.

The major conclusions from the research were that changes in self-concept do occur as a result of a wilderness skills

oriented NOLS course and secondly, that students were able to discriminate instructor effectiveness on the basis of the personality-based teaching behaviors of NOLS instructors.

Recommendations for extension of this research are presented as well as suggestions for research on broader issues of wilderness education and wilderness values.

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INTRODUCTION

Background

The past two decades have witnessed a tremendous increase in the use of the wilderness, and out-of-doors generally, as a "classroom" for a variety of educational purposes. One of the most significant educational uses of the outdoors has been the development of "adventure/challenge" and "wilderness education" programs. The foundations of many of these programs are based on the educational philosophy of Kurt Hahn, the founder of the "Outward Bound" movement. Outward Bound has been a significant force in shaping the many adapted outdoor programs found today for special populations, while still maintaining its world stature. Outward Bound and many of its derivative programs have as a specific educational goal "personal growth through challenge." The programs generally do not focus on personal wilderness skills but rather on rigorous, challenging events designed to make the student more self-confident in facing physically and mentally demanding situations in the future. James (1980), for example, cites the catalog of the first U.S. Outward Bound School which described the program as

being created "to offer young men between the ages of 16 and 22 a unique and challenging opportunity to prove themselves in a rugged contest against the mountains" (p. 8).

Outward Bound and its derivative programs may be viewed as anchoring the personal growth/therapeutic end of a wide spectrum of outdoor programs. The National Outdoor Leader School could perhaps be considered as anchoring the other end of the spectrum, that of personal wilderness skill development. Both of these programs make use of an "experiential" approach to education and they share the use of the wilderness as a learning environment. It is this use of experiential education and the use of the wilderness, and its concomitant values, which give these programs some common educational dimensions and opportunities.

The National Outdoor Leadership School (NOLS) was founded by Paul Petzoldt, a former Outward Bound director of mountaineering. The establishment of NOLS in 1965 was, however, predicated on a philosophical difference with Outward Bound which still exists today. While Outward Bound stresses "challenge and personal growth", NOLS stresses individual competency in wilderness skills and the development of individual leadership skills. The differences between the two philosophies might be

characterized by Outward Bound's view that "the wilderness" is a source of challenge--a force to be reckoned with. The NOLS view could be stated as "the wilderness is a place for those who learn the skills to live comfortably in it." Rugged wilderness environments are not seen as a personal challenge. In this sense NOLS does not "advertise" personal growth as a program outcome, but recognizes that it takes place in many individuals. According to NOLS (1984a), "while a NOLS experience will enhance self-confidence and motivation, this takes place individually and naturally, rather than deliberately as the primary focus of the curriculum." There is, however, little empirical evidence to support this assertion. One of the principal and prerequisite research problems that needs to be addressed is to determine if self-concept changes do indeed result from a NOLS course.

The mission statement of NOLS, as found in the bylaws, is threefold (NOLS, nd):

1. To develop and teach wilderness skills and techniques.
2. To develop and teach wilderness use that encourages minimum environmental impact.
3. To develop and teach outdoor leaders.

Currently, NOLS provides educational programs on public lands to over 1700 students annually, primarily near its headquarters in Lander, Wyoming, but also at four branch schools in Alaska, Baja Mexico, the North Cascades in Washington, and Kenya in East Africa.

A NOLS course, of the type examined in this research, is a rigorous, 3 or 5 week expedition in extremely mountainous terrain. A course characteristically consists of three instructors and 17 students. The educational focus of the course is aimed at allowing the students to learn a wide range of mountaineering and wilderness travel skills, and to take part in various leadership development exercises such as providing leadership to a small group for a day's travel. A pervasive theme of instruction, in addition to leadership development, is how to be safe and comfortable in the wilderness and how to utilize minimum impact traveling and camping skills.

A great deal of didactic teaching takes place on a NOLS course, based on an extensive curriculum providing progressive exposure to the necessary higher skills and knowledge needed to meet the course objectives. As stated previously, NOLS is not a "survival school" or a "stress/challenge" program. The entire curriculum is

related to the acquisition of wilderness competencies: the knowledge necessary to develop skilled outdoor users and leaders. The curriculum, which has evolved over the past twenty years, is a key component of the NOLS experience (Simer and Sullivan, 1983; Petzoldt, 1974, 1984). The curriculum is standard for all courses, and an example is shown in Appendix A. The curriculum elements for the course are selected and taught by the instructors at the most appropriate time and place as the course progresses.

The success of Outward Bound, NOLS, and similar programs seems dependent on many things: curriculum elements, teaching environments, equipment, and of course, favorable safety records. One of the key elements of the success of the programs and the achievement of stated educational goals is likely the course leadership. Leadership, in this sense, relates to the qualities of the individual instructor, who, as a paid staff member of the organization, bears the responsibility not only for safety in a rigorous environment, but also for orchestrating the activities, learning experiences and goal attainment for his or her individual students. The instructors are typically responsible for increasing skill levels and cognitive development in their students. In addition, significant changes in the self-concepts of students have been reported

in many of these programs (Nye, 1975; Kaplan, 1974; Clifford & Clifford, 1967; Heaps and Thorstenson, 1974; Winkie, 1977; Bernstein, 1972).

The team of instructors on a typical NOLS course has a great deal of responsibility for the students in their charge. They must constantly evaluate individual student's needs and progress, insure the safety of both the group members and the environment and, through organization and administration of the course elements, encourage both cognitive and affective change in the students.

There are three basic requirements to become a NOLS instructor: a) demonstrate proficiency in a wide range of wilderness skills and teaching techniques, b) pass the intensive 5-week instructor course, and c) serve as an apprentice on at least one NOLS course. Constant evaluation by staff and students and opportunities for staff education are ongoing and encouraged. An average of 200 outdoor instructors per year work for the school, 150 during the summer and 100 during the winter (Sirois, 1980).

There have been several suggestions and recommendations that research on the major course influences be conducted. Hendy (1975), for example, has suggested that more research

be carried out to determine the relationship between instructor personality and student outcomes at Outward Bound. Baker (1975), in a study at NOLS, also recognized the need for further characterization of instructor influences, particularly in the area of student leadership development. Shore (1977) concluded from his work on Outward Bound studies that more characterization of instructor influences should be incorporated into research designs. He wrote:

Very much needed is a study of instructors and a new recognition of the need to pay closer attention to instructors in studies involving more widely ranging topics. For we still know very little about Outward Bound instructors and how critical (or not) they are to positive Outward Bound experiences (p. 58).

And finally, Sirois (1980), in a descriptive study of the personality traits of NOLS instructors, recognized the need to relate personality to specific student needs or outcomes.

Problem Statement

The major research problem that is addressed by this research is the lack of information on the degree, if any, of self-concept change which occurs in students as a result of a NOLS course. An additional research problem is the lack of information on how wilderness instructor personality traits relate to instructor effectiveness as perceived by

the students, and how their effectiveness relates to changes in self-concept of students on a NOLS course.

Research Objectives

The overall goals of this research are to determine the extent of change in self-concept of students on a NOLS course and the extent to which instructor personality traits are correlated with instructor effectiveness as evaluated by their students.

This research is deemed important in that the ability of an instructor to orchestrate an effective learning experience may be shown to be a function of both his or her skill and personality. Properly developed learning experiences result in specific benefits to the students and to the wilderness system itself. In addition, it will be useful to determine if the "person variables" (i.e., sex, socioeconomic status, age, etc.) of students are related to their response to various instructor personality types.

A knowledge of the influence of instructor personality traits on both perceived instructor effectiveness and on student outcomes may also assist the Staff Director of NOLS to better allocate instructor resources to achieve specific program objectives. It might also be possible, as a result

of this research, to recognize the individual differences of students and to more closely meet their particular needs for self-concept development, by assigning various combinations of instructor personality types to specific types of courses.

More specific research objective are:

1. To determine the extent of change in self-concept of students, as a result of a wilderness skills course at the National Outdoor Leadership School (NOLS).
2. To determine students' perceptions of individual instructor effectiveness.
3. To determine the personality traits of NOLS instructors and to compare the resultant profiles with published norms, the trait profiles produced by Hendy (1975) of Outward Bound Instructors, and Sirois' (1980) description of personality profiles of NOLS instructors.
4. To determine the extent to which individual instructor personality traits are correlated with students' perceptions of instructor effectiveness.
5. To determine the extent to which individual instructor evaluations are correlated with self-concept changes in students.

LITERATURE REVIEW

The purpose of this chapter is to selectively review the theoretical foundations of the current study, to review some of the significant research findings on central issues, and to develop the rationale for this research and its testable research hypotheses.

The self-concept literature and theory building efforts are reviewed first, followed by the review of several studies which examined self-concept changes in a wilderness education setting. This is followed by a review of some of the studies from the field of educational psychology which deal with teacher personality influences on student self-concept and other student outcomes. Teacher personality influences on teaching effectiveness are also reviewed. In conclusion, reviews of specific research related to wilderness instructor/leader personality descriptions and influences are presented.

Theoretical Foundations of Self-Concept

Self-concept is and has been a widely studied construct in the field of personality psychology. Allport (1955) maintains that Freud's concept of the ego may have unintentionally initiated the recognition of an "inner self" that led to current recognition or study of "self-concept" (p. 37). Since Freud, there has been a long series of personality theorists who have, in one form or another, reinforced the construct of "self as an inner directed, imaginary mechanism inferred from behavior" (LaBenne and Greene, 1969).

Ewert (1982) credits contemporary theorizing about self-concept to James (1890). James theorized that a person's ego was in fact that person's sense of identity. He further stated that the global concept of self-identity consisted of the distinct subcomponents of "spiritual-self, material-self, and social-self" (LeBenne and Greene, 1969). The spiritual-self, according to James, was comprised of mental faculties and inclinations. The material-self was constituted of material possessions and the social-self was formed by the esteem and regard that the person perceived others to have for him. According to LaBenne and Greene (1969), James' major contribution was "the view of self

which incorporated feelings and attitudes along with the principle of causality" (p.2). Allport (1937) supported and built on the theorizing of James, which resulted in Allport's recognition of the "proprium" in his 1955 treatise. Allport was particularly cautious about the use of the term "self" as it had been employed by James, Freud and others. The notion of a "proprium" was an effort to get around the factotum or agent theories of prescientific psychology extant since Freud's early works. According to Allport, the proprium (from "proprieate functions of the personality") comprises "awareness of self and striving of activity; it includes bodily sense, self-image, self-esteem, and identity as well as thinking and knowing" (LaBenne and Greene, 1969).

Rogers (1951) also described self-concept as a construct consisting of multiple conceptions. He described it in the following way.

The self-concept...may be thought of as an organized awareness. It is composed of such elements as the perception of one's characteristics and abilities; precepts and concepts of the self in relation to others and to the environment; the value qualities which are perceived as associated with experiences and objects; and goals and ideals which are perceived as having positive or negative valance (p. 91).

The term "self-concept" is widely used in the field of personality psychology as a construct which describes a mechanism within each individual allowing for the personal explanation of behavior. As defined by LaBenne and Greene (1969):

Self-concept is a group of feelings and cognitive processes which are inferred from observed or manifest behavior. Self-concept is the person's total appraisal of his appearance, background and origins, abilities and resources, attitudes and feelings, which culminate as a directing force in behavior (p. 10).

The authors hold that "a person's conscious awareness, what he thinks and feels, is that which primarily guides, controls and regulates his performance and action" (p. 10).

The development and change of self-concept in an individual has been of interest to many psychologists. LaBenne and Greene (1969), for example, believe that "self-concept is built or achieved through accumulated social contacts and experiences with other people" (p. 13). They give specific recognition to the role of significant others, such as parents and teachers, and such cultural influences as social class membership, in the development of self-concept. They also recognize that the development of self-concept in an individual is a result of an ever increasing exposure to opportunities for successful and unsuccessful experiences. They state:

It would be a misconception to view a person with a strong or positive self-concept as completely without failure or other negative experiences. No one escapes some disappointments and failures. However, the person who is able to deal effectively with the negative onslaughts in life is one whose total economy is essentially positive. When weighed in the balance, he feels himself adequate to meet life's challenges because of a sufficient backlog of successful encounters which allow his belief that he is valuable and worthy (p. 13).

They state their belief that the process of developing this "backlog of successful encounters" is the same for all.

They state:

We believe that the process is much the same for all students: it is the quality of their experiences which distinguish those with a good self-concept from those with a poor self-concept (p. 13).

The ability to measure changes in a construct or psychological mechanism, particularly one which consists of multiple conceptions, has also been the object of much research. Several self-report instruments have been developed, and the literature utilizing these instruments has been mixed. The Tennessee Self Concept Scale (TSCS), developed by Fitts (1965) and described in detail later in this document, allows one to examine development or change in nine specific components of self-concept, in addition to providing a global reference. Fitts identifies the specific subcomponents as: Identity (what a person is as he sees

himself); Self-Satisfaction (how he feels about the self he perceives); Behavior (an individual's perception of the way he functions); Physical-Self (his view of his body); Moral-Ethical Self (satisfaction with one's religious beliefs or lack of them); Personal Self (a view of personal worth and adequacy); Family Self (perceived value as a family member); Social Self (worth in his social interactions with other people), and Self-Criticism (level of defensiveness).

Another instrument which recognizes the multiple dimensionality of self-concept is the Self Description Questionnaire (SDQ) developed by Shavelson and Bolus (1982). This instrument recognizes seven dimensions of self-concept for use in an educational setting. The seven dimensions identified by Shavelson and Bolus (1982) are: Physical abilities (self-rating of ability and enjoyment); Physical appearance (how one perceives his appearance and attractiveness); Relationship with peers (perceptions of making friends, popularity and whether others want them as a friend); Relationship with parents (perceptions of how well he gets along with parents); Reading (rating of interests and ability in reading); Math (rating of enjoyment/ability in math), and School subjects (rating of enjoyment/ability in "all school subjects"). The SDQ was specifically designed to measure three areas of academic self-concept and

four areas of non-academic self-concept. There are many others also in use (Buros, 1974), most of which recognize the multiple dimensions of the construct and purport to measure them through a variety of scales.

A recent empirical study by Marsh et al. (1983) studied the reliability, stability, dimensionality, validity and measurement of change of self-concept. The authors conclude:

Changes in self-concept were systematic and reliable as well. This offers hope to researchers wanting to relate changes in self-concept to other variables (p. 788).

The authors go on to state further:

Thus, it is at least possible for a particularly dramatic change in a person's life, or an experimental intervention, to have a substantial effect on some particular component of self-concept, even if it has a less substantial effect on overall self-concept (p. 788).

Self-Concept and Outdoor Programs

There are several publications which are particularly relevant to this section of the literature review and are worthy of mention. Ewert (1982) has prepared a comprehensive review and analysis of over fifty studies related to self-concept and other psychological outcomes related to wilderness/adventure education. Shore (1977) has

done a similar comprehensive review and critical evaluation of studies related specifically to Outward Bound. A recent dissertation by Burton (1981) is also particularly important because of its analysis of studies related to Outward Bound, including some that were difficult to locate and not cited elsewhere.

In the field of wilderness/adventure education, much of the research on self-concept has been done at various Outward Bound schools. The body of literature is vast. Thomas (1985) relates that more than 30 doctoral dissertations have been completed which relate to Outward Bound in the United States alone, with additional research having been done at schools in Britain and West Germany. Burton (1981) as cited by Thomas (1985) found that:

Of the 161 studies examined, 50 had used self-concept or a component of self-concept as the outcome variable. Of the 38 selected studies (those Burton determined had the most valid research design), self-concept was used in 17 (45%). Further, of all the variables chosen for the Outward Bound-type research, self-concept showed the most consistent positive change (p. 13).

Because several comprehensive reviews already exist (Ewert, 1982; Shore, 1977; Burton, 1981), only a few selected recent studies are reviewed here.

Ewert (1982) discusses the work of Dickinson (1979) at the National Outdoor Leadership School (NOLS). Using a relatively small sample of 42 students from three selected courses, he administered the Tennessee Self Concept Scale as a pretest on the first day of the course and as a posttest on the last day of the course. A third administration of the instrument was given to participants five months after the completion of their course. The study apparently had no matching control group. Dickinson's analysis revealed that the population experienced a positive change in self-concept as measured by the TSCS as a result of the NOLS course and that the changes apparently persisted for the five-month follow up period. All ten scales of the TSCS (self-criticism, total positive self, identity, self-satisfaction, behavior, physical self, moral-ethical self, personal self, family self, and social self) showed significant positive changes at the .05 level of significance.

Dickinson's study is one of the few research efforts that deals with a non-stress/challenge program (i.e., NOLS) and with a "normal," although self-selecting population. It was, however, an undergraduate project and may not have been subjected to professional peer review. Efforts to locate the original study were unsuccessful.

Another recent study by Kimball (1979) again used the TSCS on a non-Outward Bound population of students enrolled in a variety of so-called "Wilderness Experience" courses. Like Dickinson's study, it used a pre-post administration of the TSCS without a control group. While Dickinson's subjects were enrolled in 5-week standard Wilderness Courses at NOLS, Kimball's work was based on 14-day experiences by the subjects who participated in perceived "high-stress" activities, such as rock climbing, river rafting and a solo experience. Kimball found, using t-tests of pre-post differences in TSCS scores, positive changes in all ten TSCS scales. Again, the difficulties of making definite conclusions and generalizations without a control group were manifest. Kimball's findings did, however, support several previous studies (Nye, 1976; Clifford and Clifford, 1967; Heaps and Thorstenson, 1974; Berstein, 1972).

A recent study by Thomas (1985) attempted to determine the influence of course length on the self-concept change of a relatively young (average age 15.14 years) group of 134 participants at the Minnesota (now Voyageur) Outward Bound School. His experimental design included both experimental and control groups in courses of two different lengths. For the 14-day course, there were 38 subjects in the experimental group and 14 subjects in the control group.

For the longer course of 21 days, there were 70 in the experimental group and 12 in the control group. The study employed a pre/post/follow-up design using the TSCS. He used mailed pre and post instruments rather than the more frequently reported pre and post testing when the students begin and end a course. Thomas found no statistically significant differences in pretest-posttest changes between the 14-day, 21-day or control group, although the slight differences found favored the experimental groups. Thomas used the ANCOVA procedure to adjust for the pretest scores in the three groups. However, there is no mention that the homogeneity-of-slopes had been tested by including the interaction effects of the pretest and experimental or control group. Such unequal sample group sizes and potential heterogeneity of variances would have indicated this procedure prior to the normal ANCOVA adjustment of posttest scores. Thomas did find significant changes ($p < .01$) when comparing pre- and follow-up self-concept scores for the younger students (age < 15.14 years). Older students experienced no such follow-up test changes.

From the studies cited here, and from the detailed reviews of the many studies by Ewert (1982), Shore (1977) and Burton (1981), it seems that wilderness education/adventure courses have indeed resulted in changes to participants. As Ewert points out:

While there has been a wide variance in the design and conclusion-generating ability of these works, there can be little doubt that many of these types of programs have done something to the participant. That something has often been a positive enhancement of the self-concept (p. 17).

The Role of Teacher Personality on Student Outcomes and Perceived Teaching Effectiveness

Wilderness leaders are seen as "teachers" in many respects. The NOLS approach is particularly dependent on the teaching qualities of the instructors since the vast majority of the course experiences for students are school-like in that both didactic and experiential teaching strategies are employed. The instructors give formal, organized lectures which are usually supplemented by student exercises and activities designed to reinforce the skills required for the subject under study. Because of this instructor role in both creating and orchestrating learning experiences, it seems important to examine more closely some of the characteristics of the teachers. One of these, teacher personality, has been purported to be an important influence variable (Thomas, 1973). Unfortunately, as will be pointed out later in this review, little research has been published in professional journals specifically on wilderness teachers' (instructors') personality influences. It is possible, however, to examine and learn from the educational research on classroom teacher influences.

Kilmer (1976), in a study of self-concept of elementary students due to the classroom environment and teacher influences, concluded that teacher warmth in interpersonal relations has a significant positive influence on student's self-concept. She also found significant positive relationships between self-concept and the amount of freedom provided by the teachers.

