This is to certify that the

dissertation entitled

"Factors Influencing Leadership Development In Wilderness Education"

presented by

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has been accepted towards fulfillment of the requirements for

Ph.D. degree in Park and Recreation Resources

Major professor

Date November 8, 1994

FACTORS INFLUENCING LEADERSHIP DEVELOPMENT IN WILDERNESS EDUCATION

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirement
for the degree of

DOCTOR OF PHILOSOPHY

Department of Park and Recreation Resources

1994

ABSTRACT

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This research identified factors in a wilderness course that contributed to the process of leadership development in wilderness education. The three objectives of the study were to a)assess short and long-term effects of self-efficacy on leadership development, b)evaluate gender differences in self-efficacy and the leadership development process, and c)propose and evaluate a path model that examined the relationships amongst feedback, goal attainment, mentoring, self-efficacy, and outdoor leadership development.

Oral histories were conducted with 19 students who completed a NOLS course within the last 5 years. Questionnaires were adminstered to 231 National Outdoor Leadership School (NOLS) participants from 1992 and 1993 summer wilderness courses in Wyoming. The questionnaires were administered immediately before (pretest) and after the course (posttest) completion. Anxiety was controlled for by measuring self-efficacy one month prior to testing. A one-year followup questionnaire was mailed to NOLS graduates to

assess the long-term effects that NOLS courses have on leadership development.

T-test results revealed that there were significantly higher self-efficacy scores at posttest than there were at pretest. Self-efficacy scores were significantly higher when controlling for anxiety. Scores also significantly decreased one year after the course, but not to the same level as the pre-course.

A path analysis revealed that feedback and mentoring most strongly contributed to students' self-efficacy. Mentoring was the most significant factor for enhancing female self-efficacy. Immediate feedback was the most significant factor for males. Regression analysis revealed a positive, but weak, relationship between self-efficacy and leadership development.

Path analysis also showed that the data did not fit the proposed path model of leadership development. The leadership development process was partially supported by self-efficacy and its correlates. Further investigation is needed to better explain the process of leadership development. Because the research revealed that females differ from males in leadership development, additional studies of gender differences are imperative. Particularly for females, anxiety reduction prior to wilderness course participation, could greatly enhance levels of self-efficacy.

ACKNOWLEDGEMENTS

A pleasureable part of finishing a dissertation is the opportunity to thank those people who have provided ideas, suggestions, editorial comments, encouragement and support along the way. First and foremost, I want to thank NOLS for the opportunity to develop this research to this extent and depth. This research would not have been possible without their financial support or the continued recognition from Del Smith, Jim Ratz, Chris Monz, and Molly Hampton. An extended thanks goes to those instructors and staff members who were willing to work with me during this process.

I want to thank my committee members Maureen McDonough, Margot Kurtz and Dan Ferguson for their interest in my research and for the feedback they provided throughout the writing of my dissertation. A special thanks goes to Dennis Propst, my advisor, colleague, and friend. I am most grateful for his belief in me as a successful doctoral candidate, and his unending patience, support and understanding from beginning to end.

I also want to thank Judy Johnson and Bette Harris from Longwood College for their administrative guidance and

mentoring. Their consistency provided me with the energy and encouragement to finish.

An acknowledgement cannot be complete without recognizing those fellow graduate students and friends for helping me make this process more manageable. Thank you Gail, Joan, Lora, Fang, Sue, and Julia for the solace and comradery often found at the Peanut Barrel. A special thanks goes to Nancy for her ideas, editorial suggestions, support and encouragement throughout this year. Her time and interest have been invaluable.

Last, but never least on my list, is to thank my Dad and the rest of my family for their love, encouragement and pride in my efforts throughout this program. God has blessed me with their support and I am infinitely grateful to them.

TABLE OF CONTENTS

Chapter V (cont'd.). Page

Appendices (cont'd.). Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Research related to outdoor adventure programs has been conducted since the 1950s (Ewert, 1989). Much of the research has revolved around three main areas (Ewert, 1989): a)therapeutic dimensions (i.e., people with disabilities, wilderness group therapy), b)individual/group behavior (i.e., reduced drop-out rates, long-term environmental attitudes), and c)psychological well-being (i.e., self-concept, self-esteem, locus of control). To date, research on outdoor adventure leadership has been sparse and inconclusive (Phipps & Swiderski, 1990). Operational definitions of leadership effectiveness are lacking, and the few studies that do exist are confined to less than a handful of master's theses (Easley, 1991). The two experimental research studies relevant to leadership are a thesis by McPeters (1976), which investigated group-centered/leader-centered leadership and another thesis by Baker (1975), who studied changes in leadership behavior in standard wilderness courses at the National Outdoor Leadership School (NOLS).