Spaulding (1964) found that there were positive correlations between a learner's self-concept and the degree to which the teachers were calm, accepting, supportive, and facilitative. His study also noted negative correlations for teacher behaviors which were perceived as dominating, grim, threatening, and sarcastic. While it could be argued that these characteristics are behaviors and not necessarily personality, it seems reasonable that the trait-like behavior descriptions reflect certain aspects of personality.

Felker et al. (1973), as part of an attempt to evaluate a teacher program of enhancement of self-concept, concluded that teachers are capable of increasing student self-concept through various behaviors and personality variables such as enthusiasm and cultivating self-rewarding behavior in

students. The authors concluded that the self-concept enhancement program, as represented by differing teacher behaviors, produced important gains in self-concept, reductions in anxiety, and the treatment groups were faced with fewer failure experiences than the control groups.

In addition to attempting to determine instructor influences on the student outcome of self-confidence, the research proposed is also focused on questions related to instructor personality influences on perceived teaching effectiveness. Several studies of significance to this aspect of the research have been identified.

The importance of instructor personality has been studied from many approaches. Sherman and Blackburn (1975), for example, report a multiple R of .88 between student perceptions of teacher personality traits and judged teaching effectiveness. They state:

...it is the personal qualities which the instructor as an individual brings to the educational setting that spells the difference between success and failure as a teacher, at least insofar as student judgments are concerned (p. 124).

Another study by Anderson et al. (1978) in a traditional classroom setting found "student perceptions of teachers' personal attributes to account for more than 59% of the

variance in instructional effectiveness ratings provided by students" (cited by Thomas et al., 1982, p. 140).

While attempting to determine teacher personality correlates of overall teaching effectiveness, Isaacson et al. (1963) used a factor analyzed version of the 16PF Personality Factor Questionnaire, among other instruments, to conclude that teachers high in the resultant factors of Surgency (enthusiasm), Cultural attainment, and Emotional stability were characteristic of teachers rated high in overall effectiveness. Individual personality traits which had significant correlations ($p < 0.5$) with student ratings of overall teaching ability were maturity, aggressiveness, enthusiasm, conscientiousness, and sensitivity.

This brief summary of the educational literature suggests that, in a classroom setting at any rate, teachers' personalities do make a difference. The teacher occupies a central role, through his or her personality and ability, as a "significant other" in the students' lives. A teacher's personality, as described in trait-like terms, apparently can influence students' achievement, self-concept, and perceptions of teacher effectiveness.

The question often asked today, "Do schools make a difference?" might be further stated as "Do teachers make a

difference?" The answer seems to be yes. The parallel question might be asked related to this proposed research. The question, "Does NOLS make a difference?" might be viewed as "Do NOLS instructors make a difference?" This second question cannot be answered at this time. This is the fundamental problem to be addressed by this research.

Instructor Personality Influences on Wilderness Courses

Very little of the research on the evaluation of specific wilderness programs is published in refereed journals. Most of the significant research contributions are in the form of theses or dissertations. Two such dissertations are worthy of some elaboration because they deal with the topic of wilderness instructors' personality. Hendy's (1975) major research objectives were to determine: 1) what kind of person is attracted to become an Outward Bound instructor; 2) from which occupations or training grounds can one recruit potential instructors, and 3) what kind of person makes a good instructor (Hendy, p. 7). He utilized a standard personality trait survey instrument, the Cattell Sixteen Personality Factor (16PF) Questionnaire, and administered it to twenty-five Outward Bound instructors. He analyzed the resultant 16PF profiles for instructors in three ways. First, he computed the mean sten scores for

male and female instructors, then he compared them to each other and to published norms for ten referent occupational groups. Second, he compared profiles of "superior" and "other" instructors after having three supervisors rate each instructor.

His conclusions indicated that, from a personality trait point-of-view, the Outward Bound instructors were reserved, bright, tender-minded, very imaginative, forthright, and experimenting. He noticed some discrepancies between males and females, but many more similarities. He also concluded, that in many respects, "superior" instructors differed significantly from "other" instructors. The superior instructors had more enthusiasm (surgency); they were more forthright, and had higher scores in imaginative and experimenting scales, all seen as important teaching qualifications.

As well as using profiles in a comparative sense, Hendy also compared the Outward Bound instructor profiles with 16PF norms for various occupational groups. His comparisons of Outward Bound instructors with referent occupation group norms yielded some predictable similarities, but some surprising differences. He noted that male instructors would make good high school teachers, but that female

instructors would not! He also concluded that Outward Bound instructors would be poor social workers and "were not suited to be school counselors, athletes, or pilots" (Hendy, p. 121). The joint sex-profile comparison suggested that the instructors would not make good psychiatric technicians or artists. As more and more adapted Outward Bound programs are used for "special populations," including mental health care clients, the finding on suitability as psychiatric technicians is probably worthy of further research.

Hendy concluded his research with a recommendation that much more effort be given to characterizing Outward Bound instructors for the purpose of predicting leadership effectiveness in meeting the goals of Outward Bound students.

Sirois (1980) conducted a study very similar to Hendy's (1975) work. Her sample population, however, consisted of instructors at the National Outdoor Leadership School (NOLS). She administered the Cattell 16PF¹ to a total of 58 instructors and did analyses which paralleled Hendy's work on Outward Bound instructors. She concluded that, when compared to the general population, her population tended to

¹ For capsule descriptions of the personality factors measured by the 16PF, refer to Table 2. More complete descriptions of the factors can be found in Appendix E.

be more 1) reserved, 2) intelligent, 3) assertive and dominant, 4) enthusiastic, 5) tender-minded, 6) imaginative, 7) forthright, 8) experimenting, 9) self-sufficient, and 10) careless of social rules. She did not do a statistical comparison with Hendy's profile of Outward Bound instructors, but did state her findings "are compatible with those revealed by Hendy" (p. 66). Her results did not agree with the literature related to the 16PF test on the five factors found to describe characteristics of the general area of leadership. According to Cattell et al. (1970), the five 16PF Factors which can discriminate good leadership ability are conscientious (G+), venturesome (H+), self-assured (O-), controlled (Q3+) and relaxed (Q4-). She concludes her research with recommendations that further research should be done on instructor personality, and that attempts should be made to correlate client preferences and/or needs with the personality traits of the leaders.

STUDY HYPOTHESES AND RESEARCH QUESTIONS

Study Hypotheses

The objective of this chapter is to specifically state the hypotheses and research questions which guide this research. For each hypothesis and research question developed, particularly relevant previous research is cited, and the theoretical foundations presented. The resulting specific hypothesis and sub-hypotheses are then explicitly stated in non-null form.

Hypothesis #1

There has not been sufficient empirical evidence gained by previous research to confidently conclude the nature and extent of student outcomes as a result of a NOLS course. Previous research by Dickinson (1979), while demonstrating such changes, was not generalizable because of small sample size and lack of a control group. McNeil (1975), Lyman (1975) and Iida (1975) have suggested the need for better experimental designs with sufficient sample size, control groups, as well as careful attention to "artifacts" such as maturation, history and testing reactance.

Further, in order to correlate course influences such as the role of instructor personality traits, a second objective of this research, it is necessary to first determine the dependent student outcomes. The paper by Marsh et al. (1983) has suggested that "a particularly dramatic change in a person's life or an experimental intervention" (p. 788) may affect various components of an individual's self-concept. A NOLS course, the experimental "treatment," is perceived to be a significant life event for most students. Thus, Hypothesis #1:

H#1: There will be changes in the self-concept of students as a result of a standard wilderness skills course at the National Outdoor Leadership School.

To further identify the particular sub-dimensions of change of the multi-faceted construct of self-concept, sub-hypothesis H#1a is stated as follows (Fitts, 1965; Shavelson & Bolus, 1982):

H#1a: There will be changes in the nine sub-dimensions of self-concept as identified by Fitts (1965) specifically, the subcomponents to be examined are: identity, self-satisfaction, behavior, physical self, moral-ethical self, personal

self, family self, social self, and self-criticism.

Hypothesis #2

Much of the literature in educational psychology and educational evaluation has indicated that student evaluations of teachers are positively related to student outcomes (Felker et al., 1973; Kilmer, 1976). While this has been demonstrated in a classroom setting with a variety of student outcome measures, it has not been demonstrated in a wilderness or outdoor/adventure education program. Using the outcome measure of self-concept and its related subscales, the hypothesis tested by Felker et al. (1973) and Kilmer (1976) will be tested with the sample population at NOLS. Thus, Hypothesis #2 is stated:

H#2: There will be a correlation between students' change in self-concept and the "overall effectiveness" ratings of each of the three instructors on a NOLS course.

Hypothesis #3

The personal variables or individual differences of students and their relationship to changes in self-concept

have a long research tradition in the educational literature dealing with classroom settings. A review by Kilmer (1976) concluded:

Personal variables, including performance and adjustment, sex differences, race, age, development, grade in school, locus of control, and physical appearance, all tend to influence student self-concepts (p. 44).

The majority of the research reviewed by Kilmer, however, resulted in mixed results or was inconclusive on sex differences and race or ethnicity and their relation to self-concept. Dickinson (1979) and Thomas (1985) both indicated greater change in self-concept in the younger segments of their sample populations as a result of wilderness/adventure education courses.

Dickinson noted in his study of 42 students at NOLS that, while the entire sample had increased overall in all dimensions of self-concept measured, this change was not evident in the subjects who were 18 years old and older. Thomas' work at Outward Bound noted more change, although not significant, in students below the mean age of his sample population (15.14 years) of the 108 subjects in the treatment group.

Even though the NOLS population in this study was self-selecting, as in many other studies, and does not represent

the full range of education or age, and even though the ethnic makeup of the total NOLS population does not typically represent the ethnicity of the general population of the United States, it was decided that the influence of the selected personal student variables on changes in self-concept should be examined. Hypothesis #3 represents this strategy:

H#3: The degree of self-concept change in students as a result of a NOLS course will be moderated by some student personal variables such as sex, age and ethnic origin (Gardener, 1974).

Hypothesis #4

As cited earlier, several authors have examined the relationship of teacher personality factors to self-concept changes in students (Kilmer, 1976; Spaulding, 1964; Felker et al., 1973) and student ratings of teacher effectiveness (Spaulding, 1963) in a classroom setting. Hendy (1975) looked at differences in instructor profiles, as determined by Cattell's 16PF, as they relate to instructor effectiveness as "judged" by three program administrators at Outward Bound. As related previously, he found significant differences between "superior instructors" and "other" instructors. Cousineau (1977), in a Delphi-type study of

specific outdoor skills related to certification of outdoor leaders, concluded that three of the 36 identified skill competencies, and therefore effectiveness, suggested by the "panel of experts," related to instructor personality. A recent paper by Teschner and Wolter (1984), while not considered as empirical, but rather as anecdotal research, gave the highest importance in rating staff effectiveness to personal characteristics, including personality.

Because of the potentially large sample size of instructors involved in this research ($n > 100$), the use of ratings by independent "judges," such as administrators, of individual instructor effectiveness was deemed to be unsuitable and impractical. Instead, student evaluations of "instructor effectiveness", based on the conclusions of Tollefson et al. (1983) that "student evaluations are valid measures of instructional differences" (p. 393), were selected for study. The hypothesis tested in this aspect of the research is as follows:

H#4: There will be a correlation between student ratings of "overall effectiveness" of individual instructors and certain instructor personality traits. (Issacson et al. 1963 Cousineau, 1977 Teschner and Wolter, 1984 Tollefson et al., 1983).

Hypothesis #5

An elaboration of Hypothesis #4 is the determination of instructor personality profiles for instructors rated by students as having "high overall effectiveness" and those rated as having "lower overall effectiveness". This aspect of this research is comparable to Hendy's (1975) work. An effort will be made to explain any personality trait differences between the two student-rated groups in order to begin to understand some of the personality correlates of instructor effectiveness. This approach to evaluation has resulted in Hypothesis #5.

H#5: There will be differences in personality traits between instructors who gain high "overall effectiveness" ratings from students and instructors with lower "overall effectiveness" ratings as evaluated by their students (Hendy, 1975).

Research Questions

It was apparent that the experimental design and data requirements necessary to test the five research hypotheses stated above would result in an opportunity to examine several research questions of importance, but of peripheral

concern to the major thrust of the research reported here. In addition, many of the research questions which evolved during the preliminary planning for this research were very specific to the NOLS population, and thus did not have the virtue of universality or generalizability. In some cases, the research questions were lacking in clearcut theoretical foundations which would allow them to be tested in hypothesis form. Three such research questions, with the above noted caveats, were thus developed and are presented as follows.

Research Question #1

Student attributions and attitudes about their perceived outcomes, it is speculated, will provide some insight into the importance of various dimensions of a NOLS course. Thus, three course influences were defined as the essence of a NOLS experience. These were (1) the NOLS instructor team of three instructors on each course; (2) the experiences related to living in a relatively isolated, small group for an extended period of time, and (3) exposure through didactic and experiential teaching techniques to the standard NOLS dogma and doctrines which are required and ubiquitous on all courses, as represented by the NOLS curriculum and teaching syllabus.

Thus, to determine the relative importance of these various course influences, Research Question #1 was generated.

#1 Will the instructors be rated as more influential than the small group living experience or the NOLS curriculum elements in achieving personal outcomes, regardless of what outcomes are reported by the students?

Research Question #2

In keeping with the stated missions of NOLS, two student outcomes are thought to result from a NOLS course. These are (1) outdoor skills, including minimum impact camping techniques, and (2) outdoor leadership skills. A third potential outcome, that of self-confidence, is also thought to result even though it is not an objective of the NOLS curriculum or courses.

To ascertain student perceptions of their own gains from a NOLS course, Research Question #2 was developed.

#2 Will self-confidence be reported as the most important outcome by students on a NOLS course when compared to outcomes of outdoor skill or leadership skill?

Research Question #3

Finally, in an attempt to take advantage of previous research aimed at determining the personality traits of wilderness/adventure education instructors, a research question was developed to compare the results of the current research with that reported by Hendy (1975) and Sirois (1980). Thus, Research Question #3 is as follows:

#3 Will there be differences in personality profiles between NOLS instructors and those for Outward Bound instructors as reported by Hendy (1975) or the profiles of NOLS instructors as reported by Sirois (1980)?

METHODS AND PROCEDURES

Research Design and Study Instruments

Research Design

The research reported in this dissertation was done at the International Headquarters of the National Outdoor Leadership School (NOLS) in Lander, Wyoming. The data collection period was from June 12, 1984 to September 5, 1984.

NOLS operates very much like a contemporary public school in that students are enrolled in "courses" which are roughly analogous to classrooms. The course, as the basic unit of instruction, typically consists of three instructors and up to seventeen students. There were five types of courses examined in this research. The catalog descriptions of each course are provided in Appendix B. Table 1 describes the general nature of the courses examined as well as comments on the specific focus of the course.

It should be pointed out that even though the courses have different names and characteristics, they are very

Table 1. Characteristics of NOLS Courses Included in This Study.

Course Type	=Length (days)	Minimum age	Comments
Wilderness	31	16	--
Wilderness Natural History	31	16	focus on ecology
Outdoor Education	24	16	for practicing or potential outdoor educators
Adventure	31	14-15	--
Mountaineering	36	16	more mountaineering; usually spend more time at high elevation

(See Appendix B for complete description of courses.)

similar in both the curriculum elements and the instructor roles and protocol. The major differences between the courses relate to the length of the course, the route (or mountain range), and in some cases, differential age requirements. An "Adventure Course," for example, is virtually identical to a "Wilderness course" except that the "Adventure course" is for students aged 14 and 15, while the "Wilderness course" has a minimum age criterion of 16 years of age. None of the courses included in the research reported here required "prerequisite" wilderness or outdoor skills.

Students who come to NOLS enroll in a specific course on a specific starting date. Thus, there existed no opportunity for random assignment of students to courses.

Instructors are assigned to work specific courses by the Staff Director at NOLS on the basis of the instructor's availability, experience, and expressed requests to work particular courses. No opportunity existed to randomly or systematically assign instructors to the courses under study.

The three instructors who work a course are assigned differing levels of responsibility or "rank" on that course. The "Course Leader" (CL) is the most experienced member of

the instructor team and is in charge of all aspects of the course when in the field. Many of the Course Leaders have accumulated several years of experience on a wide variety of courses. The second-in-command on each course is the "Patrol Leader" (PL). This instructor has usually worked several courses and, through accumulated experience, has the ability to take over the leadership of the course if necessary. The third member of the instructor team is typically a relatively recent graduate of the intensive NOLS Instructors Course and is just beginning his or her career as a NOLS instructor. A new instructor usually will have to accumulate 10 to 15 weeks of field experience before being considered for promotion to "Patrol Leader."

Thirty-five courses, of the type described above, were involved in this research. The experimental design selected for the research was a variation of the Randomized Control Group Pretest/Posttest Design (Campbell and Stanley, 1966). (See Figure 1.) In this research, the "Treatment" is considered to be a NOLS course. The outcome variable of interest is the self-concept change of students as a result of the "Treatment." The definition of an equivalent control population to compare to a self-selecting population such as the students who attend NOLS courses is frequently very difficult. It was therefore decided that the control group

Time	5 wks prior to NOLS Course			On NOLS Course		
	Before			After		
EXPERIMENTAL COURSES	<u>Pretest</u>			<u>Treatment</u>		
	O ₁			X		
CONTROL COURSES (R)	<u>Pretest</u>			<u>Posttest</u>		
	O ₁ -			O ₂		

R = Randomly selected from all courses available for testing

Figure 1: Schematic Illustration of Randomized Control-Group Pretest-Posttest Experimental Design Variation Used in This Research (Adapted from Campbell and Stanley, 1966).

should be selected from among the courses at NOLS which were already "booked" and scheduled to go to the field during the sampling period. Five of the thirty-five courses were so selected by random draw and designated as control courses. Because the students were already booked on the designated control courses, and thus their names and addresses were known, it was relatively easy to contact them prior to their course departure. It should be noted that these control courses would ultimately be exposed to the "treatment" (i.e., a NOLS course).

The procedure employed was to send each student enrolled and confirmed on one of the control courses a copy of the pretest instrument so that, with mailing time, it arrived five weeks prior to the scheduled departure date of his or her course. A cover letter, a copy of the pretest instrument and a self-addressed, stamped return envelope was sent to each student. The cover letter is attached as Appendix C to this report. As will be discussed later, the posttest administration of the instrument was given to the students on the control courses upon their arrival at NOLS, prior to their course departure. All of the courses selected as control courses, except one, were five weeks (31 days) in length, thus the pretest instrument was sent five weeks plus mailing time in advance of the course departure.

One of the courses randomly selected as a control course was, however, a three-week course. In that case, the pretest instrument was sent to the students booked on the course three weeks plus mailing time prior to the course departure. The random selection of five control courses from the 35 study courses was an attempt to maintain the effect of randomness within the selected research design. There were three types of "slippage" or loss of control subjects as a result of using this procedure.

1. Some students enrolled on a control course cancelled out during the period between pretest and course departure, and thus were not available for posttest.
2. Some students contacted did not return the pretest because they either objected to the instrument or were absent from their mailing address.
3. Some of the control subjects were tardy in returning the instrument and thus were deemed ineligible as a control subject because the period of time between pre- and posttest administration was not equivalent to the "treatment" period of time (i.e., the NOLS course). All returned pretest questionnaires were date checked via postmarks and student provided date fields to insure approximate equivalence between control period and treatment period.

Threats to validity using this procedure and experimental design are discussed in a later section of this dissertation.

To determine the influences of instructor-team personality from within the treatment, a standard psychological instrument, the 16PF Questionnaire described in the next section of this report, was administered to each of the instructors on all courses, both treatment and control. The instrument was administered one time only to the instructors as part of the instructor briefing for each course by the NOLS Staff Director, the Director of the NOLS Wyoming Branch, and the principal researcher. This briefing was held two days prior to the scheduled departure of the course. All instructors employed on the courses under study completed the instrument. If an instructor worked more than one course during the summer, he or she was requested to rewrite the instrument to provide additional potential for instrument test-retest reliability measurement. In some cases, where the instructors did not rewrite the instrument, duplicates of the first administration were associated with subsequent courses worked by the instructor.