Wilderness courses in the U.S. may last as long as 120 days. Given the significant length of field time, there are a multitude of factors that influence individual outcomes on a wilderness course. These outcomes include interacting with the environment with comfort, establishing a philosophy for making choices and decisions, developing a consciousness for self-responsibility, respecting others and the environment, and attaining leadership skills. Although there are a variety of leadership training settings from which to select, many wilderness education programs use the natural environment to develop leadership skills. The length of time in the wilderness, the physical and emotional challenges (carrying heavy packs over rough terrain, stress due to the change in a student's everyday civilized/comfortable routine, etc.), and the interpersonal relationships encountered during a wilderness experience may influence students to develop behaviors and skills that are representative of leadership qualities. Some of these leadership qualities are physical fitness and skills, emotional maturity, patience, tolerance, concern for others, and self-confidence (Ford & Blanchard, 1985).

Klint (1990) indicates that research has provided greater understanding into the outcomes of the adventure/wilderness experience, but has revealed little clarification of the process. More specifically, what specific elements of the adventure experience produce which

results? How do these results influence future behaviors and outcomes independent of the adventure experience?

One of the outcomes that has been investigated as a result of participating in an outdoor adventure or wilderness education program is the attainment of leadership skills. The research that has been conducted discusses the characteristics and behaviors involved in becoming a good leader, but little of the research assesses the components that contribute to the "process" of developing leadership.

Many outdoor education authors (Cain, 1991; Ford & Blanchard, 1985; Petzoldt, 1984) articulate the view that leadership is the development of skills, knowledge and experience which contributes to competency and judgment in a variety of situations. Viewing leadership as a long term process underscores the importance of examining the antecedent variables involved in the process.

Study Purpose

The purpose of this research is to identify those factors in a wilderness course that contribute to leadership development in wilderness education. Leadership development is viewed as a process and the implications are that certain factors on a wilderness course will contribute to the overall process. Furthermore, this research explores the relationships among these factors, and, thus begins to

specify the process which leads to long-term leadership development.

At present, researchers have not investigated the theory of self-efficacy as part of the leadership development process. In this study, the theory of self-efficacy will be used to assess its relationship with leadership development. Self-efficacy is expected to contribute to the overall understanding of the process of developing leadership. The factors of feedback (amount and type), mentoring, and goal attainment are proposed to be additional key elements of the process. Feedback and goal attainment are noted as being positive influences on one's self-efficacy, and also components involved in the mentoring process. Therefore, self-efficacy is expected to mediate the influence of feedback, goal attainment, and mentoring on leadership development.

The literature review presented supports and interprets the various components of a proposed theoretical model of leadership development. The construct of leadership will be discussed by introducing some of the theories of leadership. Leadership will also be defined and discussed in terms of outdoor leadership. Although the discussion of outdoor leadership relates to the general field of outdoor education, the research more specifically centers around wilderness education. This is because the data will be collected from subjects participating in a wilderness

program in which most educational activities take place in a wilderness environment. The distinction between wilderness and outdoor education is described in the next chapter. A discussion of the theory of self-efficacy and its determinants will clarify the proposed wilderness leadership developmental process.

CHAPTER II

REVIEW OF LEADERSHIP AND RELATED CONCEPTS

This chapter reviews the literature on leadership and justifies the study problem. An overview of the literature on leadership in general, followed by a synopsis of leadership in outdoor and wilderness settings will provide a framework from which to better understand and express the purpose for selecting the theoretical foundation and independent variables. This chapter concludes with the statement of the problem followed by the study objectives.

Leadership

Leadership Theories

According to Fairholm (1991), there are as many lists of definitional characteristics of leadership as there are writers on the subject. One of the major problems that underlies leadership research is the ambiguity in definition and measurement of the concept itself (Rosenbach & Taylor, 1984). Due to the many definitions of leadership, it is difficult to agree upon one that is broad enough to encompass all interpretations and specific enough to create

a functional guide to operationalizing the concept (Karmel, 1984).

Fairholm (1991) states that the three most well-known models of leadership over the past one hundred years are trait theory (who the leader is), behavioral theory (what the leader does), and situational theory (where leadership takes place). Trait theory recognizes leaders with unique personality qualities and character. Although some traits appear to be important for leadership, it is hard to identify common traits. No study reveals one specific trait that is apparent for all leaders. In other words, traits alone do not distinguish leaders from nonleaders. In more recent studies, it was found that some traits can differentiate leaders from followers, effective from ineffective leaders, and successful from unsuccessful leaders (Fairholm, 1991). However, trait theory, as well as other theories fail to explain the variance relative to factors influencing leadership (Stogdill, 1974).

The behavior theory of leadership was developed after trait theory because of the ambiguity in identifying leadership through various personality traits. The attempts to observe behaviors was intended to be easier and more operationally useful. However, the focus was still too narrow and it did not consider situational factors (Fairholm, 1991). Although the behavior theory is based on

strong theoretical foundations, its ability to predict behavior remains weak.

The situational theory of leadership is the most commonly accepted theory today (Fairholm, 1991). Whereas trait theory states that personality traits alone impact leadership effectiveness, situational theory states that it is the situation, in addition to traits, that determine leadership effectiveness. These situations include the location at which leadership occurs and the task requirements. More specifically, situational leadership involves the amount of direction (task behavior) and socio-emotional support (relationship behavior) a leader must provide, given the situation and willingness of her or his followers (Hershey and Blanchard, 1982). In this context "willingness" refers to personal responsibility for directing one's own behavior. For example, a wilderness experience presents a variety of tasks and experiences that enable a student to develop leadership. Even though a student may not consider her/himself a leader at home or at school, the wilderness environment and tasks involved provide a student the opportunities to develop leadership skills which carry over into other domains.