At the briefing of instructors, the principal investigator explained the student testing procedures which

would take place on the departure day and on the course return. The objective of this procedure was to insure that the testing of students was not, in itself, perceived as a traumatic or upsetting experience for the students or the instructors. The instructors were asked not to divulge the specific details of the research when they met their students the night before departure day, but rather to suggest it was "important" and a normal part of the events associated with a course. The instructors were asked for and, indeed, delivered assistance and cooperation to make the testing procedures "normal," relaxed and "important and worthwhile" for the students.

Study Instruments

Three instruments were used in this research. They are as follows:

1. The Tennessee Self-Concept Scale (Fitts, 1965) Research and Counselling Form - administered as a pretest and posttest to students in experimental courses and control courses.
2. The Sixteen Personality Factor Questionnaire (16PF) (Cattell et al., 1970) Form C - administered to each instructor on all courses involved in this research.

3. NOLS Instructor Evaluation Form - a specially designed evaluation instrument completed by all students for each instructor on his or her course.

Detailed descriptions of the instruments used are presented in the following sections.

Tennessee Self-Concept Scale (TSCS)

The Tennessee Self-Concept Scale (TSCS) (Fitts, 1965) was selected for this research after a review of test evaluations in the Mental Measurements Yearbooks (Buros, 1972; 1978) and Tests in Print (Buros, 1974), and a review of the CSE-RBS Test Evaluations: Tests of Higher Order Cognitive, Affective and Interpersonal Skills (Eval. Tech. Prog., 1972). In addition, Dr. Fitts, the now retired author of the Tennessee Self-Concept Scale, indicated in a telephone conversation that he believed the TSCS was appropriate for the proposed research. Finally, the TSCS has been found to be a valid and reliable instrument in studies of self-concept changes due to a variety of outdoor programs, particularly Outward Bound programs (Burton, 1981; Fitts, 1965; Shore, 1977).

As suggested by the review of the theoretical foundations of self-concept, self-concept is seen as a multi-faceted

construct. The TSCS purports to measure specific components of self-concept in addition to providing a global score of total self-concept. A description of the various components of self-concept measured by the TSCS is quoted from Fitts (1965, pp. 2-3).

Total P Score. This is the most important single scale on the [TSCS]. It reflects the overall level of self-esteem. Persons with high scores tend to like themselves, feel that they are persons of value and worth, have confidence in themselves and act accordingly. People with low scores are doubtful about their own worth; see themselves as undesirable; often feel anxious, depressed and unhappy, and have little faith or confidence in themselves.

Identity. Here the individual is describing his basic identity...what he is as he sees himself.

Self-Satisfaction. This score comes from those items where the individual describes how he feels about the self he perceives. In general, this score reflects the level of self-satisfaction or self-acceptance.

Behavior. This score measures the individual's perception of this own behavior or the way he functions.

Physical Self. Here the individual is presenting his view of his body, his state of health, his physical appearance, skills [and] sexuality.

Moral-Ethical Self. This score describes the self from a moral-ethical frame of reference--moral worth, relationship with God, feelings of being a "good" and "bad" person, and satisfaction with one's religion or lack of it.

Personal Self. This score reflects the individual's sense of personal worth, his feeling of adequacy as a person and his evaluation of his personality apart from his body or his relationship to others.

Family Self. This score reflects one's feelings of adequacy, worth and value as a family member. It refers to the individual's perceptions of self in reference to his closest and immediate circle of associates.

Social Self. [This score] reflects the person's sense of adequacy and worth in his social interaction with other people in general.

Self-Criticism. This scale is composed of 10 items [all of which] are mildly derogatory statements that most people admit as being true

for them. High scores indicate a normal, healthy openness and capacity for self-criticism. Low scores indicate defensiveness, and suggest that the positive (Total P Scale) scores are probably artificially elevated by this defensiveness.

The TSCS consists of 100 items, comes in booklet form, and is easily administered to large groups.

The construction of the instrument is described in detail by Fitts (1965). In general, the pool of items was assembled from many other instruments dealing with various dimensions of self-concept and personality. The items for the final instrument were then selected by a panel of seven clinical psychologists who categorized them by the component of self-concept addressed.

Fitts (1965) reported the reliability of the final instrument as measured by a test-retest reliability coefficient for the Total P Score to be .92. The coefficients for the subscales measured by the instrument range from a low of .80 (moral-ethical self) to the high of .92 for the total P scale. The mean coefficient for the nine subscales used in this study is .88. Further evidence of the reliability of the instrument was also reported by Fitts (1965).

Other evidence of reliability is found in the remarkable similarity of profile patterns found through repeated measures of the same individuals over long periods of time...Distinctive features of individual profiles are still present for most persons a year or more later (p. 15).

The validity of the instrument, as reported by Fitts, is based largely on research by others (Congdon, 1958; Havener, 1961; Piety, 1958; Wayne, 1963) which demonstrated that the instrument could differentiate between psychiatric patients and non-patients, and further, that among the psychiatric patient group, actual differences were detected by the instrument among different types of mental disorders.

The long history of the use of the TSCS to detect changes in self-concept due to a treatment or experimental intervention of some sort is used as further evidence by Fitts of the validity of the instrument.

There is considerable evidence that people's concepts of self do change as a result of significant experiences. The Tennessee Self-Concept Scale reflects these changes in predictable ways, thus constituting additional evidence for the validity of the instrument (p. 30).

The instrument, developed and first used in 1965, appears to have stood the test of time and the scrutiny of researchers in that it is not unusual to see its use in recent research reported in psychological literature as well as the educational literature dealing with student outcomes.

For the subjects tested as part of this research, the average completion time for the instrument was approximately 22 minutes with the younger students taking slightly longer.

Subjects were required to read each of the 100 statements on the instrument and respond to them "as if you were describing yourself to yourself" (Fitts, 1965). The five response categories available were (1) completely false, (2) mostly false, (3) partly false and partly true, (4) mostly true and (5) completely true. Students answered the questions on Optical Scan Computer Coding sheets provided by the Learning Resources Center at Virginia Tech. The Learning Resources Center also read the completed data sheets to a mainframe data set from magnetic tape.

A FORTRAN program was written by the principal investigator to score the instruments. The scoring algorithms used in the program were tested prior to production scoring using documented examples provided by Fitts (1965). The large sample size used in this research made computer scoring by the test publishers prohibitively expensive. To facilitate the use of standard optical scan coding sheets in lieu of the more expensive "customized" answer sheets offered by the test publisher, the questions in all booklets were renumbered sequentially using self-sticking printed numbers.

Sixteen Personality Factor Test (16PF)

The Sixteen Personality Factor Test (16PF), developed by Cattell et al. (1970), was selected for use in this research to maintain comparability with previous research by Hendy (1975) and Sirois (1980). In addition, the 16PF is used extensively, particularly in personnel selection and in industrial and organizational settings. The test is based on over thirty-five years of research in which every item has been subjected to factor analytic investigation. This, according to Cattell et al. (1970) provides a sound foundation or proof that the 16PF scales are stable and independent.

The instrument is a factor analytically developed questionnaire which measures sixteen dimensions or traits in individuals from 16 years of age to maturity. In addition to determining the sixteen primary factors or traits possessed by an individual, four second-order, broader traits are calculated based on the sixteen primary traits. A brief description of the sixteen primary factors or traits and the four second-order factors is presented in Table 2. A more detailed description of the factors can be found in Appendix E.

Table 2. Descriptions of the 16 Primary Personality Factors and 4 Second-Order Factors From the 16PF Questionnaire (IPAT, 1979)

Low Score Direction (-)		High Score Direction (+)
FACTOR A		
<u>Reserved, Detached,</u> <u>Critical, Cool, Impersonal</u>	vs	<u>Warmhearted, Outgoing,</u> <u>Participating, Interested in</u> <u>People, Easy-going</u>
FACTOR B		
<u>Less Intelligent,</u> <u>Concrete-thinking</u> (Lower scholastic mental capacity).	vs	<u>More Intelligent</u> <u>Abstract-thinking, bright</u> (Higher scholastic mental capacity).
FACTOR C		
<u>Affected by Feelings</u> <u>Emotionally Less Stable,</u> <u>Easily Upset, Changeable</u>	vs	<u>Emotionally Stable,</u> <u>Mature, Faces Reality,</u> <u>Calm, Patient</u>
FACTOR E		
<u>Humble, Mild,</u> <u>Accommodating, Easily Led,</u> <u>Conforming</u>	vs	<u>Assertive, Aggressive,</u> <u>Authoritative, Competitive,</u> <u>Stubborn</u>
FACTOR F		
<u>Sober, Prudent</u> <u>Serious, Taciturn</u>	vs	<u>Happy-go-lucky</u> <u>Impulsively Lively,</u> <u>Enthusiastic, Heedless</u>
FACTOR G		
<u>Expedient,</u> <u>Disregards Rules, Feels</u> <u>Few Obligations</u>	vs	<u>Conscientious</u> <u>Persevering, Proper,</u> <u>Moralistic, Rule-bound</u>

Table 2. (cont.)

FACTOR H

Shy, Restrained,
Threat-sensitive, Timid vs Venturesome, Socially
bold, Uninhibited, Spontaneous

FACTOR I

Tough-minded,
Self-reliant, Realistic,
No-nonsense vs Tender-minded, Intuitive,
Unrealistic, Sensitive

FACTOR L

Trusting, Adaptable,
Free of Jealousy, Easy To
Get On With vs Suspicious, Self-opinionated,
Hard to Fool, Skeptical,
Questioning

FACTOR M

Practical, Careful,
Conventional, Regulated by
External Realities vs Imaginative, Careless
of Practical Matters, Uncon-
ventional, Absent-minded

FACTOR N

Forthright, Natural,
Genuine, Unpretentious vs Shrewd, Calculating,
Socially Alert, Insightful

FACTOR O

Unperturbed, Self-
assured, Confident, Secure,
Self-satisfied vs Apprehensive, Self-
reproaching, Worrying,
Troubled

FACTOR Q1

Conservative,
Respecting Established
Ideas, Tolerant of
Traditional Difficulties vs Experimenting, Liberal,
Analytical, Likes Innovation

Table 2. (cont.)

FACTOR Q2

Group Oriented,
A "Joiner" and Sound
Follower

vs Self-sufficient, Prefers
Own Decisions, Resourceful

FACTOR Q3

Undisciplined, Self-
Conflict, Careless of
Protocol, Follows Own Urges

vs Controlled, Socially
Precise, Following Self-
image, Compulsive

FACTOR Q4

Relaxed, Tranquil,
Torpid, Unfrustrated

vs Tense, Driven,
Over-wrought, fretful

SECOND-ORDER FACTOR SCORES

FACTOR QI

Introversion

vs

Extraversion

FACTOR QII

Low Anxiety

vs

High Anxiety

FACTOR QIII

Tender-minded Emotionally

vs

Tough Poise

FACTOR QIV

Subduedness

vs

Independence

An individual's score on each of the factors can range from 1 to 10 and is referred to as "sten score." Sten scores (the term comes from "standard ten") are described by IPAT (1979) as follows:

Sten scores are distributed over 10 equal-interval standard score points (assuming normal distribution) from 1 through 10, with the population average (or mean) fixed at 5.5. Stens 5 and 6 extend, respectively, a half-standard deviation below and above the mean, constituting the solid center of the population, while the outer limits for stens 1 and 10 are 2 1/2 standard deviations below and above the mean. One would normally consider the sten score 4 through 7 to be average, since they fall within one standard deviation of the population mean and therefore represent approximately two-thirds of all obtained scores. Sten scores of 1, 2, 3 and 8, 9, 10 are generally considered to be of greater importance for profile interpretation since they are more extreme and occur far less frequently in a normal population (p. 17).

To convert an individual's raw scores to sten scores, it is necessary to use one of the three norm groups available from IPAT (1972). The available norm groups are:

1. High school students (Juniors and Seniors)
 - Form C - female norms - average age 17 (n=360)
 - Form C - male norms - average age 17 (n=406)
2. University and College Undergraduates
 - Form C - female norms - average age 20 (n=1120)
 - Form C - male norms - average age 20 (n =1038)
3. General Adult Population
 - Form C - female norms - average age 30 (n=1335)

Form C - male norms - average age 30 (n=2298)

Because Sirois (1980) had reported the average age of NOLS instructors in her sample to be 26.6 years for all respondents (female 25.7 years; male 26.9 years), the norm group used in the conversion to stens in this research was the separate Form C male and female norms for the General Adult Population from the Tabular Supplement No. 2 to the 16PF Handbook (IPAT, 1972).

A FORTRAN program was written by the principal investigator to process the data from the optical scan coding sheets and to produce sten scores for the 16 primary factors and the four second-order factors for each of the instructors. The scoring algorithms were adapted from handscoring keys produced by IPAT for Form C of the 16PF, and validation of the compilation was done with raw score data which was handscored using the scoring keys.

Split-half reliability coefficients are presented by Cattell et al. (1970) for each of the 16 factor scales. The reported reliability coefficients range from .71 to .93, with an average overall scale of .84. Internal construct validity measures are reported to range from .73 to .96, averaging .88 over all scales.

Instructor Evaluation Form

A third instrument was designed specifically for this research to gather student evaluations and perceptions of each of the instructors on his or her course. The instrument, which was designed to take no longer to complete by the students than the "open ended" instructor evaluation instrument previously in use at NOLS, was specifically designed to gain information from students on an instructor's perceived teaching effectiveness. The criterion measures of instructor effectiveness were selected through consultation with NOLS, a review of the teacher evaluation literature, and discussions with test and measurement specialists. The previous NOLS instructor evaluation instrument (NOLS, 1984b) states, "the Instructors at NOLS request thoughtful written comments from students to help them determine their strengths and weaknesses as teachers/leaders. Broad areas of concern are wilderness skills, teaching style and organization, leadership ability and personal communication."

Senior administrative staff at NOLS provided additional specific direction on what constitutes "Instructor effectiveness." Several points emerged. These were: 1) individual wilderness competencies which an instructor

possesses are important but often not as related to teaching effectiveness as are teaching competencies (i.e., skilled wilderness persons are not necessarily skilled teachers), 2) students at NOLS are not able or qualified to evaluate wilderness "competencies" that might be possessed by an instructor, but rather the students are capable of evaluating "how" selected competencies are taught, and 3) the level of instructor wilderness competencies at NOLS is uniformly high because of rigorous staff training, staff updating and peer evaluation and that differences in perceived instructor effectiveness between instructors may be a function of personality and teaching competencies, two potentially highly correlated aspects above and beyond wilderness competencies.

The criterion measures or teaching competencies selected through this process were 1) teaching skills and methods, 2) course management skills, and 3) interpersonal skills. The specific questions were selected from a 70-item pool collected from the teacher evaluation literature (Peronto, 1961; Harvey and Barker, 1970; Isaacson et al., 1963). Items were deleted which had high inter-item correlations in order to keep the instrument brief.

Section 1 of the instrument consisted of 13 questions drawn from a 70-item pool which tapped a) teaching skills and methods, b) course management abilities, and c) interpersonal skills. Eight of the questions deal with specific attributes of the criterion measures. The remaining five questions are related to the global measures of instructor effectiveness on the dimensions of leadership techniques, outdoor technical skills, interpersonal skills, teaching skills, and overall effectiveness. Students were asked to rate the degree to which instructors demonstrated or possessed the attributes on a scale of 1 (not at all) to 10 (yes, definitely).

The second section of the instrument asked students to rate, on the basis of observed behavior, sixteen personality "traits" of the instructors (after Cattell et al. 1970), using a polar-anchored semantic differential scale with values of 1 to 10. The use of this trait attribution process by peers, or others well acquainted with the ratees, as was the case in this research, has a significant history which is well documented by Wiggins (1973). Wiggins, after addressing the theoretical foundations of trait attribution theory concludes:

In general, peer ratings [of personality traits] have been shown to have substantial generalizability of external structure across diverse rating groups and conditions, and

generalizability to criterion selections of social importance. With respect to the last, peer ratings have been demonstrated to be predictive of officer effectiveness, performance in flight training, leadership ability, supervisory skill, teaching effectiveness, overseas performance of Peace Corps volunteers and academic performance of both undergraduate and graduate students. Peer rating procedures have also been applied successfully to specialized populations, as is evident from a series of studies designed to assess dimensions of social maladjustment in preadolescent boys (p. 378).

The third section of the instrument asked the students to rate their perceived gain in personal outcomes of 1) SELF-CONFIDENCE, 2) OUTDOOR SKILL, and 3) LEADERSHIP SKILL on a 10-point scale from 1 (not much gain) to 10 (gained a great deal).

The final section of the instrument asked the students to rate the importance of 1) the INSTRUCTOR, 2) the SMALL GROUP LIVING EXPERIENCE, and 3) the NOLS CURRICULUM in achieving the reported gains.

Three pilot tests of Section 1 of the research instrument using university students in an outdoor skills course resulted in Alpha reliability coefficients ranging from .88 to .98.

During the data collection period at NOLS, the instructor evaluation instrument was administered to the students the

morning after the course returned from 5 weeks in the field. The instructors were not present during the evaluation. All instruments were administered by the same researcher using the same protocol.

Student Information File Data

In addition to the three instruments described in the preceding section, one other data collection procedure was employed. A data base, referred to as "Student Information Files", was created from information in individual student application files. A wide range of information was collected on 367 students of the total NOLS population that attended the courses included in this research. Some of the items of interest in this research analysis and in characterizing NOLS students are: sex, age, marital status, previous NOLS experience, place of residence, education level and occupation. Most of the information in this student information data base is for students who were involved in the "treatment" courses.

Sample Size

The population studied in this research consists of students enrolled in a standard NOLS course during the summer of 1984. The study design required pretesting and posttesting of the entire study population. There were 35 courses available for testing during the sampling period. Five courses were randomly selected, as described elsewhere, for designation as control courses. Students on these courses were pretested in advance of their arrival at NOLS. Posttesting of the control groups took place at the same time as the pretesting of treatment courses.

The number of students scheduled or "booked" on a course is usually 17 maximum. Because of unscheduled student absences, poor bookings on some courses, and occasional delayed arrival at NOLS, there was frequently some variation in the number of students who were actually available for pre- and posttesting. The distribution of this loss of subjects is assumed to be randomly distributed over all courses.

In addition, a few students, in spite of a research protocol designed to diminish it, chose to sabotage their answer sheets by purposely drawing designs, writing cryptic messages, or just refusing to answer. It is assumed that

this loss of subjects is also randomly distributed over all courses.

Table 3 shows the characteristics of the courses used as the treatment or experimental group, and Table 4 shows the courses used as control groups. The tables present, by course number and type, the number of students who wrote the pretest, the number who wrote the posttest and the final number of students for which both a pretest and posttest were available. Reflected in the treatment group is the fact that occasionally a student would be evacuated from a course while in the field and be unavailable for posttesting.

In addition to the testing of subjects in the treatment and control groups, each instructor involved in this research was administered a research instrument. There were a total of one hundred and sixteen (116) instructors tested. One hundred and three (103) of the instructors tested taught the treatment and control courses. Thirteen additional instructors, involved in similar courses for which there were no student pretests or posttests, were also tested. Four of the courses, usually those with younger students, had an additional instructor added to the instructor team. Three courses in the experimental group went to the field

Table 3. Courses and Students per Course Tested in the Treatment Group

Experimental Course No.	Course Type*	No. Students Booked	No. Pretested	No. Posttested	No. Pre & Posttest
1	NAT. HIST.	17	16	15	15
2	WILD.	17	17	16	16
3	OEC	13	13	12	12
4	ADV.	16	16	13	13
5	ADV.	16	15	13	12
6	MTN.	17	17	15	15
7	WILD.	17	17	17	17
8	WILD.	15	15	15	15
9	WILD.	16	16	9	9
10	WILD.	17	17	17	16
11	ADV.	10	10	8	8
12	OEC	14	14	12	12
13	MTN.	17	16	15	15
14	WILD.	10	10	10	10
15	MTN.	16	16	14	14
16	WILD.	16	16	14	14
19	MTN.	13	13	10	10
20	NAT. HIST.	17	17	16	16
21	WILD.	14	14	14	14
22	ADV.	16	16	13	13
23	OEC	11	11	9	9
24	MTN.	17	17	14	14
25	WILD.	9	8	8	7
28	MTN.	17	8	9	3
29	WILD.	16	7	13	5
30	WILD.	10	10	10	10
32	ADV.	11	11	9	8
34	MTN.	17	16	13	13
37	NAT. HIST.	13	13	12	12
38	WILD.	8	8	8	8
TOTALS		433	410	375	355

*NOTE: Course type: NAT HIST. = Natural History Course; WILD. = Wilderness Course; ADV = Adventure course; OEC = Outdoor Educators Course; MTN = Mountaineering course.

Table 4. Courses and Students per Course Tested in the Control Group

Experimental Course No.	Course Type*	No. Students Booked	No. Pretested	No. Posttested	No. Pre & Posttest
33	OEC.	17	11	12	7
35	WILD.	17	15	17	15
36	WILD.	17	10	17	9
39	MTN.	17	9	17	9
40	OEC.	15	11	15	10
TOTALS		83	56	78	50

*NOTE: Course type: WILD. = Wilderness Course; OEC = Outdoor Educator Course; MTN. = Mountaineering Course.

with only two instructors, the Course Leader and Patrol Leader, because of low student numbers. Table 5 presents a breakdown of the instructors tested as part of this research by position, sex, and group affiliation.

Data Collection Procedures

All testing of subjects involved in this research took place at the international headquarters of the National Outdoor Leadership School in Lander, Wyoming. The testing took place in a large dining room, with good seating and lighting, and away from the other activity areas of the school. The testing environment was the same for all subjects and was "classroom-like" in nature. The pretest and posttest procedures are described in the following separate sections.

Pretesting Procedures and Protocol

Students typically arrive in Lander the day before their course is scheduled to depart. The instructors for the course usually have an informal social meeting and information session with their students, the evening before their scheduled course departure. The procedures for the next day, referred to as "issue day," are usually explained.

TABLE 5. Instructors Tested by Position and Sex for Treatment Courses, Control Courses, Other Courses

Experimental Affiliation	Course Leader		Patrol Leader		Instructor #1		Instructor #2		TOTAL
	M	F	M	F	M	F	M	F	
Treatment Courses	22	7	21	9	19	7	-	3	88
Control Courses	4	1	3	2	3	2	-	-	15
Other Courses	2	2	2	2	3	1	1	-	13
	28	10	26	13	25	10	1	3	116

During this evening meeting, the instructors briefly explained the importance of this research and elicited student cooperation. This was to be done in a low-key fashion.

"Issue day" for a NOLS course is a busy, long day for the students. It is the day they are "outfitted" and rationed for the field, and finally transported to the roadhead to start for their first night's campsite. The day officially starts with a 6:00 am breakfast in the hotel dining room. There was usually only one course starting on a given day, but occasionally, two courses would be scheduled for departure on the same day.

After students had completed their breakfast, the principal researcher, who also had administrative responsibilities for the school, would introduce either the Executive Director of the School or the Director of the Wyoming Branch School for an "official welcome." The principal investigator would then initiate, using a standard, rehearsed protocol, student pretesting with the TSCS instrument. Students were supplied with individual booklets, answer sheets and pencils. Toward the end of the testing period, the students were reminded to insure that their names were on the answer sheets. The instrument

usually took about 22 minutes to complete. If the course being tested was a control course, that is, they had received a pretest at their homes several weeks earlier, the test administered on issue day was actually a posttest. A slightly revised protocol was used in these instances. After the testing was completed and various administrative tasks dealt with, the students left with their instructors for issuing equipment and departure on their course.

Posttesting Procedures and Protocol

All NOLS courses "officially" end at 12:00 noon on the last scheduled day of the course. The afternoon before the "official" end, the students return from the field. They shower, eat, and clean and return equipment. The evening of their return from the field normally entails a social function such as a course banquet at a nearby restaurant. The next morning the students would meet for breakfast at 8:00 am in the hotel dining room where, after breakfast, the principal investigator would initiate the posttesting and the post course administrative tasks. The students were asked to complete one Instructor Evaluation Form for each instructor on their course. This process was typically completed in 15 to 20 minutes. Students on treatment courses were then posttested using the TSCS instrument.

When testing was completed, the principal investigator briefly explained the details of the research, its importance to NOLS, and thanked the students for their involvement. The students were then involved in post course administrative activities and were then dismissed. Several students throughout the testing period were not able to complete the posttesting phase because of early plane departures. These losses were sporadic and assumed to be randomly distributed over all courses.

All testing of subjects was done by the same person, in the same place, and using the same protocol. This hopefully reduced the threats to the validity of the research due to "instrumentation" and "reactive effects of experimental arrangements" (Campbell and Stanley, 1966, pp. 5-6). They have suggested that changes in instruments or observers may produce changes in obtained measures. By keeping the researcher, and the protocol, the same for all treatment and control groups, it was hoped that any such "instrumentation" threat to internal validity would be minimized and, if present, reflected in both the treatment and the control groups.

The threat to external validity due to the reactive or interactive effect of testing in which pretesting might

increase or decrease sensitivity was also a concern. Unfortunately, the instrument used (TSCS) has the word self-concept boldly written on the test booklet. Researcher protocol was developed to minimize any sensitization to the research or the instrument caused by this by suggesting that the instrument was merely a means and an opportunity to describe how the subjects felt about themselves. This was done in a low-key fashion which diminished the "research" use of the instrument. No mention of study objectives or posttesting was made. Campbell and Stanley suggest that other threats to internal and external validity are adequately controlled by the experimental design selected.

ANALYSIS AND RESULTS

The objectives of this chapter are to describe the data analysis procedures used to test the study hypotheses and research questions and to highlight significant results of these analyses. Discussion of the results is presented in Chapter 6. The analysis of data specific to the individual research hypotheses and research questions is presented following a brief characterization of NOLS instructor personality based on the analysis of the 16PF questionnaire, and a characterization of the characteristics of NOLS students used as subjects in this research. These characterizations are provided as a general review and background for the reader.

The Personality of NOLS Instructors: A Characterization

NOLS instructors differ significantly from the general population norm groups to which they were compared in 13 of 16 primary source traits or factors measured by the 16PF instrument. In the narrative, the factor letter, the direction of the difference from the norm group, and the

statistical significance of the difference are presented for each factor. The statistical results are presented in Table 6. In the following narrative, differences between the mean Factor Scores for NOLS instructors and the norm group which are statistically significant, but do not deviate more than one-half of a standard deviation, may be considered as slight, while differences greater than one-half standard deviation are considered as substantial.

NOLS instructors are more intelligent, or abstract-thinking (B+, $p \leq .0001$), and are more emotionally stable (C+, $p \leq .0001$) than the norms of the general adult population. NOLS instructors are less enthusiastic or impulsive (F-, $p \leq .007$), and they are only slightly bolder or venturesome (H+, $p \leq .05$). NOLS instructors are more tender-minded (I+, $p \leq .003$) and are more trusting than the general adult population (L-, $p \leq .0001$). Instructors also seem to be more imaginative (M+, $p \leq .02$) and much more open and forthright (N-, $p \leq .0001$) than the comparative group. As could be expected, given the wilderness nature of the environment in which they work, NOLS instructors are substantially more self-assured and secure (O-, $p \leq .0002$). The instructors are more experimenting and liberal in their views (Q_1+ , $p \leq .0001$) and only slightly more self-sufficient in decision-making than the norm group (Q_2+ , $p \leq .01$). Finally, the instructors

Table 6. Comparison of 16 PF Factor Scores of NOLS Instructors* with Adult General Population Norms (IPAT 1972).

16PF Factor	Mean (for all instructors)	Std.	Prob. (difference from 5.5=0)
A	5.7414	1.8421	ns
B	7.0000	1.7986	.0001
C	7.3448	1.9070	.0001
E	5.3190	1.8817	ns
F	5.0862	1.6289	.0072
G	5.2845	1.5312	ns
H	5.9052	2.2534	.0053
I	5.9310	1.5588	.0035
L	3.9655	1.8693	.0001
M	5.8793	1.7403	.0206
N	4.0517	1.8921	.0001
O	4.9310	1.6190	.0002
Q1	6.5259	1.6809	.0001
Q2	5.9052	1.7984	.0168
Q3	5.0603	1.4643	.0016
Q4	4.6121	1.7583	.0001

n=116

* Adult General Population Mean for all Factors is 5.5.

seem to be a little less controlled, more careless of social rules (Q_3^- , $p \leq .0016$), and much more relaxed and composed than the general population (Q_4^- , $p \leq .0001$). NOLS instructors do not differ from the general population on the reserved vs outgoing Factor (A, $p \leq .161$), or the assertive vs humble Factor (E, $p \leq .302$). Comparisons with the norm group on expediency vs conscientious (G, $p \leq .132$) also yielded no significant difference.

Male and female NOLS instructors are very similar, differing only in three factors. The female instructors are substantially more venturesome (H^+ , $p \leq .05$) as well as more sensitive (I^+ , $p \leq .05$) than their male counterparts. Female instructors are also more trusting than male instructors (L^- , $p \leq .05$). The preceding characterization is based on 16PF profiles of 80 male instructors and 36 female instructors.

The NOLS Student Population: A Characterization

A sample of 367 of the 516 students who formed the study population had detailed records compiled for them based on their application forms and other enrollment documentation. From this sample, it is possible to provide a general characterization of the population in terms of demographic

and socio-economic indicators. Such a characterization is presented in the following section.

Approximately 70% of the NOLS students used as subjects in this research were male. The vast majority (95.9%) were single, 3.29% were married, with the remaining .81% either separated or divorced. The average age of the students used as subjects in this research is 19.44 years with a standard deviation of 6.19. The average number of years of education reported by the students is 12.11 years with a standard deviation of 2.94. For almost 96% of the students, this was their first NOLS course.

The vast majority of students reported their ethnic origin as "white, not hispanic" (98%), while there was less than 1% representation by "American Indian" (.56%), "black, not hispanic" (.56%) and "hispanic" (.84%). There was no representation of either Asian or Pacific ethnic origins.

The young average age of the population is reflected by the fact that 82% of the population list their occupation as "student." The "professional" category and "teacher" category accounted for an additional 13.5% of the respondents. The "technical" occupation classification accounted for 1.9% of the subjects, and the remaining 2.5% did not specify an occupation.

When asked how they intended to use their NOLS training, over 77% indicated that it was for their "personal" interest or use. The remaining 22% indicated they planned to use their NOLS training for "career development" or for a combination of "personal and career" purposes. To determine if the self-selecting population under study had much higher initial scores in self-concept than the general population norm group (Fitts, 1965), Table 7 was prepared showing the combined pretest scores for the treatment and control groups and their approximate percentile rating when compared with the general population. This table demonstrates that for all but two subscales (satisfaction and personal self), the study population was at or below the 50th percentile of the norm group.

Tests of Study Hypotheses²

Hypothesis #1 and Hypothesis #1a

H₀1: There will be no changes in total self-concept as a result of a standard wilderness course at the National Outdoor Leadership School

and:

²For the purpose of statistical testing, hypotheses in this section are stated in the null form.

Table 7. Comparison of Combined Treatment Group and Control Group Pretest Scores on the TSCS With Norm Group (Fitts, 1965).

Combined Treatment and Control Pretests				
TSCS Scale	Mean	Std.	n	Norm Group Percentile Score for Observed Means
Total Positive	347.56	31.07	466	50
Identity	124.40	10.23	466	40
Satisfaction	112.48	13.82	466	70
Behavior	110.68	11.54	466	30
Physical-Self	69.00	8.00	466	30
Moral-Self	70.11	7.39	466	49
Personal-Self	68.49	7.25	466	68
Family-Self	70.69	8.25	466	50
Social-Self	69.27	7.88	466	52
Self-Criticism	35.88	5.50	466	48

H₀1a: There will be no changes in the nine subscales of self-concept as identified by Fitts (1965).

Analysis of the TSCS scores for Total Self-Concept and the nine subscales resulted in the mean pretest and posttest scores for the treatment and control groups which are presented in Table 8.

Simple pretest - posttest difference scores for individuals in both the treatment group and control group were calculated to determine the probability that the differences were not greater than zero. It was expected that, unless an anxiety effect or some other testing artifact was at work, the control group pre-post differences would not be significantly different from zero. If the treatment (a NOLS course) had any influence, it would be evidenced by significant pre-post differences for the treatment groups. The results of this initial analysis are presented in Table 9. As can be seen, the treatment caused significant changes in Total Positive Self-Concept and all nine subscales. To substantiate the simple t-test values, a MANOVA was performed, for both treatment and control groups, on all subscales except Total Positive and Identity. The treatment group's Wilks' Criterion $F(8,346)=7.47$ with probability $\leq .0001$. The control group was $F(8,42)=1.04$ with

Table 8. Means of Pretest and Posttest Scores on the TSCS for Treatment and Control Groups.

Treatment Group						
TSCS Scale	PRETEST			POSTTEST		
	Mean	Std.	n	Mean	Std.	n
Total Positive	346.39	30.79	410	353.36	34.78	375
Identity	124.08	10.15	410	126.25	11.97	375
Satisfaction	112.00	13.73	410	114.30	14.52	375
Behavior	110.22	11.53	410	112.82	12.57	375
Physical-Self	68.66	7.87	410	70.30	8.28	375
Moral-Self	69.74	7.36	410	70.76	8.18	375
Personal-Self	68.35	7.35	410	69.94	7.61	375
Family-Self	70.67	8.08	410	72.04	8.22	375
Social-Self	68.88	7.91	410	70.31	9.08	375
Self-Criticism	35.88	5.36	410	36.91	6.05	375

Control Group						
TSCS Scale	PRETEST			POSTTEST		
	Mean	Std.	n	Mean	Std.	n
Total Positive	356.76	31.86	56	345.93	36.62	78
Identity	126.71	10.65	56	123.39	12.43	78
Satisfaction	116.00	14.11	56	111.89	14.65	78
Behavior	114.05	11.12	56	110.64	12.58	78
Physical-Self	71.53	8.56	56	68.57	9.19	78
Moral-Self	72.78	7.10	56	70.05	7.96	78
Personal-Self	69.53	6.41	56	68.36	7.92	78
Family-Self	70.84	9.15	56	69.55	9.44	78
Social-Self	72.07	7.14	56	69.39	7.28	78
Self-Criticism	35.93	6.52	56	35.88	6.59	78

Table 9. Pretest-Posttest Difference Scores on TSCS, for Treatment and Control Groups.

Treatment Group					
TSCS SCALE	PRETEST-POSTTEST DIFFERENCES				Prob.
	Mean d	Std.	n	t	
Total Positive	7.05	23.92	354	5.55	.0001
Identity	2.07	8.61	354	4.52	.0001
Satisfaction	2.32	11.13	354	3.91	.0001
Behavior	2.67	9.76	354	5.14	.0001
Physical-Self	1.88	6.44	354	5.50	.0001
Moral-Self	1.10	6.09	354	3.42	.0007
Personal-Self	1.52	6.48	354	4.42	.0001
Family-Self	1.29	6.15	354	3.94	.0001
Social-Self	1.25	6.55	354	3.60	.0004
Self-Criticism	0.91	5.00	354	3.41	.0007

Control Group					
TSCS SCALE	PRETEST-POSTTEST DIFFERENCES				Prob.
	Mean d	Std.	n	t	
Total Positive	-3.68	22.01	50	-1.18	.2429
Identity	-1.04	8.81	50	-0.83	.4082
Satisfaction	-0.72	10.71	50	-0.48	.6367
Behavior	-1.92	6.71	50	-2.02	.0485
Physical-Self	-0.62	5.57	50	-0.79	.4353
Moral-Self	-1.94	5.66	50	-2.42	.0193
Personal-Self	0.24	5.66	50	0.30	.7657
Family-Self	-0.20	6.04	50	-0.23	.8158
Social-Self	-1.16	5.66	50	-1.45	.1535
Self-Criticism	0.20	3.70	50	0.38	.7042

a probability of .4195. Only two of the subscales for the control group showed significant changes between pre- and posttesting. Both changes were in the negative direction in the subscales of moral-ethical self ($p \leq .02$) and behavior ($p \leq .05$). Discussion of this potential anxiety effect due to testing will be presented in Chapter 6.

To compare the treatment effect differences from the control group where random assignment was not possible, the Analysis of Covariance procedure (ANCOVA), as suggested by several authors, was used (Huck and McLean, 1975; Kenny, 1975; Linn and Slinde, 1977; Bryk and Weisberg, 1977). As suggested by the authors, an ANCOVA model was first produced which used the experimental group, the pretest scores, and the interaction term (Experimental group x pretest scores) as covariates. None of the ten scales produced a significant F value for the interaction, thus confirming the assumption of homogeneity-of-slopes requirement of the ANCOVA procedure (Huck and McLean, 1975; Bryk and Weisberg, 1977). A normal ANCOVA, using the pretest score as the covariate, was then produced. The results of this analysis are shown in Table 10. There were significant differences in seven of the 10 scales due to the treatment when posttest scores were covaried by experimental group and pretest scores. The only subscales not reaching significance were

Table 10. Summary Table of ANCOVA of Posttests of ISCS for Treatment and Control Groups, With Pretest as Covariate (n=404).

TSCS Scale	TREATMENT GROUP		CONTROL GROUP		Std. Error	PROB LSMEAN1 ≠ LSMEANS2
	Least Squares Mean (LSMEAN1)	Std. Error	Least Squares Mean (LSMEAN2)	Std. Error		
Total Positive	354.95	1.24	345.27	3.30	0.0063	
Identity	126.62	.45	123.73	1.20	0.0256	
Satisfaction	114.81	.56	112.45	1.48	0.1387	
Behavior	113.45	.47	109.64	1.27	0.0051	
Physical-Self	70.68	.32	68.76	.85	0.0367	
Moral-Self	71.24	.31	68.69	.83	0.0743	
Personal-Self	70.14	.31	69.04	.83	0.2169	
Family-Self	72.15	.30	70.49	.81	0.0547	
Social-Self	70.69	.33	68.73	.89	0.0411	
Self-Criticism	36.91	.25	36.32	.66	0.4085	

"satisfaction" ($p \leq .138$), "personal self" ($p \leq .217$) and "self-criticism" ($p \leq .408$). The Total Self-Concept Scale showed a significant difference between the treatment and control groups, thus allowing a confident rejection of Hypothesis H_01 . Table 10 also indicates that Hypothesis H_01a can be rejected for six of the nine subscales of self-concept as measured by the TSCS.

Hypothesis #2

H_02 : There will be no correlation between students' change in self-concept and the "overall effectiveness" ratings of each of the three instructors on a NOLS course

A stepwise multiple linear regression technique was used in this analysis, with individual subject change in total positive self-concept as the dependent variable and the student rated "overall effectiveness" score for each of the instructors on that student's course as independent variables. The results of this procedure are shown in Table 11. It can be seen from Table 11 that, while the regression has "statistical" significance ($p \leq .047$), the R^2 of .018 raises considerable question about the predictive ability of the independent variables. Only the Course Leader's "effectiveness" rating made a positive and significant

Table 11. Stepwise Regression of Instructor Team "Overall Effectiveness" Ratings on Total Positive Self-Concept Change.

Source	DF	SS	MS	F	PROB
Regression	2	3548.93	1774.47	3.08	0.0474
Error	327	188575.52	576.68		
Total	329	192124.45			

Variable	B-Value	Std. Error	F	PROB
Intercept	-20.32			
Course Leader	6.14	2.86	4.60	0.0327
Patrol Leader	Failed to Meet .15 Sign. Level for Entry			
Instructor	- 3.13	2.00	2.44	0.1194

$R^2 = .018$

contribution ($p \leq .032$) and accounts for the 2% of variation explained by the regression model. Discussion of the very tenuous rejection of H_02 is presented in the concluding chapter.

Hypothesis #3

H_03 : The degree of self-concept change in students as a result of a NOLS course will not be moderated by student personal variables.