In addition to the three most well-known models of leadership, contingency theory, developed by Fiedler, is closely aligned with situational theory of leadership in that leadership changes with the situation (Fairholm, 1991).

Different from the other models, Fiedler places significance on effectiveness. The basic premise is to match the leader's personality with the situation most favorable for her or his success (Fiedler, 1965). Fairholm (1991) and Rosenbach & Taylor (1989) relate that leadership effectiveness is contingent upon the situation and the personality that matches that situation. Fiedler measures effectiveness by three situational conditions; a)leader-member relations (how well the leader is accepted by members), b)task structure (the degree to which follower tasks are programmable), and c)position power (the formal authority the leader holds). He found that task-motivated leaders perform best in situations in which all three factors are either high or low, and conditions are either favorable (leader effectiveness and subordinate motivation are balanced) or unfavorable (leader effectiveness and subordinate motivation are unbalanced).

Criticism of Fiedler's contingency theory centered around the fact that there are certain aspects of the situation or job that are not necessarily dependent on leadership effectiveness. For example, factors such as training, clear job descriptions and intrinsically motivating performance may cancel out the need for leadership (Rosenbach & Taylor, 1989). Researchers have yet to adequately explain the discrepancy in these situational factors (Rosenbach & Taylor, 1989).

The four leadership theories just discussed provide an understanding of the history of leadership and attempts to define and operationalize the term. A key consideration lacking in all four theories seems to be the recognition of leadership as a process.

Leadership As A Process

There are many definitions of leadership that highlight the relationship between a leader and an individual or group. The term "leadership" is commonly used to describe the act of guiding, or directing others toward a mutual objective (Kraus, 1985). According to Tannenbaum and Massarik (1957), leadership can be defined as: "an interpersonal influence, exercised in situations and directed, through the communication process, toward the attainment of a specified goal or goals (p. 91)." Leadership involves communication between people (e.g., mentor and protege) which potentially provides an opportunity for feedback and goal attainment to occur. The key word in this definition is "process," which appears in many leadership definitions, and reflects an integral part of the definition of leadership. The interpretation of the term "process" is that leadership is not something that happens automatically. Rather, through the process of communication, feedback, and goal attainment over time, one

can develop a method and style of leadership that is effective and successful for her/him.

In respect to developing leadership through a wilderness experience, Klint (1990) suggests assessing the "process" of a wilderness experience first. This will, in turn, lend greater understanding to the results of that experience. Furthermore, the two most supported theories of leadership, situational and contingency theories, both emphasize the need for defining leadership in the context (or situation) in which it occurs. Thus, it is important to focus on a formal wilderness experience that clarifies the leadership process in a wilderness setting. By identifying the specific elements of a wilderness experience that contribute to leadership development over time, a clearer understanding of the process of becoming a wilderness leader should emerge.

Outdoor Leadership

For the purposes of this dissertation, wilderness education is considered a subset of outdoor education. The distinction is that outdoor education encompasses a broader range of education (day camps, park and recreation programs, etc.), whereas wilderness education is limited to those educational experiences related to activities and pursuits located in specific wilderness settings (e.g., mountaineering, rock climbing, backpacking, snow work).

Wilderness education most often refers to an expedition style (two or more weeks in the field) of leadership. Although some of the literature refers to outdoor adventure or outdoor education leaders, the data in this study will more specifically pertain to wilderness education leaders. Since much of the difference between outdoor education and wilderness education is a matter of semantics, the results of this research will be relevant for both and the two terms will be used interchangeably.

Some researchers suggest that there are a variety of elements in a wilderness/adventure experience that contribute to a participant's effective leadership (i.e., skill performance, motivation, physical fitness, healthy self-concept, personality traits, concern for others, ability to inspire others, and ability to understand participants' needs) (Ford & Blanchard, 1985; Priest, 1991). Other researchers contend that judgment and decision-making abilities are primary characteristics of competent outdoor leadership (Cain, 1985; Priest, 1991; Hunt, 1984; McAvoy, 1980; Petzoldt, 1984). Cain and McAvoy (1990) conducted a study assessing the significance of development, evaluation, and documentation on judgment and decision-making abilities in students and practitioners in the field of outdoor leadership. They found that judgment and decision making abilities are evaluated through the process of an instructor/mentor evaluating the student, through written

appraisals, and through ongoing, structured, and cumulative feedback by instructors/mentors over a period of time. By allowing for ongoing appraisals, evaluations and feedback, Cain and McAvoy (1990) purport that the mentoring process provides the greatest influence on the potential for students to develop into wilderness education leaders.