Two different analysis techniques were employed to test hypothesis H_03 . The first analysis technique was a Multivariate Analysis of Variance (MANOVA) to determine the significance of a sex effect, an age class effect, and an ethnic effect on change in self-concept. The second procedure, suggested by Veldman and Brophy (1974), used gain scores. The independent variables pretest score, pretest score squared (as suggested by the above authors), sex, age, ethnic background, place of residence, and previous NOLS experience were regressed against the dependent variable TSCS posttest score.

The MANOVA procedure requires that the multiple dependent variables be independent from one another, or have no linear combinations of other variables in the dependent variable

list. Because of the construction of the TSCS, the subscales do include linear combinations of variables resulting in a singular matrix, and thus, an insoluble MANOVA. To create independence among the subscales, two-way ANOVAs were performed on the Total Positive Scale and the Identity Scale of the TSCS. These are shown in Table 12.

A MANOVA was then performed on the remaining subscales to determine sex, age, ethnic residence, and previous NOLS experience effects. The F-values from the MANOVA are shown in Table 13. As can be seen from Tables 12 and 13, there are no significant sex effects or age class effects on the TSCS difference scores resulting from the treatment. While a significant effect due to previous NOLS course did result, the results should be considered potentially spurious because of the extremely small number of subjects (4%) who had previous experience. Similarly, the significant ethnic effect should also be considered as spurious because of poor representation. On the basis of the MANOVA, therefore, it is not appropriate to reject H_0^3 .

The results of the gain score analysis, based on Veldman & Brophy (1974), are summarized in Table 14. Each of the subscale posttest scores showed high correlation with the pretest scores (R^2 's from .39 to .55). The squared pretest

Table 12. ANOVA for TSCS Scale Total Positive and Identity to Determine Effects on TSCS Change Scores by Sex, Age Class, Ethnic Background, Previous NOLS Course and Place of Residence.

Total Positive TSCS Scale			
Source	df	F	PROB
Sex	1	0.28	.5944
Age Class	3	1.77	.1513
Ethnic	3	3.09	.0274
Prev. NOLS Course	1	6.98	.0087
Place of Residence	1	1.21	.2724

Identity TSCS Scale			
Source	df	F	PROB
Sex	1	1.00	.3186
Age Class	3	2.24	.0823
Ethnic	3	5.29	.0016
Previous NOLS Course	1	3.09	.0799
Place of Residence	1	0.50	.4811

Table 13. F-Values (Wilks' Criterion) for MANOVA to Determine Effects of Personal Values on all TSCS Subscales Except Total Postive and Identity.

Source of Effect	df	Wilks' Exact F	PROB
Sex	8, 256	1.36	0.2168
Age Class	24, 743	1.03	0.4218
Ethnic Origin	24, 743	2.71	0.0001
Previous NOLS Course	8, 256	2.43	0.0150
Place of Residence	8, 256	0.35	0.9465

Table 14. Summary of Residual Gain Score Regression Analysis of Pretest Score; Pretest Score Squared; Sex; Age; Ethnic Background; Place of Residence, and Previous NOLS Course Experience on Posttest Scores for the 10 Scales of TSCS.

TSCS Scale	Ind. Variables Added	R ² with Addition	F of Added Var.	PROB of Added Var.
Total Positive	Pretest Score	.55	362.95	.0001
	Previous NOLS Course	.57	10.05	.0017
Identity	Pretest Score	.52	316.90	.0001
	Age	.54	3.06	.0815
	Ethnic Background	.53	5.69	.0177
	Previous NOLS Course	.54	4.74	.0303
Satisfaction	Pretest Score	.49	301.52	.0001
	Previous NOLS Course	.52	12.99	.0004
Behavior	Pretest Score	.45	240.40	.0001
	Sex	.46	2.80	.0956
	Previous NOLS Course	.46	4.02	.0459
Physical-Self	Pretest Score	.48	273.48	.0001
	Previous NOLS Course	.49	7.27	.0074
Moral-Self	Pretest Score	.48	269.59	.0001
	Previous NOLS Course	.49	7.37	.0070
Personal-Self	Pretest Score	.39	185.70	.0001
	Previous NOLS Course	.40	4.33	.0382
Family-Self	Pretest Score	.51	330.67	.0001
	Previous NOLS Course	.53	8.21	.0045
	Ethnic	.54	14.28	.0002
Social-Self	Pretest Score	.52	332.53	.0001
	Previous NOLS Course	.53	3.34	.0686
Self-Criticism	Pretest Score	.40	198.42	.0001

score was not significant in any of the TSCS subscales. Significant contributions of ethnic background to the subscales of identity and family self in this analysis may be spurious due to small sample size. This analysis procedure does, however, result in the same indication that previous NOLS experience may be an important variable in several of the subscales, although, here again, only about 5% of the population possessed such experience. The only other personal variables of note are the approach to significance of age in the subscale "Identity" ($p \leq .08$) and sex in the subscale "Behavior" ($p \leq .09$). On the basis of the above analysis, given the associated cautions about inadequate representation of ethnic categories and a relatively small percentage of subjects with previous NOLS experience, H_{03} cannot be confidently rejected.

Hypothesis #4

H_{04} : There will be no correlation between student ratings of "overall effectiveness" of individual instructors and the identified instructor personality traits.

Dimensions of instructor personality were determined using two methods. One method, utilizing the 16PF self-report personality instrument, determined 16 personality traits based on instructor responses to a 106 item

questionnaire. In the second method, students were asked to rate the personality traits of their instructors based on their behavior throughout the NOLS course. The ratings were done on 16 items which were designed to describe the same personality traits as determined by the 16PF instrument completed by all instructors. Analysis for H_04 utilized both of these different approximations of personality as independent variables in predicting "overall effectiveness" of the instructors. Table 15 presents the results of the multiple regression analysis using the Instructors' 16PF factors as independent variables. The overall regression is significant ($p \leq .0013$), but the overall predictive ability of the independent variables is very low ($R^2 = .092$). The individual 16PF factors which achieved significance were the factors of "conscientiousness" ($G+$, $p \leq .057$) and "less controlled, careless of social rules" (Q_3- , $p \leq .002$).

Regression analysis using the student rated "perceived" personality traits of their individual instructors yielded more encouraging results. As can be seen from Table 16, six of the sixteen rated personality traits based on behavior accounted for 51% of the variance in the "overall effectiveness" ratings given to the instructors by the students. The factors of intelligence ($B+$), boldness ($H+$), trust ($L-$), conservative (Q_1-), self-sufficiency (Q_2+) and

Table 15. Stepwise Regression of Instructors' 16PF Primary Factor Personality Scores on Student Rated "Overall Effectiveness."

SOURCE	DF	SS	MS	F	Prob
Regression	3	4.459	1.486	3.73	0.0134
Error	111	44.226	0.398		
Total	114	48.685			

VARIABLE	B-value	Std. Error	F	Prob
Intercept	8.365			
16PF Factor E	-0.052	0.033	2.43	0.1219
16PF Factor G	0.078	0.041	3.68	0.0577
16PF Factor Q3	-0.138	0.044	3.874	0.0023

$R^2 = .092$

Table 16. Stepwise Regression of Student Rated Personality Factors of Instructors on Student Rated "Overall Effectiveness."

SOURCE	DF	SS	MS	F	Prob
Regression	6	25.09	4.181	19.33	0.0001
Error	110	23.79	0.216		
Total	116	48.883			

VARIABLE	B-value	Std. Error	F	Prob
Intercept	5.864			
Factor B	0.239	0.089	7.14	0.0087
Factor H	0.146	0.056	6.94	0.0096
Factor L	-0.141	0.067	4.49	0.0364
Factor Q1	-0.200	0.062	10.43	0.0016
Factor Q2	0.153	0.064	5.66	0.0191
Factor Q3	0.195	0.066	8.80	0.0037

$R^2 = .513$

less controlled, careless of social rules (Q_3^-) achieved significance in the predictive model. It is interesting to note that Factor Q_3 is the only one common to both analyses.

On the basis of the above analysis, it is possible to confidently reject H_{04} on the basis of "perceived" personality traits of instructors as evaluated by students. A less confident rejection of H_{04} can be made using the 16PF self-report instrument.

Hypothesis #5

H_{05} : There will be no differences in personality traits between instructors with high "overall effectiveness" ratings from students and instructors with lower "overall effectiveness" ratings as evaluated by their students.

The distinction between high "overall effectiveness" and lower "overall effectiveness" was based on a median split on the "overall effectiveness" student ratings for the instructors. These ratings were made on a scale ranging from 1 (ineffective) to 10 (very effective). The median effectiveness rating was calculated to be 8.88. Therefore, all instructors with effectiveness rating equal to or above this were considered as the high group, while instructors

with less than 8.88 were considered to be in the lower group. In testing this hypothesis, as in Hypothesis 4, both measures of instructor personality factors were used.

Table 17 presents the results of a MANOVA using the "overall effectiveness" ratings and the 16PF self-report personality factors for the two median split groups of instructors. As is noted, the MANOVA F is not significant ($p \leq .9102$). None of the 16 personality factors as determined by the 16PF instrument gained significance.

Quite a different picture is created, however, when the same MANOVA was performed using the perceived instructor personality traits as rated by the students. Table 18 indicates that the students do perceive significant differences between high effectiveness instructors and lower effectiveness instructors for 14 of the 16 rated traits. After control of Type I experiment-wise error rate, only two factors were not significantly different between the two groups. Factor I (tough minded vs tender minded) failed to achieve significance, but higher rated instructors tended to be more tender minded. Factor Q_1 (conservative vs experimenting) also failed to gain significance, but higher rated instructors tended to be rated as more experimenting or liberal. The higher rated instructors are perceived as

Table 17. MANOVA and t-Tests of Means* of Instructor Effectiveness and 16PF Personality Factors

MANOVA F (Wilks' Criterion) for Instructor Effectiveness Effect
 DF=(16,99) F=0.55 Prob>F=0.9102

VARIABLE	Mean Rating for High Effectiveness Instructors (Eff. Rating>8.88)n=58	Mean Rating for Low Effectiveness Instructors (Eff. Rating<8.88)n=58	Prob
Factor A	5.793	5.689	ns
Factor B	6.965	7.034	ns
Factor C	7.379	7.310	ns
Factor E	5.224	5.414	ns
Factor F	5.172	5.000	ns
Factor G	5.517	5.052	ns
Factor H	6.069	5.741	ns
Factor I	5.845	6.017	ns
Factor L	3.931	4.000	ns
Factor M	5.759	6.000	ns
Factor N	4.086	4.017	ns
Factor O	4.931	4.931	ns
Factor Q1	6.534	6.517	ns
Factor Q2	6.034	5.776	ns
Factor Q3	4.983	5.138	ns
Factor Q4	4.672	4.552	ns

* Experiment-wise error rate (Type I error) controlled by Tukey's Studentized Range (HSD) test ($\alpha=.05$).

Table 18. MANOVA and t-Tests of Means* of Instructor Effectiveness and Student Rated Instructor Personality Factors.

MANOVA F (Wilks' Criterion) for Instructor Effectiveness Effect
 DF=(17,93) F=6.93 Prob>F=0.0001

VARIABLE**	High Effectiveness Instructors (Eff. Rating>8.88)n=58	Low Effectiveness Instructors (Eff. Rating<8.88)n=58	Prob
Factor A	7.032	6.143	.05
Factor B	7.651	6.976	.05
Factor C	7.000	6.523	.05
Factor E	6.279	5.769	.05
Factor F	7.373	6.617	.05
Factor G	7.618	7.291	.05
Factor H	6.995	6.179	.05
Factor I	5.004	4.714	ns
Factor L	1.897	2.648	.05
Factor M	5.157	4.829	.05
Factor N	2.621	2.977	.05
Factor O	1.850	2.639	.05
Factor Q1	5.109	4.851	ns
Factor Q2	6.802	6.401	.05
Factor Q3	6.982	6.653	.05
Factor Q4	1.982	2.750	.05

* Experiment-wise error rate (Type I error) controlled by Tukey's Studentized Range (HSD) test ($\alpha=.05$).

** Factor descriptions are the same as for the 16PF (see Table 2, p. 56).

being more outgoing (A+) and intelligent (B+) than the lower rated instructors. Instructors with higher effectiveness ratings are also perceived by the students as being more emotionally stable (C+), more assertive (E+) and more enthusiastic and happy-go-lucky (F+). Higher scores on conscientiousness (G+) and social boldness or venturesomeness (H+) also highlight these more effective instructors. Being more trusting and easy to get along with (L-) and imaginative (M+) are also significant characteristics of the more effective instructor group. The students also perceive these high effectiveness instructors as being more forthright and unpretentious (N-), more self-assured and confident (O-) and a little more self-sufficient and resourceful (Q2+). Effective instructors are also viewed as more controlled and precise (Q3+) and more relaxed (Q4-).

While the instructor self-report personality analysis does not lead to rejection of H_05 , the strength of the differences in the student ratings of personality based behaviors suggests provisional rejection of the hypothesis. The implication of these mixed results is discussed in the concluding chapter.

Tests of Research QuestionsResearch Question #1

RQ#1: Will instructors be rated as more influential than the small group experience or the NOLS curriculum elements in achieving personal outcomes regardless of which outcomes are reported by the student?

Sections 3 and 4 of the Instructor Evaluation instrument asked students to rate the importance of the various course influences, specifically the instructors, the small group living experience and the NOLS curriculum on perceived course outcomes. The students were asked to rate the importance of these course influences on a scale of 1 (not very important) to 10 (very important) regardless of what gain was reported. The tabulation of the results of these ratings is shown in Table 19. Visual comparisons of the median or mode show no differences. The mean rating, however, favored the NOLS curriculum over the Instructor team and the small group experience.

In an effort to determine the instructor influence on each of three reported outcomes (i.e., self-confidence, outdoor skill, and leadership skill), correlational techniques were used. The correlations presented in Table 20 indicate that the instructor and the curriculum are the

Table 19. Student Ratings of Importance of Course Influences on Reported Outcomes, on a Scale of 1 (Not Important) to 10 (Very Important).

Course Influence	Mean (out of 10)	Std. Dev.	Median	Mode
Instructor	7.66	2.12	8	10
Small Group Experience	7.32	2.36	8	10
NOLS curriculum	7.87	2.00	8	10

n = 1480

Table 20. Correlations of Course Influences on Reported Student Outcomes as a Result of a NOLS Course.

Reported Outcome	Instructor r=	Small Group r=	Curriculum r=	All Influences R ²
Self-confidence	.39	.29	.35	.32
Outdoor Skill	.43	.27	.51	.22
Leadership Skill	.41	.34	.42	.35

*All r and R² values are significant at the .0001 level.
n=1480

most important influences on the student outcome of self-confidence. The instructor is also virtually tied with the NOLS curriculum in the outcome of leadership skill. The outcome of outdoor skill is most highly influenced by the NOLS curriculum, but the instructor also has a fairly high correlation. The instructor alone can account for about 18% of the variance in outdoor skill, about 17% of the variance in the outcome of leadership skill, and 15% of the variance for the outcome of self-confidence.

Research Question #2

RQ#2: Will self-confidence be reported as the most important outcome by students on a NOLS course when compared to outcomes of outdoor skill or leadership skill?

Student perception of the personal gains they achieved as a result of their NOLS course were solicited in three questions on the instructor evaluation form. The students were asked to rate the degree to which they achieved personal gain of self-confidence, outdoor skill, or leadership skill on a scale of 1 (not much gain) to 10 (gained a great deal). Tabulation of the results of this rating are presented in Table 21. Further analysis was performed to determine the percentage of subjects who rated one outcome higher than the other two (Table 21). There is

Table 21. Student Ratings of Perceived Personal Outcomes as a Result of a NOLS Course on a Scale of 1 (Not Much Gain) to 10 (Gained a Great Deal).

Personal Outcomes	Mean	Std. Dev.	Median	Mode	% Reporting Highest Outcome
Self-confidence	7.56	2.09	8	8	22
Outdoor Skill	8.50	1.69	9	10	67
Leadership Skill	7.13	2.22	7	8	11

n = 1480

no question that appreciable gains were reported for all three personal outcomes. The gain of outdoor skill was rated as the highest gain and had a higher proportion (67%) reporting it as the highest of the three choices provided. The outcome of self-confidence, a term frequently equated with the self-concept scale of "satisfaction," was rated second highest, even though it is not a specific objective of the NOLS experience. The answer to Research Question #2 appears to be "no." Outdoor skill development, the heart of the NOLS curriculum and experience is the top rated gain.

Research Question #3

RQ#3: Will there be differences in personality profiles between NOLS instructors and those for Outward Bound instructors as reported by Hendy (1975) or the profiles of NOLS instructors as reported by Sirois (1980)?

As reported in the literature review in Chapter 2, only two other studies were located which dealt directly with the issues of wilderness instructor personality. The availability of the studies of Hendy (1975) and Sirois (1980) provided the opportunity for both statistical and speculative comparisons between instructors at NOLS and Outward Bound. Again, as was pointed out earlier, the philosophical foundations of the two programs differ

considerably, and an interesting research analysis is to determine if these philosophical differences in programs have resulted in different types of instructors, as perhaps measured by personality traits. Both Hendy and Sirois used the 16PF instrument on their sample populations, thus allowing some comparison with the population studied in this research.

For visual comparison, the results of Hendy, Sirois and the research reported here are presented in Table 22. In this table, the 16PF factors determined by the researcher to be significantly different from the norm group are indicated. Sirois did not present the individual sten scores for her sample, or the standard deviations; therefore, only the combined group (male and female) factor means are presented. This research and Sirois' both found many more factors to be significantly different from the norm group than did Hendy. The small sample size associated with Hendy's work may account for this phenomenon. This research and Sirois agreed on 8 of the 16 PF factors, differing on the balance. The interesting aspect of this research question is related to the differences, if any, which might exist between NOLS and Outward Bound instructors. Hendy did provide the individual sten score data for the study population. These data were reanalyzed

Table 22. Comparison of Combined Male and Female Wilderness Instructor 16PF Factor Scores as Determined by Hendy (1975), Sirois (1980) and Easley (1985).

16PF Factor	Hendy (1975) n=25 O.B. Inst.	Sirois (1980) n=59 NOLS Inst.	Easley (1985) n=116 NOLS Inst.
A	4.0*	3.8*	5.7
B	6.6*	7.3*	7.0
C	5.8	5.9	7.3*
E	7.2*	7.1*	5.3
F	5.7	6.1*	5.0*
G	5.1	4.9*	5.3
H	5.4	5.5	5.9*
I	7.0*	6.4*	5.9*
L	5.6	5.7	4.0*
M	8.5*	6.3*	5.9*
N	4.0*	3.9*	4.0*
O	5.8	5.4	4.9*
Q1	7.0	6.3*	6.5*
Q2	6.8*	6.9*	5.9*
Q3	6.0	4.9*	5.1*
Q4	5.3	5.7	4.6*

NOTE: Mean of norm group, for all factors, is 5.5.

* denotes that the researcher determined significant difference from norm group.

as part of this research and a MANOVA comparison was done to determine significant differences between the populations on the basis of the 16PF factors. Table 23 presents the results of the MANOVA analysis and for completeness, also provides the standard deviation for each of the means presented.

With appropriate cautions concerning the small sample size associated with Hendy's work, some narrative distinctions can be made between the two populations. The population of NOLS instructors involved in this research seems to be more outgoing and people-oriented (A+) than their Outward Bound counterparts. The NOLS instructors, seem to be more emotionally stable, mature and calm (C+). These NOLS instructors also appear to be a little less dominant or assertive and seem to have a more accommodating, submissive personality style (E-). A fairly large difference between the two instructor groups is apparent on the personality trait of tough-minded versus tender-minded. The Outward Bound instructors, seem to be more tender-minded, with NOLS instructors being only slightly more tender-minded than the norm group. NOLS instructors seem to be more trusting and easy to get along with (L-) than both the norm group and Outward Bound instructors. The Outward Bound group results on the 16PF indicate they are much more

Table 23. MANOVA and t-tests of Means** of Instructor 16PF Personality Factors as Determined by Hendy (1975) and Easley (1985).