Leadership Development

While some of the literature discusses theories of leadership and characteristics of a leader (i.e., personality traits, situational factors, behavioral traits), there are some authors who believe that leadership, particularly outdoor leadership, is a continual process of experiences (March, 1987; Green, 1990; Raiola, 1990; Rosenbach & Taylor, 1984; Swiderski, 1981). Combining these two lines of research, leadership would be considered a developmental process of experiences in which some of the outcomes are contingent upon personality, situations, and/or behavioral characteristics. In addition to personality, situations and behavior, Raiola (1990) adds that the two essential components to leadership development are training and education. Raiola (1990) further contends that one can gain proper knowledge and skills through continual training and education in outdoor related experiences. Ford and Blanchard (1985) suggest that experience as a participant and as a leader in outdoor pursuits, along with successful

completion of courses and workshops in outdoor skills are also important ingredients to competency in outdoor leadership. Green (1990) contends that outdoor leaders should have a grounding in leadership ethics which can be acquired and learned through reading, attending seminars, and networking with other professional outdoor leaders.

Training, education, competency and experience lead to good judgment, a factor found to be related to leadership development in a number of studies (Ford & Blanchard, 1985; Green, 1990; Raiola, 1990). Judgment is based on acquiring the skills, knowledge, and experience that are necessary for leading a safe and enjoyable outdoor trip (Cain, 1985, Green, 1981, McAvoy, 1980; Petzoldt, 1984; Swiderski, 1981).

Developing judgment is also viewed as an ongoing, temporal process. Similar to the concept of leadership, judgment has also been difficult to measure due to the subjective nature of the construct. Cain & McAvoy (1990) found the following to be important in the development of judgment: a)experience in a variety of environments and seasons, b)experience under a variety of instructors, c)experience in outdoor related jobs, d)opportunities for students to lead in certain outdoor situations and e)receiving written and formal evaluations of performance.

In essence, the literature on outdoor leadership contributes to the overall body of literature on leadership. The outdoor leadership literature acknowledges the

significance of personality traits, behavior, and the situation, but places more emphasis on developmental skills (judgment and decision making), mentoring, and ongoing feedback as valuable components of leadership development. This literature supports the idea that leadership is not an end in itself. There are no concrete measures or absolute certainties that an individual has achieved leadership (Miles, 1987). Rather, leadership development is considered an ongoing process which is preceded by certain personality and situational factors. The degree of leadership development is a function of the process which requires active involvement in a variety of outdoor related experiences such as classes, workshops, personal experiences, reading, leadership responsibilities, and past outdoor related jobs (Cain & McAvoy, 1990; Ford, 1985; Green, 1990). Active involvement in such experiences leads to better judgment, a prerequisite of effective outdoor leadership (Figure 1).

Although leadership theories have continually improved over time, there still remains the dilemma of defining and operationalizing the term. Leadership may not be a definitive construct with clearly agreed upon measures of success or effectiveness (Rosenbach & Taylor, 1989), but the search continues for the latent variables and the process that will increase the probability of an individual becoming an effective leader. The conceptualization in Figure 1

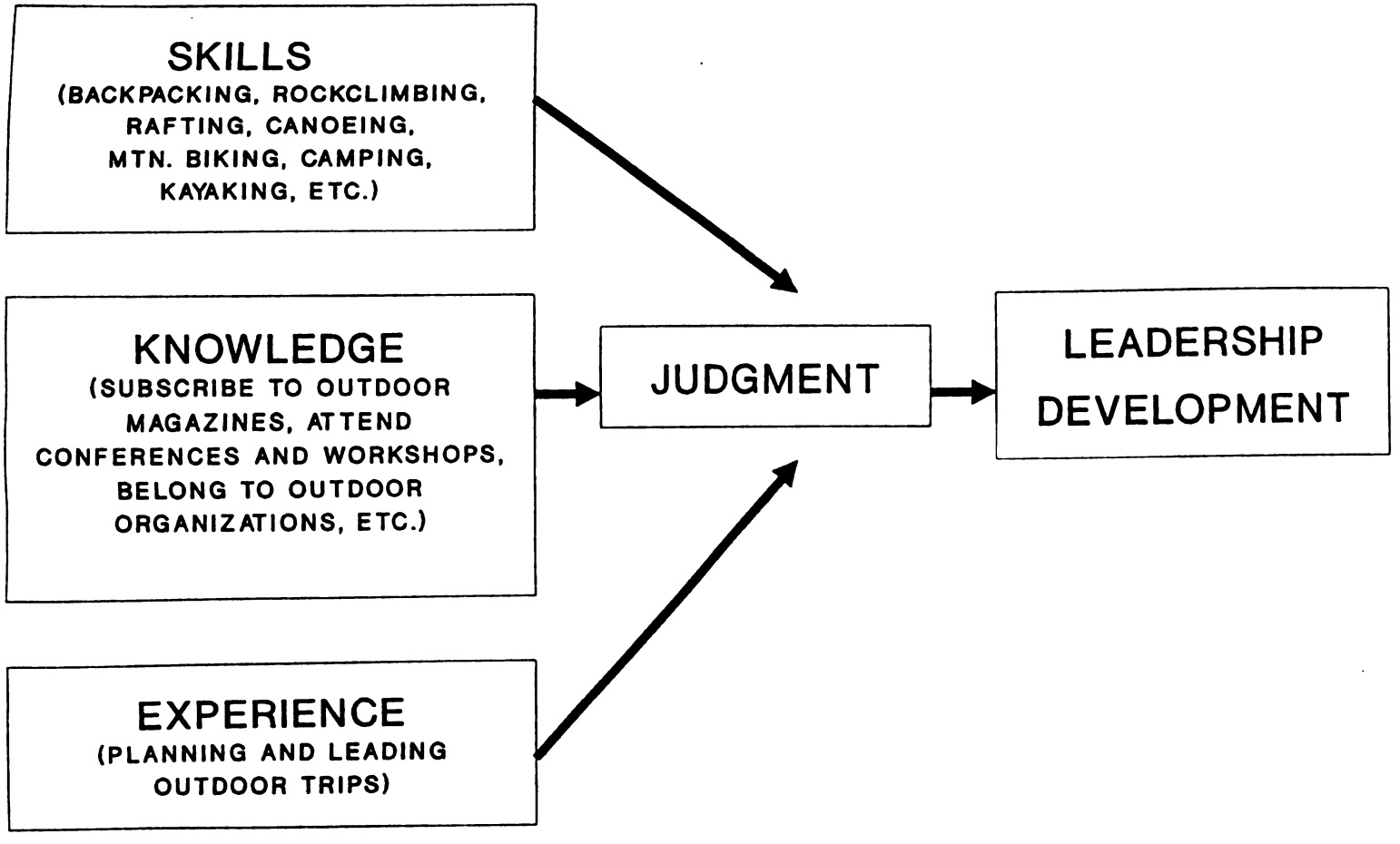


FIGURE 1. DEVELOPMENT OF OUTDOOR LEADERSHIP

provides a rationale, with some empirical support, for an operational definition of leadership based on levels of experience, skills and knowledge.

Even though the nature and extent of leadership after an extended wilderness course is largely unknown, adventure recreation practitioners tend to agree that participants who complete a wilderness experience/course with feelings of competence and skill enhancement are more inclined to continue in some form of outdoor recreation (Ewert, 1989). Although Ewert (1989) does not make reference to leadership, the continued involvement in outdoor recreation may lead one to develop leadership abilities.

Statement Of The Problem

A primary goal of most wilderness education programs is for students to continue their involvement in wilderness education. Continued involvement often leads to the development of leadership in wilderness skills and experiences. According to many researchers, the accumulation of skills, knowledge and experience contributes to judgment which aids in operationalizing the term leadership. That is, one cannot acquire the judgment necessary for leadership development unless a person continues her/his involvement in wilderness education.

Research on leadership outcomes resulting from outdoor programs is practically nonexistent (Easley, 1991). There

is little assessment of the degree to which graduates continue their involvement in wilderness education, either as a career or as a voluntary activity. Uncertainty exists as to whether or not desired long range leadership development outcomes have been achieved. Furthermore, the literature identifies the need to investigate the "process" by which certain outcomes are achieved rather than centering attention on the "product" (the outcomes of an extended wilderness experience, Klint, 1990).

The problem of this study is to propose and evaluate a theoretical model which identifies the components of the process by which wilderness leadership development occurs.

In the following pages, factors which contribute to leadership development in wilderness education will be discussed. One such factor, self-efficacy, is a theory used widely across many disciplines to determine the effects it has on success and future development for students. In addition to self-efficacy, other key components to the leadership development process are mentoring, goal attainment and feedback. These variables will be incorporated into a model which links self-efficacy to the overall leadership development process.

CHAPTER III

REVIEW OF SELF-EFFICACY LITERATURE AND DEVELOPMENT OF THEORETICAL MODEL

Self-Efficacy

According to Bandura (1977), self-efficacy refers to personal judgments of one's capability to act in specific situations that may contain novel, unpredictable, and potentially stressful encounters. More specifically, how confident does a person perceive her/himself to be in performing a task/skill of varying difficulty? Since this assessment may provide the opportunity to determine future performance, self-efficacy is a highly recommended theory of human behavior in outdoor adventure pursuits (Ewert, 1989). Researchers in many different fields have applied Bandura's theory. Self-efficacy theory has provided a conceptual framework in which to understand behavior and provide explanation of one's success and/or continued involvement in an activity. Behavioral domains investigated include achievement behavior (Collins, 1982; Schunk, 1984), high risk sports (Brody, et.al. 1988), career development (Hackett & Betz, 1981), pain tolerance (Litt, 1988), physical education and sports (Feltz, 1983; McAuley, 1983),

adjustment to abortion (Major, 1990), and leisure socialization (Hoff and Ellis, 1992). These studies have revealed that self-efficacy has a positive impact on one's success, confidence, and future development. However, according to Klint (1990), there has been only one published study that has applied Bandura's theory to the adventure experience. Brody, Hatfield, & Spalding (1988) were interested in the generality of the self-efficacy construct by investigating levels of self-efficacy generated by rappelling. In essence, they wanted to determine if rappelling was not only generalizable to other high risk sports (i.e., rock climbing, scuba diving, etc.) but also to everyday stressful situations such as speaking in front of a group and/or coping with test anxiety. Brody, et.al., (1988) found that the self-efficacy levels developed by rappelling were generalizable to other high risk sports but did not generalize to everyday stressful encounters.