MANOVA F (Wilks' Criterion) for Study Population Effect
DF = (16,124) F = 8.53, Prob > F = .0001

16 PF Factor	Hendy (1975) n=25 O.B. Inst.		Easley (1985) n=116 NOLS Inst.		Prob
	Mean	STD	Mean	STD	
A	4.1200*	2.0067	5.7414	1.8421	.05
B	6.6400*	1.5242	7.0000*	1.7986	ns
C	5.7600	1.9638	7.3448*	1.9070	.05
E	7.1600*	1.7954	5.3190	1.8817	.05
F	5.5200	2.1626	5.0862*	1.6289	ns
G	5.0000	1.9791	5.2845	1.5312	ns
H	5.3600	2.1962	5.9052*	2.2534	ns
I	7.0800*	1.8466	5.9310*	1.5588	.05
L	5.4000	1.9791	3.9655*	1.8693	.05
M	8.4800*	1.7349	5.8793*	1.7403	.05
N	3.9600*	1.9035	4.0517*	1.8921	ns
O	5.7600	2.1071	4.9310*	1.6190	.05
Q1	6.9600	1.8367	6.5259*	1.6809	ns
Q2	6.8400*	1.7483	5.9052*	1.7984	.05
Q3	5.9200	2.1197	5.0603*	1.4643	.05
Q4	5.2000	2.1409	4.6121*	1.7583	ns

** Experiment-wise error rate (Type I error) controlled by Tukey's studentized (HSD) test.

* denotes that the researcher determined a significant difference from norm group.

imaginative (M+) than NOLS instructors or the norm group. NOLS instructors are slightly more secure and self-assured (less apprehensive) (O-). Both groups deviate only slightly from the norm group on this factor.

Both groups of instructors tend to be more self-sufficient (Q2+) than the norm group with Outward Bound instructors being significantly more so than NOLS instructors. The two groups tend to differ with regard to their adherence to social rules. The NOLS instructors tend to be slightly more careless of these social rules (Q3-), while Outward Bound instructors seem to be slightly more socially precise or controlled.

While the differences reported are interesting and statistically significant, only a very tenuous conclusion should be drawn that suggests the two groups are different. Many former Outward Bound instructors currently instruct at NOLS and indeed, many Outward Bound instructors have received their outdoor skill training at NOLS. Further research, beyond Hendy's and that reported here is necessary to differentiate instructor personality styles appropriate to the different program philosophies extant between NOLS and Outward Bound.

DISCUSSION AND CONCLUSIONS

Summary of Findings

The research reported here took place during the summer of 1984 at the National Outdoor Leadership School in Lander, Wyoming. A total of 355 "treatment" subjects and 50 "control" subjects were given pretest and posttest administrations of the Tennessee Self-Concept Scale (Fitts, 1965) to measure the effect of a standard NOLS course (the "treatment") on subjects' self-concept. The research used a Randomized Control Group Pretest/Posttest Design (Campbell and Stanley, 1966) with a slight modification in that control courses were randomly selected instead of random assignment of individual subjects. The treatment subjects were enrolled in 30 NOLS courses, and the control subjects were enrolled in 5 randomly selected NOLS courses.

To further define the characteristics of the treatment (i.e., a NOLS course), 116 instructors who taught the courses, typically three per course, were administered the 16PF Personality Questionnaire (Cattell et al., 1970). These same instructors were also evaluated by their students

at the conclusion of the course using a specially designed Instructor Evaluation Form. The form addressed dimensions of individual instructor teaching effectiveness, perceived personality characteristics based on behavior, and also solicited student ratings based on their experience for hypothesized personal outcomes and course influences.

The general objectives of this research were to determine the extent of change in self-concept of students on a NOLS course and the extent to which instructor personality traits were correlated with instructor effectiveness as evaluated by their students. These general research objectives were couched in terms of five testable hypotheses and three interesting research questions. Analysis of the results from the test instruments and information on student application forms allowed a narrative characterization of both NOLS instructors and NOLS students and comparisons with the appropriate norm group for the general population.

The characterization of NOLS instructors, based on a self-reported personality instrument, presents a picture of a population which differs significantly from general adult population on 13 of 16 described factors. The greatest differences indicate that the instructors seem to be more intelligent, more emotionally stable, more trusting and more forthright and unpretentious than the norm group.

The characterization of NOLS students used as subjects in this research verifies that they compare fairly well with the average of the norm group. They deviate from the mean of the norm group only on the TSCS subscales of self-satisfaction and personal self. This finding is important in that it confirms that the self-selecting population studied was not already high in overall self-concept and therefore was considered as capable of being influenced by the treatment used in this research.

The findings of this research using the pretest-posttest administration of the TSCS comparison with a control group, allows the conclusion that a NOLS course resulted in significantly greater increase in total positive self-concept and six of its nine subscales, as defined by Fitts, for treatment subjects over those subjects who were not subjected to the treatment. The TSCS subscales not achieving significance were satisfaction, personal self, and self-criticism.

The effectiveness of the members of the instructor team as determined by student evaluation was found to be only slightly related to student changes in self-concept. The effectiveness rating of the course leader added significantly to the predictive ability of the model ($p > .0327$), but the predictive ability was low ($R^2 = .019$).

Two different analytical approaches to determining the effect of various student variables produced mixed results. Student ethnic origin, while showing a significant effect in regression analysis, was discounted because of the small samples of the ethnic origin achieving significance. Both MANOVA and a gain score analysis indicated that previous NOLS experience may produce a significant effect on self-concept change, but here again, the sample proportion was small. Other student characteristics, including sex, age, marital status, place of residence, or education showed no significant effect on self-concept change.

A direct test of instructor team personality influences on student ratings of instructor "overall effectiveness" was done using two different sets of instructor personality trait values. One analysis procedure used the results of the individual instructor 16PF Personality Factor Questionnaire, while the second analysis used student-rated scores on the same sixteen trait descriptors used by the 16PF instrument.

Regression analysis produced significant F values for the overall regression of instructor personality on perceived instructor effectiveness. The factors derived from the 16PF instrument used as independent variables to predict overall

effectiveness scores, resulted in a low R^2 of .092 with only two of the 16 factors achieving significance: Factor E (submissive vs dominant) and Factor Q_3 (undisciplined self-conflict vs controlled). Both beta weights were negative, favoring the E- and Q_3 - direction from the norm group. Much stronger predictive ability was achieved using the student ratings of the same 16 factor descriptors. An R^2 of .513 resulted using the student-rated values as independent variables to predict student-rated overall effectiveness scores for the instructors. Six factors were found to be significant predictors. These were intelligence (B+), shy vs bold (H+), trusting vs suspicious (L-), conservative vs liberal (Q_1 -), group-oriented vs self-sufficient (Q_2 +), and undisciplined self-conflict vs controlled (Q_3 -). On the basis of these analyses, it was concluded that objective assessment of instructor personality may not be significantly related to student perceptions of instructor effectiveness, but that personality traits that are perceived by students on the basis of the behavior of the instructor do provide greater predictive ability than the objective measure of the 16PF.

The median of the student-rated instructor effectiveness score distribution was used to categorize each instructor as "high effectiveness" or "lower effectiveness." The two sets

of personality measures (16PF and student-rated) were subjected individually to a MANOVA in an attempt to differentiate the personality traits of "high effectiveness" instructors and "lower effectiveness" instructors. The 16PF Questionnaire factors failed to produce a significant difference on any of the 16 factors. The student-rated perceived personality factors, however, resulted in significant differences on 14 of the 16 student rated personality traits. The students clearly differentiated, on the basis of personality-related behavior, between effective and less effective instructors. The implications of these mixed findings are discussed in the following section.

Research Question 1 was related to the course influences which helped in achieving reported personal outcomes as a result of a NOLS course. The NOLS curriculum was rated as the most important course influence, followed by the instructor team, and the small group experience. Further analysis indicated that the instructor team is most influential on the outcome of self-confidence as reported by the students. The NOLS curriculum and the instructor rated almost equally as the most important influences on the student outcome of Leadership Skill. The NOLS curriculum was regarded as the most important influence on the outcome of outdoor skill. The instructor made a lesser but

significant contribution and was responsible for accounting for about 16% of the variance by itself.

NOLS students reported significant gains in the three personal outcomes of self-confidence, outdoor skill, and leadership skill. Outdoor skill, in keeping with the mission statement of NOLS, was ranked highest, self-confidence second in importance, and leadership skill, a specific objective of the NOLS approach, was ranked third. Students did report, however, sizable gains even in leadership skill.

The final research question addressed by this research compared 16PF personality profiles of Outward Bound instructors as reported by Hendy (1975) and those of NOLS instructors as determined by this research. While no statistically-based firm conclusions were recommended because of the differences in sample sizes, it did appear that there are differences which may reflect the differential program philosophies of the two schools. Whether the "stress/challenge" approach of Outward Bound attracts instructor personality types different from the "wilderness skills" approach of NOLS is a question not adequately answered by the comparisons presented.

Discussion

Hypothesis H₀₁ and H_{01a}

The rejection of Hypothesis H₀₁ and H_{01a} seems to be warranted on the basis of the research procedures followed in this study. The implication of the decline in posttest scores of the control group is worthy of some discussion. As stated previously, the TSCS subscales moral-ethical self and behavior both showed average losses for the control group who were pretested five weeks prior to arriving at NOLS and posttested the day they arrived at NOLS for departure on their course. The drops in difference scores in these two subscales could be attributed to undocumented history such as a traumatic life event during the five week period between pretest and posttest. With the small size of the control group, even one or two students who experienced such an event could have influenced the reported results. It is interesting to note that the moral-ethical subscale purports to measure "feelings of being a good person or a bad person" (Fitts, 1965), and the behavior subscale purports to measure "the individual's perception of his own behavior" (Fitts, 1965). Could it be that a couple of students, perhaps on their first trip away from home, did some "bad" things enroute that they were ashamed of, thus producing a lower score on the posttest?

A more plausible and less speculative reason may perhaps be found in a study by Koepke (1973) at the Colorado Outward Bound School. She found that the students "experience(d) a high anxiety level just prior to the course" (p. 5). She also reported an inverse relation between a student's self-perception and the level of anxiety experienced. Rhodes (1973) pointed out that "anticipatory anxiety on the part of the participants prior to the beginning of the training experience...can easily bias the results of pre-training measures" (p. 164). Kimball (1979) related the problems of administering a psychometric survey to students while "on a course" and recommended that "testing should occur in a quiet classroom-like atmosphere" (p. 156). The testing procedures used in this research were designed to reduce this reported precourse anxiety, but it is possible that the drop in TSCS scales reported for control students was, in fact, a result of the perceived challenges ahead or of the testing instrument itself. This potential anxiety effect has great significance for pretest-posttest administration of psychometric instruments and should be subjected to further research.

Hypothesis Ho2

Rejection of Hypothesis # 2 was possible based on a significant regression ($p > .047$) of the student-rated instructor effectiveness values for each instructor as independent variables and the Total Positive Self-Concept Change score for each student as the dependent variable. It is felt that the low regression coefficient ($R^2 = .018$) may be due to a lack of variation in the student-rated global measure of overall effectiveness. For all instructors, the mean rating (out of a maximum score of 10) was 8.81 and the standard deviation was 1.31. The modal response was 9 and the median response was 8.88. The restricted range of this global effectiveness measure may have reduced the predictive ability.

Many other predictors of student outcome should be examined. For example, this research has not addressed the role of the wilderness environment, or degree of solitude experienced on a NOLS course. Other factors which should be examined as possible predictors of student outcomes would include specific NOLS curriculum elements and perhaps even some measure of the strength of interpersonal relationships developed by the students while on a NOLS course.

Hypothesis Ho4 and Hypothesis Ho5

Both Hypotheses #4 and #5 were tested using two independently derived sets of instructor personality trait descriptors. One set, derived from a standard psychological self-report instrument, the Cattell 16PF, has reasonable published reliability coefficients and has been used to determine teacher personality correlation with overall teacher effectiveness (Isaacson et al., 1963) and to discriminate between high effectiveness and lower effectiveness wilderness instructors (Hendy, 1975). The second set of instructor personality descriptors was based on student ratings on a bipolar, 10-point semantic differential scale anchored with the trait descriptors ascribed by Cattell to the 16PF factors.

In H_04 , the 16PF factors were correlated significantly with "overall effectiveness," but had low predictive ability. The student-rated instructor traits, however, when used as independent variables, were able to account for 51% of the variance in the model. The objective 16PF personality traits of the instructors studied in this research seem so similar, based on relatively small standard deviations shown in Table 23, that they may lack the variation necessary in a correlational analysis to be predictive. This indicates that the strict screening and

training process used for selecting instructors at NOLS may favor a particularly narrow range of personalities or that only certain types of people may be attracted to become NOLS instructors. This situation probably does not exist in a normal school setting where the 16PF instrument has been used successfully to discriminate between teachers on a variety of outcome variables.

It is also possible that the student ratings, as used in this study, do not measure or describe just personality, but rather measure an instructor's ability to demonstrate teaching behaviors or styles based on both personality and perhaps, thespian abilities. Thus, while the 16PF indicates a fairly homogeneous population of instructors based on personality, the student ratings may indicate a significant and much more variable differential ability of an instructor to demonstrate, through teaching behaviors, the described attributes or traits evaluated.

To examine the basis for this second possibility, a Multitrait-Multimethod Analysis (MTMM) as proposed by Campbell and Fiske (1959) was performed. The MTMM indicated very low convergent validity between the two methods. The analysis also pointed out that several of the traits lacked discriminant validity, indicating significant method

variance. This indicates that the objective measure and the student trait attributions are, in some items, measuring different things. In spite of these findings, it can be concluded that student ratings, whether they are actually personality "traits" or perceiving "teaching behaviors," do provide, in both H_04 and H_05 , a means of beginning to understand some of the dimensions of teacher effectiveness. If further research and analysis indicates that student-rated scales do indeed differentiate on the basis of personality plus style or other teaching behaviors, then such a scale might offer unique opportunities for individual instructors and administrative staff, through training programs, to develop the more manipulable style dimensions of instructor effectiveness.

The availability of 16PF profiles for "potential" NOLS instructors may provide some insight as to how well they fit the rather homogeneous population of instructors who have successfully made it through the rigorous screening and training program. The analysis of H_05 , using a median split on effectiveness ratings, to differentiate between 16PF profiles for high effectiveness and lower effectiveness instructors may not have been sufficiently discriminating. Further analysis using the 16PF personality traits for the top quartile of effectiveness vs the bottom quartile of

effectiveness may demonstrate greater utility of the 16PF in discriminating between the highest and lowest rated instructors. This procedure was not undertaken as part of this research in order to maintain the full sample size for analysis. There are also statistical concerns related to using only extreme scores in such analyses.

The Implications of This Research for NOLS and Other Programs

There seem to be three major implications of this research for NOLS and other outdoor programs. These are discussed in the following paragraphs.

First, it seems possible to cause significant self-concept changes of students through outdoor programs which accentuate the development of competence and outdoor skills as a course objective (i.e., the NOLS approach).

Second, student ratings indicate a substantial relationship between instructor effectiveness, and a combination of both personality and teaching behavior. Further, it is possible to identify those personality/behavior attributions by students which are related to high overall instructor effectiveness. This has implications for staff selection, training, and assignment.

The final implication is based on the fact that the instructor population at NOLS appears to be fairly homogeneous on the basis of self-report measures of personality. This homogeneous instructor personality type is probably the result of the stringent staff selection and training process which is used at NOLS. This finding has implications for staff selection in other outdoor programs and suggests that stringent selection procedures can help insure consistent effectiveness by the staff so selected.

Suggestions for Further Research

The research reported here has provided sufficient evidence that 1) students who complete NOLS courses gain significantly in self-concept and 2) instructors do make a difference on the basis of their perceived personality and teaching behaviors in this change. Further research on self-concept change as a result of a NOLS course would not seem to warrant high priority. Many issues of instructor influences and differential personality characteristics related to instructor effectiveness, however, remain unanswered. The following list suggests some possibilities for extending the initial research efforts embodied in this dissertation. While phrased as general problem statements, it is felt that each suggested research notion could result

in several testable hypotheses which would advance the state of knowledge in the field of wilderness education, particularly in those programs which use the development of competence and skill as a program objective.

1. Further refinement of the instructor evaluation instrument should be undertaken. Efforts should be focused on developing, if possible, a student evaluation of perceived personality which has the potential to help identify teaching behaviors which are above and beyond strict personality-based behaviors.
2. Further research efforts should now focus on the two mission statement-based student outcomes of outdoor skill and leadership skill. Initial efforts might be devoted to determining the criterion measures of these outcomes, their operationalization, and the degree of change produced in students using the techniques extant on standard NOLS courses. Extension of this work could involve limited experimental manipulation of a package of different teaching strategies for use on some courses to determine their differential effectiveness. This would be particularly germane to the student gains of leadership skill, both as perceived by the student and as measured by objective instruments.

3. Several instructor candidates are not successful in pursuing the instructor course, or on the basis of peer evaluations by fellow instructors are not rehired. An interesting research project would be to administer a self-report personality instrument to all instructor candidates prior to the instructor course and then to have their fellow students as well as their instructors provide a rigorous post-course evaluation of their performance and potential for success as a NOLS instructor. It may be possible to thus differentiate further those personality traits related to success from a population which is theoretically less homogeneous than the experienced instructors used in this research.
4. This research has addressed but one specific student outcome, the objective measure of self-concept. It would be an interesting research project, perhaps using survey research methods rather than experimental methods, to determine what specific effects a NOLS course has in the longer run on various aspects of a student's life after their NOLS experience. Such research would probably be based on subjective self-perception by former students, but other more quantifiable research objectives could be

developed related to employment patterns in outdoor programs, selection of college major, repeat attendance at NOLS and involvement in environmental organizations. Comparisons with an equivalent control group of non-NOLS students might lead to some interesting revelations on the longer term effects of such a program.

5. Further examination and definition of the influence of various well-defined components of the NOLS curriculum should be undertaken. This research has demonstrated a potentially strong influence of the curriculum on a variety of student outcomes. More precise definition of which components influence which outcomes would be of assistance in developing new course proposals and revising existing course teaching strategies to achieve specific outcomes.

The preceding five suggestions deal principally with extensions of the efforts reported in this dissertation. There are, however, broader issues related to wilderness education and management which must also be addressed by future researchers. Some discussion of these potential research thrusts is in order.

There appears to be a definitive need to develop a taxonomy of wilderness/adventure education programs. There currently exist programs which use the wilderness as a classroom that range in objectives from the therapeutic/personal growth orientation of Outward Bound and its derivative programs, through the type of skills/leadership programs represented by NOLS. The principle focus of many of these programs is not adequately understood, nor are their value to the students or the wilderness. The number and diversity of objectives of the programs are increasing. Hale (1975), for example, described over 200 such programs which offer outdoor adventure and skills as a component of their curriculum. In addition, Hendee and Roggenbuck (1984) determined that there were 542 wilderness-related courses taught within colleges and universities in the U.S. They determined that about 30% of the course instructors listed the first objective of the course as "wilderness appreciation, use, enjoyment and skills." An additional 40% listed this objective as the second major purpose of the course. The courses represented student enrollment of over 8000 students per year. Further definition of the specific wilderness values related to appreciation, use and enjoyment seems to be needed.

Once an adequate taxonomy of objectives and course types has been developed, it may be possible to explore a second major issue related to wilderness education, that is, how do these courses relate to, encourage, or solidify the wilderness values perceived by the students and how do these values transfer to everyday life. Little work has been done on how these courses influence student perceptions of the wilderness values of nature appreciation, freedom, solitude, simplicity, spiritual and aesthetic insight (Hendee et al., 1978). The fundamental questions yet to be answered deal with what are the values of these educational wilderness experiences and what types of educational approach will maximize these values in the heart and mind of the students. Different methodological approaches may be necessary to address these issues. Research efforts which utilize qualitative research methods rather than objective or self-report instruments may be the necessary first step to provide the answers to the many questions which remain.

Conclusions

"We know we cannot conserve our wilderness areas adequately, even with all the restrictions, without educating the user" (Petzoldt, 1974). This research indicates that, the students perceive that they have gained

a substantial wilderness education from a NOLS course. Outdoor skill and leadership, the mission objectives of NOLS, thus appear to have been met. An additional outcome of value, that of self-confidence, was also determined to be a significant outcome. Outward Bound, and its many derivative programs, stress "personal growth through challenge" as the primary outcome. The NOLS approach stresses individual competency in wilderness skills and the development of leadership skills. In this sense, NOLS does not "advertise" personal growth as a course outcome, but recognizes that it takes place in many individuals. According to NOLS (1984), "while a NOLS experience will enhance self-confidence and motivation, this takes place individually and naturally, rather than deliberately as the primary focus of the curriculum." This study provides empirical evidence that this increased self-confidence and self-concept does indeed occur.

The instructors are necessary components of a NOLS course, for they are the ones who orchestrate the learning experiences based on the NOLS curriculum, in a rugged wilderness environment. The instructors are important in achieving the mission statements of NOLS, but in addition, seem to be an important influence resulting in increased self-confidence of their students.

This research indicates that students' perception of instructor personality was more useful in differentiating their perceptions of instructor effectiveness than was the 16PF instrument. Further, there appears to be some basis for suggesting that the personality characteristics, on the basis of a standard self-report personality instrument, are different between NOLS instructors and Outward Bound instructors.

The final conclusion is that there seems to be sufficient empirical evidence on self-concept changes to warrant a higher priority to research on other student outcome measures, such as outdoor skills and leadership skill development.

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APPENDIX A

The NOLS Curriculum for Standard Wilderness Skills Courses
(NOLS, 1985)

APPENDIX A

The NOLS Curriculum for Standard Wilderness Skills Courses
(NOLS, 1985).

Minimum-impact Camping and Resource Protection:

- 1) Campsite selection
- 2) Shelter use
- 3) Stove use and care
- 4) Sanitation and waste disposal
- 5) Wildland ethics
- 6) Land management and use

Travel Techniques:

- 1) Backpacking and carrying
- 2) Energy conservation
- 3) Trail techniques
- 4) Map-reading and compass use
- 5) Time control plans
- 6) Off-trail route finding and navigation
- 7) River crossings

Outdoor Living Skills:

- 1) Cooking and baking
- 2) Nutrition and rations
- 3) Fishing techniques and ethics
- 4) Keeping warm and dry
- 5) High altitude physiology
- 6) Equipment care and selection

Safety:

- 1) Basic first aid
- 2) Safety and accident protection
- 3) Hazard evaluation
- 4) Cold-related injury prevention and treatment
- 5) Mountain rescue techniques

Environmental awareness:

- 1) Mountain ecosystems
- 2) Flora and fauna identification
- 3) Geology
- 4) Weather

Expedition Dynamics:

- 1) Leadership
- 2) Expedition behavior
- 3) Emergency behaviors

APPENDIX A (continued).

Mountaineering:

- 1) Bouldering
- 2) Knots, rope-handling and systems
- 3) Signals and belays
- 4) Rock-climbing techniques
- 5) Anchors and protection placement
- 6) Rappelling
- 7) Climbing ethics
- 8) Snow travel techniques
- 9) Avalanche forecasting

APPENDIX B

Catalog Descriptions of NOLS Courses

Wind River Wilderness Course

AGE: 16 minimum

DURATION: Approximately 31 days

LOCATION: Wind River Range (Wyoming)

From the surrounding plains filled with sagebrush and antelope, the Wind River Range appears a mere distant spiny skyline. Many tourists bypass its obscure dirt entrance roads on their way to the popular Teton and Yellowstone Parks. Protected thus from plain view and by the fame of these neighboring areas, the magnificent Wind River mountains have remained wild, a haven for wildlife and those who seek rugged pristine wilderness.

Here is a vast stretch of backcountry, many times larger than the Tetons, with granite as fine as Yosemite's, and offering some of the best trout fishing in the west. Here also is the home of the original NOLS Wilderness Course, the place where the NOLS philosophy and minimum-impact techniques were developed.

The Wind River mountains are ideally suited to training well-rounded wilderness travelers, capable of map-reading, route-finding, fly-fishing, traveling on snow, rock climbing, and safely negotiating rushing streams. On a wilderness course you will learn expeditioning skills and

the art of minimum-impact camping in thick lodgepole forests, among stunted twisted pines at treeline, and on alpine tundra. Amid glaciers--the seven largest in the Rocky Mountains--you will learn how snow and ice shaped this dramatic mountain landscape. And you will know the satisfaction of leaving a campsite undetectable to other travelers.

Instruction will also cover basic rock-climbing techniques. You will begin with bouldering and rope-handling and progress to signals and belaying, protection placement, top-roping and rappeling. Peak ascents will offer you spectacular views of surrounding mountain country, traveled long ago by Shoshone and Crow Indians, mountain men and fur traders.

For those who seek a complete introduction to backcountry skills, the Wind River Wilderness Course offers the classic NOLS experience in one of the most spectacular wild areas in the west.

Wind River Mountaineering Course

AGE: 16 minimum

DURATION: Approximately 31 days

LOCATION: Wind River Range (Wyoming)

The remote wilderness of the Wind River Range provides an ideal setting for developing mountaineering skills. Among its forests, mountain passes and glacial cirques you will learn how to read a map and choose an energy-efficient, off-trail route. By its lakes and streams, you will develop the art of fly-fishing. On its granite faces, you will practice rock-climbing techniques.

Becoming a mountaineer involves more than learning technical rock-or-snow-climbing. Mountaineering encompasses all the skills and judgment required to progress safely and competently from the roadhead to the summit and back: basic camping and travel skills, minimum-impact practices, energy conservation, hazard evaluation, first aid and emergency procedures, expedition dynamics, as well as climbing expertise.

A mountaineer is as knowledgeable about baking bread, identifying animal tracks and nursing a sick comrade as picking a route across a glacier. Setting a hook in a trout's mouth is as natural as setting an anchor for a

rappel. Above all, a mountaineer is adaptable, equally prepared to leave camp before sunrise to ensure a safe climb, or to help fix a stove while waiting out a storm.

Since the success of any mountaineering expedition is dependent upon competence in a variety of areas, you will progress along a continuum of wilderness skills, starting with basic camping and travel techniques.

As these are mastered, you will assume more leadership responsibility and will advance to new skill areas including bouldering, top-roping, rappelling, fly-fishing and snow travel. You'll develop an understanding of weather, lightning and other hazards of mountain travel, and you will attempt ascents of exposed peaks and ridges. In addition, thorough knowledge of practical conservation techniques will heighten your awareness of the delicate beauty found in the Wind River's alpine meadow and spruce-fir forests.

To develop mountaineering proficiency, you must exert yourself and be committed as a member of an extended expedition. The curriculum is fast-paced and packs are heavy due to the added weight of climbing gear. But in return, you will gain the spectrum of skills taught in the Wyoming Wilderness Courses, while reaching a few more high peaks or passes.

Adventure Course

AGE: 14-15 years old

DURATION: Approximately 31 days

LOCATION: Absaroka and Bighorn Ranges (Wyoming) and Uinta Range (Utah)

The Adventure Course is an adaptation of the NOLS Wilderness Course for the needs of young adults. If you are 14 or 15 years old, this expedition has been designed to meet your level of energy and curiosity. Many of our most outstanding graduates, including quite a few NOLS instructors, began their outdoor training with an Adventure Course.

You will learn to read a topographic map, to lead your fellow students off-trail through the wilderness, to cast for trout in high-altitude lakes and streams, and to identify mountain flora and fauna. Each day you will set up your own camp and cook your own meals, taught by experienced instructors who are as proficient at demonstrating the secrets of baking great cinnamon rolls as they are at teaching safe river-crossings.

The Adventure Course offers more than physical accomplishment. Getting along with your tentmate may be harder than crossing a boulder field carrying a backpack.

For many people this NOLS course is a valuable opportunity to develop judgment and to take responsibility for important individual and group decisions.

Outdoor Educators Course

AGE: 18 minimum

DURATION: Approximately 24 days

LOCATION: Wind River, Teton and Bighorn Ranges (Wyoming)

ELIGIBILITY: Applicants should be practicing or potential outdoor educators

The Outdoor Educators Course is designed to familiarize teachers and leaders of outdoor programs with the curriculum and teaching techniques of the National Outdoor Leadership School. Our goal is to train these educators in backcountry living and travel skills, and safety and judgment, which can enhance their own outdoor programs.

It is an opportunity to gain a respected professional credential while sharing techniques and ideas with other people in the field of outdoor recreation. This course is aimed not only at working outdoor educators, but also at those who are considering entering the profession.

Prior to going into the mountains, students spend a morning and afternoon learning about the NOLS outfitting operation. By nightfall, they have been fully equipped and are camping in the field, ready for three weeks of backcountry training.

As the expedition moves through the mountainous wilds of Wyoming, students learn the essentials of the NOLS curriculum, including conservation practices, map-reading and route-finding, hazard evaluation, emergency procedures, and basic climbing. The emphasis here is on rounding out skills through daily practice and experience, and on refining teaching techniques. In order to enhance teaching effectiveness, students are encouraged to present classes in areas pertinent to the outdoor education field. Each participant will also have opportunities to share his or her teaching experience and ideas.

In addition to field experience, students gain a broad, practical knowledge of the wilderness environment. Being able to key out trees and wildflowers, to recognize animal tracks and bird calls, and to interpret these signs, are skills important to every outdoor educator. Other topics of instruction include organizational aspects of outdoor programming, such as expedition planning, equipment selection, and student evaluation.

This course is rigorous and fast-paced. However, due to its length and focus on a wide range of educators' concepts, the Outdoor Educators Course emphasizes a comprehensive wilderness education. Graduates who are interested in

developing competence in particular recreational skill areas, such as rock-climbing or fly-fishing, are encouraged to attend NOLS advanced courses.

Wilderness Natural History Course

AGE: 16 minimum

DURATION: Approximately 31 days

LOCATION: Absaroka and Wind River Ranges (Wyoming)

The walled cirques and forested valleys of the Absaroka and Wind River Ranges provide ideal settings to learn outdoor living and travel skills, and applied lessons of ecology. Here, in some of the most pristine wilderness in the contiguous U.S., you will acquire expedition experience and backcountry expertise while sharpening your observational and interpretive skills.

With NOLS instructors particularly knowledgeable about natural history, you will have a unique opportunity to study the structures and interrelationships of several largely intact ecosystems, including some of the finest forest in the world.

Since wilderness competence is a prime tenet of all NOLS courses, you will first concentrate on learning the essentials of the wilderness course curriculum, including minimum-impact camping, cooking, trail techniques, expedition behavior, accident prevention, practical first aid, fly-fishing, and, if time and conditions permit, basic rock-climbing and snow travel. Daily practice and critique

of map-reading, route-finding, and small-group leadership skills will ensure your development as an accomplished outdoorsperson. These skills will enable you to traverse the high alpine ridges and cross rivers necessary to penetrate some of the most biologically and geologically interesting portions of these ranges.

This course places particular emphasis on developing a broad, yet practical, knowledge of the wilderness environment. You will learn to identify the diverse flora and fauna and to understand the features that enable them to thrive, and to recognize how the present landforms and rock types tell the story of the region's geologic past. Contrasting bedrock and soil geology of two areas, for example, create interesting differences in ecology, and pose complex questions for those curious about natural processes.

You will learn such ecological principles as habitat requirements and feeding habits of wildlife, and vegetational zonation and succession of basic communities. These concepts will help explain your everyday observations while hiking, climbing or at camp: whortleberries and woodpeckers in a burned stand of lodgepole pine, a moose belly-deep in cattails by a beaver pond, the algal insect communities in a hotspring runoff channel.

Keying out wildflowers, recognizing animal tracks or the call of a hermit thrush, and interpreting these signs, are skills that will enhance your appreciation of any wild country you explore. For those ready for a challenge, and for a close view of natural history, this expedition will provide a comprehensive education in wilderness skills and environmental processes.

APPENDIX C

Cover Letter Sent to Subjects in Control Courses

The National Outdoor
Leadership School

Summer 1984

Dear NOLS student,

IMPORTANT

We are very happy that you are coming to NOLS this summer and we look forward to meeting you. The course that you are scheduled to go on has been selected to be part of a comprehensive research project. We know that we can count on your cooperation as we undertake this project.

Will you please do the following for us as soon as you can and mail it back to us in the provided prepaid envelope?

1. Find the Tennessee Self-Concept Questionnaire booklet, and answer sheet.
2. Use a No. 2 pencil.
3. At the top of the answer sheet print just your name and date.
4. Starting with No.1 in the booklet and No.1 on the answer sheet, answer all questions by filling in the circle (1-5) for your answer. DO ALL THE QUESTIONS AS HONESTLY AS YOU CAN.
5. When you have completed all 100 questions place the test booklet and the answer sheet in the return envelope and mail as soon as possible.

Thank you for your cooperation, we look forward to seeing you when you arrive for your course.

Yours very Truly.

A.T.Easley

Jim Ratz
Executive Director

P.O. Box AA
Lander, Wyoming 82520
407-342-6073



APPENDIX D

Tennessee Self-Concept Scale (Fitts, 1965)

(Reproduced with the permission of the publisher.)

Tennessee Self-Concept Scale

William H. Fitts, Ph.D.

Published by

wps WESTERN PSYCHOLOGICAL SERVICES
Publishers and Distributors
12011 Wilshire Boulevard
Los Angeles, California 90025

INSTRUCTIONS

On the top line of the separate answer sheet, fill in your name and the other information except for the time information in the last three boxes. You will fill in these boxes later. Write only on the answer sheet. Do not put any marks in this booklet.

The statements in this booklet are to help you describe yourself as you see yourself. Please respond to them as if you were describing yourself *to yourself*. Do not omit any item. Read each statement carefully, then select one of the five responses listed below. On your answer sheet, put a circle around the response you chose. If you want to change an answer after you have circled it, do not erase it but put an X mark through the response and then circle the response you want.

When you are ready to start, find the box on your answer sheet marked *time started* and record the time. When you are finished, record the time finished in the box on your answer sheet marked *time finished*.

As you start, be sure that your answer sheet and this booklet are lined up evenly so that the item numbers match each other.

Remember, put a circle around the response number you have chosen for each statement.

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

You will find these response numbers repeated at the top of each page to help you remember them.

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

1. I have a healthy body
2. I am an attractive person.....
3. I consider myself a sloppy person
4. I am a decent sort of person
5. I am an honest person
6. I am a bad person
7. I am a cheerful person.....
8. I am a calm and easygoing person.....
9. I am a nobody
10. I have a family that would always help me in any kind of trouble.....
11. I am a member of a happy family.....
12. My friends have no confidence in me
13. I am a friendly person
14. I am popular with men
15. I am not interested in what other people do
16. I do not always tell the truth
17. I get angry sometimes

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

18. I like to look nice and neat all the time
19. I am full of aches and pains
20. I am a sick person
21. I am a religious person
22. I am a moral failure
23. I am a morally weak person
24. I have a lot of self-control
25. I am a hateful person
26. I am losing my mind
27. I am an important person to my friends and family
28. I am not loved by my family
29. I feel that my family doesn't trust me
30. I am popular with women
31. I am mad at the whole world
32. I am hard to be friendly with
33. Once in a while I think of things too bad to talk about
34. Sometimes, when I am not feeling well, I am cross

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

- 35. I am neither too fat nor too thin
- 36. I like my looks just the way they are
- 37. I would like to change some parts of my body
- 38. I am satisfied with my moral behavior
- 39. I am satisfied with my relationship to God
- 40. I ought to go to church more
- 41. I am satisfied to be just what I am
- 42. I am just as nice as I should be
- 43. I despise myself
- 44. I am satisfied with my family relationships
- 45. I understand my family as well as I should
- 46. I should trust my family more
- 47. I am as sociable as I want to be
- 48. I try to please others, but don't overdo it
- 49. I am no good at all from a social standpoint
- 50. I do not like everyone I know
- 51. Once in a while, I laugh at a dirty joke

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

- 52. I am neither too tall nor too short
- 53. I don't feel as well as I should
- 54. I should have more sex appeal
- 55. I am as religious as I want to be
- 56. I wish I could be more trustworthy
- 57. I shouldn't tell so many lies
- 58. I am as smart as I want to be
- 59. I am not the person I would like to be
- 60. I wish I didn't give up as easily as I do
- 61. I treat my parents as well as I should (Use past tense if parents are not living-
- 62. I am too sensitive to things my family says
- 63. I should love my family more
- 64. I am satisfied with the way I treat other people
- 65. I should be more polite to others
- 66. I ought to get along better with other people
- 67. I gossip a little at times
- 68. At times I feel like swearing

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

- 69. I take good care of myself physically
- 70. I try to be careful about my appearance
- 71. I often act like I am "all thumbs"
- 72. I am true to my religion in my everyday life
- 73. I try to change when I know I'm doing things that are wrong
- 74. I sometimes do very bad things
- 75. I can always take care of myself in any situation
- 76. I take the blame for things without getting mad
- 77. I do things without thinking about them first
- 78. I try to play fair with my friends and family
- 79. I take a real interest in my family
- 80. I give in to my parents (Use past tense if parents are not living)
- 81. I try to understand the other fellow's point of view
- 82. I get along well with other people
- 83. I do not forgive others easily
- 84. I would rather win than lose in a game

Completely False	Mostly False	Partly False and Partly True	Mostly True	Completely True
1	2	3	4	5

- 85. I feel good most of the time -
- 86. I do poorly in sports and games -
- 87. I am a poor sleeper -
- 88. I do what is right most of the time -
- 89. I sometimes use unfair means to get ahead -
- 90. I have trouble doing the things that are right -
- 91. I solve my problems quite easily -
- 92. I change my mind a lot -
- 93. I try to run away from my problems -
- 94. I do my share of work at home -
- 95. I quarrel with my family -
- 96. I do not act like my family thinks I should -
- 97. I see good points in all the people I meet -
- 98. I do not feel at ease with other people -
- 99. I find it hard to talk with strangers -
- 100. Once in a while I put off until tomorrow what I ought to do today -

APPENDIX E

16PF Cover Sheet and Descriptions of 16 Primary Factors
and 4 Second-Order Factors



Form C
1969 EDITION R

16 PF

WHAT TO DO: Inside this booklet are some questions to see what interests you have and how you feel about things. On most items there are no "right" or "wrong" answers because people have the right to their own views. All you have to do is answer what is true for you.

If a separate answer sheet has *not* been given to you, turn this booklet over and tear off the answer sheet on the back page. Write your name and other information asked for on the answer sheet.

First, read the four **EXAMPLES** below and mark your answers on the answer sheet where it says **EXAMPLES**. Fill in the box completely:

EXAMPLES:

- | | |
|---|--|
| <p>1. I like to watch team games.
a. yes, b. occasionally, c. no.</p> | <p>3. Money cannot bring happiness.
a. yes (true),
b. in between,
c. no (false).</p> |
| <p>2. I prefer people who:
a. are reserved,
b. (are) in between,
c. make friends quickly.</p> | <p>4. Adult is to child as cat is to:
a. kitten, b. dog, c. baby.</p> |

In the last example there *is* a right answer—kitten. But there are very few such reasoning items.

Ask now if something isn't clear.

When the examiner tells you, start with number 1 and answer the questions. Keep these four things in mind:

1. Give only answers that are true *for you*. It is best to say what you really think.
2. Don't spend too much time thinking over each question. Give the first, natural answer as it comes to you. Of course, the questions are too short to give you *all* the information you might like, but give the best answer you can under the circumstances.
3. Answer *every* question one way or the other. Don't skip any.
4. You should mark the *a* or *c* answer *most* of the time. Mark the middle *b* answer *only* when you feel you have to, because neither *a* nor *c* seems to be right for you.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

Capsule Descriptions of the 16 Primary Personality Factors
(IPAT, 1979).

Low Score Direction

High Score Direction

FACTOR A

Reserved, Detached,
Critical, Cool, Impersonal

Warmhearted, Outgoing
Participating, Interested
in People, Easy-going

People who score low (sten of 1 to 3) on Factor A tend to be stiff, cool, skeptical and aloof. They like things rather than people, working alone, and avoiding compromises of viewpoints. They are likely to be precise and rigid in their way of doing things and in their personal standards. In many occupations, these are desirable traits. They may tend, at times, to be critical, obstructive, or hard.