Bandura (1982) states that perceptions of one's self-efficacy can affect how much effort people will expend and how long they will persist in the face of obstacles or aversive conditions. Self-efficacy plays a role in self-motivation. Those who perceive themselves as highly efficacious in achieving their goals tend to extend their efforts even when they fail at performing a task. In other words, persons will continue to persist and maintain motivation until they succeed. Persons with low self-

efficacy tend to be discouraged by failure. Therefore, their motivation decreases toward obtaining their designated goal. In short, those who judge themselves as highly efficacious will expect favorable outcomes, whereas those who doubt their ability will expect average performances of themselves and often obtain negative outcomes (Bandura, 1977; 1986).

Bandura (1977, 1986) bases perceived efficacy levels on four principal sources of information: performance attainment, vicarious experiences, verbal persuasion, and physiological states. Performance attainments in wilderness education provide the most influential information on one's efficacy strength (McGowan, 1986). In essence, successes in skills increase efficacy judgments, and repeated failures lower them. It is important to attain success early in order to build a strong self-efficacy. Occasional failures after a successful performance are unlikely to have an effect on judgments of one's capabilities (Bandura, 1986).

According to McAuley and Gill (1983), self-efficacy appears to be situation specific. In other words, a person may perceive her/himself to be highly efficacious in one task, but less efficacious in a different task. The situation is not to be confused or correlated with experience. Experience is what is obtained from and within a particular situation. For example, a situation may include the environment, setting, and group dynamics,

whereas the experience is what is gained/learned from a given situation (e.g., "the experience was good, given the situation").

A diving study conducted by Feltz and Mugno (1983), revealed that self-efficacy in the first trial of a diving performance was a direct result of a previous diving performance. However, after the first trial dive, self-efficacy became the mediating variable between one's perception of her/himself to perform diving and actual diving performance. As each trial was completed, the direct influence of self-efficacy decreased and one's previous performance became the most influential factor in future performances. According to Bandura's theory (1977), self-efficacy acts as a link between past performance and future performance. Previous performance on a task was found to be a major predicator of performance in the future. Feltz (1982) found that performance had a more powerful impact on self-efficacy than self-efficacy had on performance.

Career development and choice are other concepts that relate self-efficacy to future performance. For example, there are a variety of instruments (personality inventories, career interest inventories, etc.) that have made predictions of career choice. Collins (1982) found that perceived self-efficacy predicted occupational choice better than ability. The higher the level of self-efficacy, the larger the window of career options and the greater the

interest shown (Bandura, 1986). In addition, Hackett and Betz (1981) proposed that through socialization experiences, individuals develop self-efficacy beliefs about their ability to perform in various occupations. To illustrate, women may not view male-dominated occupations (e.g., wilderness educator, carpenter, construction worker) as gender inappropriate as much as they might perceive themselves to lack the ability to perform efficaciously or confidently in these occupations because of their gender.

Observing and visualizing peers, course members, coaches and instructors performing successfully can enhance one's level of efficacy. Observers can develop the belief that they too possess the capabilities to master similar activities through vicarious experiences (Bandura, 1986). According to a study conducted by Weinberg, Grove and Jackson (1992), modeling was also an important component to increasing self-efficacy. Although other research supports the idea that peer as well as instructor/coach modeling are important, in this study modeling from the tennis coaches was more important. It was indicated that this may be due to the fact that coaches see and work with students on a daily basis. Therefore, modeling from the coach became more apparent.

On a wilderness course, each student has the opportunity to view other students performing a task. Each student also takes mental notes of how instructors are

behaving, performing, and interacting with the group and the natural environment. According to self-efficacy theory, the observer then makes judgments of her/his efficacy based on the observed performances and behaviors of others. In this situation, peers as well as instructors may act as significant models in influencing a student's self-efficacy.

Verbal persuasion may be used to convince people that they have the skills and strength to accomplish their goals. Through feedback, verbal persuasion can be one technique used for changing one's efficacy when the outcome she/he seeks is achieved. In a recent study, one of the most effective techniques used by coaches to enhance performance of Australian tennis players was frequently using rewarding statements (e.g., "you can do it!") and verbal persuasion (Weinberg, et. al., 1992). Other techniques that proved to be most effective in strengthening self-efficacy in this study were positive self-talk, the ability to model confidence, and the use of instruction and drills.

People tend to trust evaluations and feedback from those who are skilled in the activity (i.e., instructor, coach, teacher, excelled students). However, when the persuasion is given without background knowledge and insight into a student's ability to actually succeed at a task, it is likely to create self-doubt in addition to decreased trust in the one who is providing the feedback (Bandura, 1986; McGowan, 1986). It is important to provide accurate,

immediate and specific feedback in order for desired performance to take place.