People who score high (sten of 8 to 10) on Factor A tend to be goodnatured, easy-going, emotionally expressive, ready to cooperate, attentive to people, softhearted, kindly, adaptable. They like occupations dealing with people and socially impressive situations, and they readily form active groups. They are generous in personal relations, less afraid of criticism, better able to remember names of people.

FACTOR B

Less Intelligent,
Concrete-thinking
(Lower scholastic mental capacity).

More Intelligent,
Abstract-thinking, bright
(Higher scholastic mental capacity).

The person scoring low on Factor B tends to be slow to learn and grasp, dull, given to concrete and literal interpretation. This dullness may be simply a reflection of low intelligence, or it may represent poor functioning due to psychopathology.

The person who scores high on Factor B tends to be quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture, and some with alertness. High scores contraindicate deterioration of mental functions in pathological conditions.

FACTOR C

Affected by Feelings,
Emotionally Less Stable,
Easily Upset, Changeable

Emotionally Stable,
Mature, Faces Reality,
Calm, Patient

The person who scores low on Factor C tends to be low in frustration tolerance for unsatisfactory conditions, changeable and plastic, evading necessary reality demands, neurotically fatigued, fretful, easily annoyed and emotional, active in dissatisfaction, having neurotic symptoms (phobias, sleep disturbances, psychosomatic complaints, etc.). Low Factor C score is common to almost all forms of neurotic and some psychotic disorders.

The person who scores high on Factor C tends to be emotionally mature, stable, realistic about life, unruffled, possessing ego strength, better able to maintain solid group morale. This person may be making a resigned adjustment* to unsolved emotional problems.

*Shrewd clinical observations have pointed out that a good C level sometimes enables a person to achieve effective adjustment despite an underlying psychotic potential.

FACTOR E

Humble, Mild,
Accommodating, Easily Led,
Conforming

Assertive, Aggressive,
Authoritative, Competitive,
Stubborn

Individuals scoring low on Factor E tend to give way to others, to be docile, and to conform. They are often dependent, confessing anxious for obsessional correctness. This passivity is part of many neurotic syndromes.

Individuals scoring high on Factor E are assertive, self-assertive, self-assured, and independent-minded. They tend to be austere, a law to themselves, hostile or extrapunitive, authoritarian (managing others, and disregarding of authority).

FACTOR F

Sober, Prudent
Serious, Taciturn

Happy-go-lucky
Impulsively Lively,
Enthusiastic, Heedless

Low scores on Factor F tend to be restrained, reticent, and introspective. They are sometimes dour, pessimistic, unduly deliberate, and considered smug and primly correct by observers.

High scorers on this trait tend to be cheerful, active, talkative, frank, expressive, effervescent, and carefree. They are frequently chosen as elected leaders. They may be impulsive and mercurial.

They tend to be sober,
dependable people.

FACTOR G

Expedient,
Disregards Rules, Feels
Few Obligations

People who score low on Factor G tend to be unsteady in purpose. They are often casual and lacking in effort from group undertakings and cultural demands. Their freedom from group influence may lead to anti-social acts, but at times makes them more effective, while their refusal to be bound by rules causes them to have less somatic upset from stress.

Conscientious
Persevering, Proper,
Moralistic, Rule-bound

People who score high on Factor G tend to be exacting in character, dominated by sense of duty, persevering, responsible, planful, "fill the unforgiving minute." They are usually conscientious and moralistic, and they prefer hard-working people to witty companions. The inner "categorical imperative" of this essential superego (in the psychoanalytic sense) should be distinguished from the superficially similar "social ideal self" of Q3+.

FACTOR H

Shy, Restrained,
Threat-sensitive, Timid

Individuals who score low on this trait tend to be shy, withdrawing, cautious, retiring, "wallflowers." They usually have inferiority feelings and tend to be slow and impeded in speech and in expressing themselves. They dislike occupations with personal contacts, prefer one or two close friends to large groups, and are not given to keeping in contact with all that is going on around them.

Venturesome,
Socially bold, Uninhibited,
Spontaneous

Individuals who score high on Factor H are sociable, bold, ready to try new things, spontaneous, and abundant in emotional response. Their "thick-skinnedness" enables them to face wear and tear in dealing with people and grueling emotional situations without fatigue. However, they can be careless of detail, ignore danger signals and consume much time talking. They tend to be "pushy" and actively interested in the opposite sex.

FACTOR I

Tough-minded,
Self-reliant, Realistic,
No-nonsense

People who score low on Factor I tend to be tough, realistic, "down-to-earth" independent, responsible, but skeptical of subjective cultural elaborations. They are sometimes unmoved, hard, cynical, smug. They tend to keep a group operating on a practical and realistic "no-nonsense" basis.

Tender-minded, Intuitive,
Unrealistic, Sensitive

People who score high on Factor I tend to be emotionally sensitive, day-dreaming, artistically fastidious, and fanciful. They are sometimes demanding of attention and help, impatient, dependent, temperamental, and not very realistic. They dislike crude people and rough occupations. In a group, they often tend to slow up group performance and to upset group morale by undue fussiness.

FACTOR L

Trusting, Adaptable,
Free of Jealousy, Easy To
Get On With

The person who scores low on Factor L tends to be free of jealous tendencies, adaptable cheerful, uncompetitive, concerned about others, a good team worker. They are open and tolerant and usually willing to take a chance with people.

Suspicious,
Self-opinionated, Hard to
Fool, Skeptical, Questioning

People who score high on Factor L tend to be mistrusting and doubtful. They are often involved in their own egos and are self-opinionated and interested in internal, mental life. Usually they are deliberate in their actions, unconcerned about other people, and poor team members.

FACTOR M

Practical, Careful,
Conventional, Regulated by
External Realities

Low scorers on Factor M tend to be anxious to do the right things, attentive to practical matters, and subject to the dictation of what is obviously possible.

Imaginative, Careless
of Practical Matters, Uncon-
ventional, Absent-minded

High scorers on Factor M tend to be unconventional, unconcerned over everyday matters, self-motivated, imaginatively creative, concerned with "essentials," often absorbed in thought, and

They are concerned over detail, able to keep their heads in emergencies, but are sometimes unimaginative. In short, they are responsive to the outer, rather than the inner world.

oblivious of particular people and physical realities. Their inner-directed interests sometimes lead to unrealistic situations accompanied by expressive outbursts. Their individuality tends to cause them to be rejected in group activities.

FACTOR N

Forthright, Natural
Genuine, Unpretentious

Shrewd, Calculating,
Socially Alert, Insightful

Individuals who score low on Factor N have a lot of natural warmth and a genuine liking for people, are uncomplicated and sentimental, and are unvarnished in their approach to people.

Individuals who score high on Factor N tend to be polished, experienced, and shrewd. Their approach to people and problems is usually perceptive, hardheaded, and efficient, an unsentimental approach to situations, an approach akin to cynicism.

FACTOR O

Unperturbed, Self-assured, Confident, Secure, Self-satisfied

Apprehensive, Self-reproaching, Worrying, Troubled

Persons with low scores on Factor O tend to be unruffled, with unshakable nerve. They have a mature, unanxious confidence in themselves and their capacity to deal with things. They are resilient and secure, but to the point of being insensitive of when a group is not going along with them, so that they may evoke antipathies and distrust.

Persons with high scores on Factor O have a strong sense of obligation and high expectations of themselves. They tend to worry and feel anxious and guilt-stricken over difficulties. Often they do not feel accepted in groups or free to participate. High Factor O score is very common in clinical groups of all types.

FACTOR Q1

Conservative,
Respecting Established

Experimenting, Liberal,
Analytical, Likes Innovation

Ideas, Tolerant of
Traditional Difficulties

Low scorers on Factor Q1 are confident in what they have been taught to believe, and accept the "tried and true," despite inconsistencies, when something else might be better. They are cautious and compromising in regard to new ideas. Thus, they tend to oppose and postpone change, are inclined to go along with tradition, are more conservative in religion and politics, and tend not to be interested in analytical "intellectual" thought.

High scorers on Factor Q1 tend to be interested in intellectual matters and to have doubts on fundamental issues. They are skeptical and inquiring regarding ideas, either old or new. Usually they are more well informed, less inclined to moralize, more inclined to experiment in life generally, and more tolerant of inconvenience and change.

FACTOR Q2

Group Oriented,
A "Joiner" and Sound
Follower

Individuals who score low on Factor Q2 prefer to work and make decisions with other people and like and depend on social approval and admiration. They tend to go along with the group and may be lacking in individual resolution. They are not necessarily gregarious by choice; rather they might need group support.

Self-sufficient, Prefers
Own Decisions, Resourceful

Individuals who score high on Factor Q2 are temperamentally independent, accustomed to going their own way, making decisions and taking action on their own. They discount public opinion, but are not necessarily dominant in their relations with others (see Factor E); in fact, they could be hesitant to ask others for help. They do not dislike people, but simply do not need their agreement or support.

FACTOR Q3

Undisciplined Self-conflict,
Careless of Protocol, Follows
Own Urges

People who score low on Factor Q3 will not be bothered

Controlled, Socially
Precise, Following Self-
image, Compulsive

People who score high on Factor Q3 tend to have

with will control and have little regard for social demands. They are impetuous and not overly considerate, careful, or painstaking. They may feel maladjusted, and many maladjustments (especially the affective, but not the paranoid) show Q3.

strong control of their emotions and general behavior, are inclined to be socially aware and careful, and evidence what is commonly termed "self-respect" and high times tend, however, to be perfectionistic and obstinate. Effective leaders, and some paranoids, are high on Q3.

FACTOR Q4

Relaxed, Tranquil

Individuals who score low on Factor Q4 tend to be sedate, relaxed, composed, and satisfied (not frustrated). In some situations, their oversatisfaction can lead to laziness and low performance, in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance.

Tense, Frustrated

Individuals who score high on Factor Q4 tend to be tense, restless, fretful, impatient, and hard driving. They are often fatigued, but unable to remain inactive. In groups, they take a poor view of the degree of unity, orderliness, and leadership. Their frustration represents an excess of stimulated, but undischarged drive.

SECOND-ORDER FACTOR SCORES

FACTOR Q1

Introversion

The person who scores low on Factor Q1 tends to be shy, self-sufficient, and inhibited in interpersonal contacts. This can be either a favorable or unfavorable finding, depending upon the particular situation in which the person is expected to function, e.g., introversion is a favorable predictor of precision workmanship.

Extraversion

The person who scores high on this factor is a socially outgoing, uninhibited person, good at making and maintaining interpersonal contacts. This can be very favorable in situations that call for this type of temperament, e.g., salesmanship, but should not be considered necessarily favorable as a general predictor, e.g., of scholastic achievement.

FACTOR QII

Low Anxiety

People who score low on this factor tend to be those whose lives are generally satisfying and those who are able to achieve those things that seem to them to be important. However, an extremely low score can mean lack of motivation for difficult tasks, as is generally shown in studies relating anxiety to achievement.

High Anxiety

The people who score high on this factor are high on anxiety as it is commonly understood. They need not be neurotic, since anxiety could be situational, but it is probable that there are some maladjustments, i.e., they are dissatisfied with the degree to which they are able to meet the demands of life and to achieve what they desire. Very high anxiety is generally disruptive of performance, and productive of physical disturbances.

FACTOR QIII

Tender-minded Emotionally

Individuals who score low on Factor QIII are likely to be troubled by pervasive emotionality, and may be of a discouraged, frustrated type. They are, however, sensitive to the subtleties of life, likely to be artistic and rather gentle. If they have problems, they often involve too much thought and consideration before action is taken.

Tough Poise

Individuals who score high on this factor are likely to be enterprising, decisive, and resilient personalities. However, they are likely to miss the subtle relationships of life, and to orient their behavior too much toward the obvious. If they have difficulties, they are likely to involve rapid action with insufficient consideration and thought.

FACTOR QIV

Subduedness

People who score low on Factor IV are group dependent, chastened,

Independence

People who score high on this factor tend to be aggressive, independent,

passive personalities.
They are likely to desire
and need support from other
persons, and likely to
orient their behavior toward
persons who give such
support.

daring, incisive people.
They will seek those
situations where such
behavior is at least
tolerated and possibly
rewarded, and are likely
to exhibit considerable
initiative.

APPENDIX F

Instructor Evaluation Form

4061001-541

V P I & S U LEARNING RESOURCES CENTER

NAME	COURSE	DATE
INCORRECT MARKS ○ • X ✓	CORRECT MARK 1 2 ● 4	USE NO. 2 PENCIL

ID NUMBER	FORM	SEAT NO	GROUP
0 (0) 0 (0) 0 (0) 0 (0) 0	A	0 10 0	1
1 (1) 1 (1) 1 (1) 1 (1) 1	B	1 11 1	2
2 (2) 2 (2) 2 (2) 2 (2) 2	C	2 12 2	3
3 (3) 3 (3) 3 (3) 3 (3) 3	D	3 13 3	4
4 (4) 4 (4) 4 (4) 4 (4) 4	E	4 14 4	5
5 (5) 5 (5) 5 (5) 5 (5) 5	F	5 15 5	6
6 (6) 6 (6) 6 (6) 6 (6) 6	G	6 16 6	7
7 (7) 7 (7) 7 (7) 7 (7) 7	H	7 17 7	8
8 (8) 8 (8) 8 (8) 8 (8) 8	I	8 18 8	9
9 (9) 9 (9) 9 (9) 9 (9) 9	J	9 19 9	10

INSTRUCTOR EVALUATION - INST. NAME: _____
 Answer each question on a scale of
 ① - Not At All TO ⑩ - Yes, Definitely
 Your name will NOT be disclosed

DID THIS INSTRUCTOR:

1) DEMONSTRATE KNOWLEDGE OF THE COURSE SUBJECT MATTER?	1	1 2 3 4 5 6 7 8 9 10
2) USE A VARIETY OF TEACHING TECHNIQUES?	2	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
3) PLAN AND ADMINISTER MATERIAL AND EXPERIENCES EFFECTIVELY?	3	1 2 3 4 5 6 7 8 9 10
4) SHOW GOOD JUDGEMENT AND DECISION-MAKING SKILLS?	4	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
5) HELP YOU INDIVIDUALLY MEET YOUR GOALS?	5	1 2 3 4 5 6 7 8 9 10
6) DEMONSTRATE AN INTEREST IN YOUR NEEDS?	6	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
7) DEMONSTRATE TACT AND SENSITIVITY IN RELATIONS WITH YOU?	7	1 2 3 4 5 6 7 8 9 10
8) ACT AS A "ROLE MODEL" FOR YOU?	8	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
9) CONSISTENTLY USE GOOD LEADERSHIP TECHNIQUES?	9	1 2 3 4 5 6 7 8 9 10
10) CONSISTENTLY USE GOOD OUTDOOR TECHNICAL SKILLS?	10	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
11) CONSISTENTLY USE GOOD INTERPERSONAL SKILLS?	11	1 2 3 4 5 6 7 8 9 10
12) CONSISTENTLY USE GOOD TEACHING SKILLS?	12	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
13) RATE THIS INSTRUCTOR'S OVERALL EFFECTIVENESS - ① INEFFECTIVE - ⑩ VERY EFFECTIVE	13	1 2 3 4 5 6 7 8 9 10
USE THIS SPACE FOR ADDITIONAL COMMENTS	14	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
	15	1 2 3 4 5 6 7 8 9 10
	16	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
	17	1 2 3 4 5 6 7 8 9 10
	18	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
	19	1 2 3 4 5 6 7 8 9 10
	20	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
	21	1 2 3 4 5 6 7 8 9 10
	22	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10
	23	1 2 3 4 5 6 7 8 9 10
	24	1 (1) 2 (2) 3 (3) 4 (4) 5 (5) 6 (6) 7 (7) 8 (8) 9 (9) 10

PLEASE TURN OVER

Indicate this instructor's apparent personality traits in each category.

Example: This instructor seems to be: SAD 1 2 3 4 5 6 7 8 9 10 HAPPY

- | 26) | RESERVED | <input type="radio"/> 1 | VS | OUTGOING | <input type="radio"/> 10 | 26 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
|-----|---|-------------------------|----------------------|--------------------------|--------------------------|----|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
| 27) | DULL | <input type="radio"/> 1 | VS | BRIGHT | <input type="radio"/> 10 | 27 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 28) | AFFECTED BY FEELINGS | <input type="radio"/> 1 | VS | EMOTIONALLY STABLE | <input type="radio"/> 10 | 28 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 29) | HUMBLE | <input type="radio"/> 1 | VS | ASSERTIVE | <input type="radio"/> 10 | 29 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 30) | SOBER | <input type="radio"/> 1 | VS | ENTHUSIASTIC | <input type="radio"/> 10 | 30 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 31) | EXPEDIENT, DISREGARDS RULES | <input type="radio"/> 1 | VS | CONSCIENTIOUS | <input type="radio"/> 10 | 31 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 32) | SHY | <input type="radio"/> 1 | VS | VENTURESOME | <input type="radio"/> 10 | 32 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 33) | TOUGH-MINDED | <input type="radio"/> 1 | VS | TENDER-MINDED | <input type="radio"/> 10 | 33 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 34) | TRUSTING | <input type="radio"/> 1 | VS | SUSPICIOUS | <input type="radio"/> 10 | 34 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 35) | PRACTICAL | <input type="radio"/> 1 | VS | IMAGINATIVE | <input type="radio"/> 10 | 35 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 36) | UNPRETENTIOUS, GENUINE | <input type="radio"/> 1 | VS | ASTUTE, SUREW | <input type="radio"/> 10 | 36 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 37) | SELF-ASSURED | <input type="radio"/> 1 | VS | APPREHENSIVE | <input type="radio"/> 10 | 37 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 38) | CONSERVATIVE | <input type="radio"/> 1 | VS | EXPERIMENTING | <input type="radio"/> 10 | 38 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 39) | GROUP-DEPENDENT | <input type="radio"/> 1 | VS | SELF-SUFFICIENT | <input type="radio"/> 10 | 39 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 40) | UNDISCIPLINED, FOLLOWS OWN URGES | <input type="radio"/> 1 | VS | CONTROLLED | <input type="radio"/> 10 | 40 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 41) | RELAXED | <input type="radio"/> 1 | VS | TENSE | <input type="radio"/> 10 | 41 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| | Please rate the degree to which you achieved the following personal outcomes on your NOLS course. | | | | | 42 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 43) | SELF-CONFIDENCE | <input type="radio"/> 1 | NOT MUCH GAIN - | <input type="radio"/> 10 | GAINED A GREAT DEAL | 43 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 44) | OUTDOOR SKILL | <input type="radio"/> 1 | NOT MUCH GAIN - | <input type="radio"/> 10 | GAINED A GREAT DEAL | 44 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 45) | LEADERSHIP SKILL | <input type="radio"/> 1 | NOT MUCH GAIN - | <input type="radio"/> 10 | GAINED A GREAT DEAL | 45 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 46) | HOW IMPORTANT WAS THIS INSTRUCTOR IN ACHIEVING THESE GAINS? | <input type="radio"/> 1 | NOT VERY IMPORTANT - | <input type="radio"/> 10 | VERY IMPORTANT | 46 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 47) | HOW IMPORTANT WAS THE SMALL GROUP LIVING EXPERIENCE IN ACHIEVING THESE GAINS? | <input type="radio"/> 1 | NOT VERY IMPORTANT - | <input type="radio"/> 10 | VERY IMPORT. | 47 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |
| 48) | HOW IMPORTANT WAS THE NOLS CURRICULUM IN GAINING YOUR OUTCOMES? | <input type="radio"/> 1 | NOT VERY IMPORTANT - | <input type="radio"/> 10 | VERY IMPORTANT. | 48 | <input type="radio"/> 1 | <input type="radio"/> 2 | <input type="radio"/> 3 | <input type="radio"/> 4 | <input type="radio"/> 5 | <input type="radio"/> 6 | <input type="radio"/> 7 | <input type="radio"/> 8 | <input type="radio"/> 9 | <input type="radio"/> 10 |



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