People tend to rely on information and past experiences to judge their physiological capabilities (i.e., fear, anxiety, emotional strength, physical stamina). If the information generates more fear and the challenges are beyond one's capabilities, then people tend to arouse themselves to levels of distress that debilitate their future actions. For example, Czikszentmihalyi (1976) discusses the implications of the theory of "flow." Flow is a state of mind where one's thoughts are only on the task/activity at hand. The involvement in the task/activity is such that time as well as all other thoughts appear to be non-existent. In essence, when a person perceives her/his ability to be more than the task requires, boredom results. On the other hand, when a person perceives her/his ability to be less than what the task is demanding, anxiety sets in. However, when one's ability matches the task demands, "flow" occurs. Therefore, experiences and tasks that eliminate anxiety from a subjective state of perceived risks can heighten self-efficacy along with improving one's performance (Bandura, 1986; McGowan, 1986).

In addition to past performance as a strong predictor of future performance, Feltz and Mugno (1983) also found that physiological arousal (e.g., anxiety) predicted performance. They found that heart rate (measurement of

physiological arousal) before performing a back-dive in the first out of four trials was a strong predictor of performance, and that self-efficacy acted as the mediating variable between anxiety and performance. In this instance, anxiety helped the person to perform the task. According to flow theory, it is best to obtain a balance between anxiety and boredom. The construct of flow does not indicate that anxiety, to some degree, is counter-productive. Rather, it states that an over-abundance of anxiety can reduce one's level of confidence and the desire to want to engage in the activity.

To summarize, research (Bandura, 1977, 1986) indicates that factors such as feedback (amount and type) and goal attainment have an impact on a person's level of self-efficacy. In addition, mentoring, which involves the elements of feedback and goal attainment, is suggested as having a strong impact on one's self-efficacy. Each of these factors corresponds to three out of Bandura's four sources of information described above. Performance attainment corresponds to goal attainment, vicarious experiences are provided via mentoring and verbal persuasion is closely related to feedback. The following section is a discussion of these three factors and their potential relationship to the leadership development process. Anxiety, a physiological state found to be influential in

one's performance, will be incorporated into the research design of this study.

Feedback

Feedback can be a significant factor in developing higher levels of self-efficacy, particularly in situations where students are unable to judge their own performance (Bandura, 1986). According to Porthan (1989), feedback is a mature and supervisory process that occurs throughout a wilderness course. Feedback is concurrent with teaching. Appropriate feedback can support the teaching efforts of the teacher and the learning process for the student. Lenny (1977), reports that when feedback is immediate, objective and accurate, gender differences are not likely to occur in self-confidence. However, when minimal or ambiguous feedback is given, females often have lower self-confidence than males (Lenny, 1977). In other words, feedback, when it is available, can be used to increase one's feeling of efficacy (Petruzzello, 1986). Petruzzello (1986) found that positive feedback appears to give subjects a positive value judgment of performance.

Rink (1985) states that feedback is often viewed as a function of motivation. Without information from feedback, students may lose interest in continuing a task. Immediate feedback occurs right after the performance, and delayed feedback occurs after some time interval. If the feedback

is delayed to the point where the performance is forgotten, then the benefit that feedback provides will tend to be minimal.

Goal Attainment

According to Bandura and Schunk (1981), pursuing proximal goals and achieving them develops a sense of self-efficacy and increases motivation. Explicit goals are more likely than vague intentions to influence engagement in any given activity. If the goal is deemed to be challenging, and the individual is successful at accomplishing the goal, it is likely that the student will continue in the activity. Bandura (1986) states that a sense of mastering challenges and accomplishing goals is likely to generate greater interest in the activity. Therefore, achieving goals enhances self-efficacy (Bandura, 1977).

Mentoring

In addition to feedback and goal attainment, mentoring seems to receive strong support for increasing self-efficacy. A mentoring relationship consists of two persons: a mentor and a protege (Beeler, 1988). According to Bolton (1980), a mentor is a person who personalizes the modeling influences for the protege by a direct involvement not necessarily provided by a role model. Specifically, a person can be a role model without being a mentor (Jeruchim

and Shapiro, 1992). A role model is one who exhibits behaviors, values, professionalism and competence that a protege looks up to and admires (Jeruchim and Shapiro, 1992). In many cases of role modeling, no personal relationship develops.

The protege is a person receiving guidance and direction from the mentor (Beeler, 1988). A relationship seems to develop due to the potential the mentor sees in the protege. The protege likes and trusts the mentor and respects her/his accomplishments and skills. There is evidence that suggests a strong linkage between mentoring and career success for both genders (Bahniuk, et al, 1990).

According to Redmond (1990) and Jeruchim & Shapiro (1992), there are three types of mentoring: natural, planned, and symbolic. Natural mentoring occurs when there is a natural mutual liking and respect between two people. To some degree, emotional involvement is a characteristic for natural mentoring to exist. Planned mentoring is when a person in authority or seniority is assigned to a person with less experience to serve as a mentor. There is evidence that suggests this type of mentoring to be a very valuable approach to motivation and success in an organization (Redmond, 1990). Symbolic or fantasy mentors can be very inspirational, particularly for women. They can be mythical figures, historical figures, and pioneers or someone prominent a woman admires in her profession

(Jeruchim and Shapiro, 1992). Similar to role modeling, symbolic mentoring can be a very motivating and supportive technique for women.

In addition to being a role model, the mentor acts as a guide, protector, coach, friend, sponsor, and teacher (Jeruchim and Shapiro, 1992). In wilderness education programs, a successful mentoring process can be defined as establishing a rapport between student and instructor, encouraging the establishment of goals, offering guidance on continuing performance, and providing periodic feedback. According to Redmond (1990), the most important element to the mentoring process, is the interaction between the mentor and protege. Some wilderness instructors design their courses so that each student is assigned to one of the three instructors serving as a mentor (planned mentoring). Although that particular instructor may not actually result in being the "natural" mentor to that student, the process enhances the opportunity for mentoring to take place.

Although mentoring serves as a powerful asset to both females and males on wilderness courses, there is some evidence to suggest that having female instructors on wilderness courses serving as mentors (planned, natural, symbolic or some combination of all three) can raise levels of self-efficacy for women. That is, evidence exists for an interaction between gender and mentoring. For example, Bolton (1980), acknowledges that same-sex role models (women

mentors guiding women proteges) were reported as more important for women. Furthermore, the advantages of women mentoring women or having the opportunity to interact and share experiences and knowledge can have an impact on future success (Luna & Cullen, 1990). According to Ragins and McFarlin (1990), female proteges with female mentors were more likely to agree with the idea that their mentors served a role modeling function. Thus, having appropriate mentor relationships, may have an influence on students' eventual outcomes as leaders or future involvement in wilderness education.

Theoretical Model

Figure 2 is a theoretical model of the general components of leadership development in this study. The figure integrates the literature on leadership and self-efficacy with the elements that influence both self-efficacy and wilderness leadership development. Currently, there is no connection between these bodies of literature. The proposed theoretical model is intended to minimize the ambiguity in defining leadership and add to the understanding of the leadership development process.

The structure of Figure 2 indicates that a typical wilderness course consists of a group of people who bring

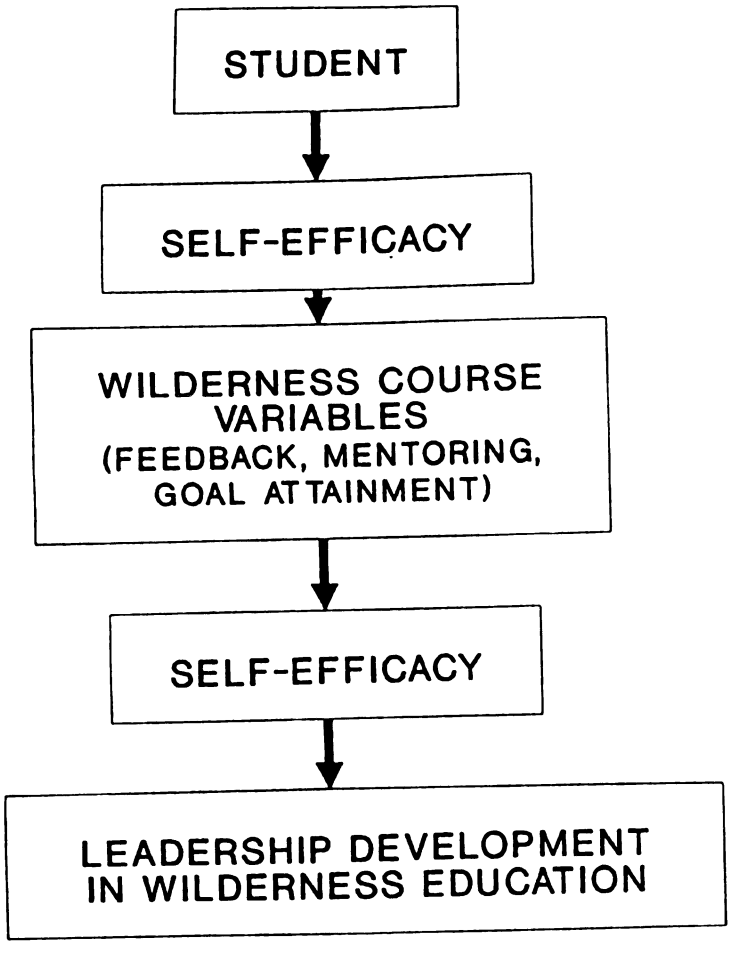


FIGURE 2. THEORETICAL MODEL OF LEADERSHIP DEVELOPMENT

with them a multitude of physiological states, personal characteristics, and background experiences that are influenced by other group members' characteristics. The literature purports that personal characteristics (personality, age, gender, background experiences) impact both leadership and self-efficacy (Bandura, 1986; Fairholm, 1991). Situational leadership involves an interaction between personal characteristics and the environment. Before a student begins a wilderness course, she/he has developed a level of self-efficacy which has been shaped and influenced by these personal characteristics, environment and background experiences.

Throughout the wilderness course, a student's level of self-efficacy is combined with a variety of other factors that she/he is exposed to during her/his experience. The most significant factors are mentoring, feedback (amount and type), and goal attainment (Figure 2). The literature previously reviewed indicates that these factors have a positive influence on additional levels of self-efficacy. Furthermore, a heightened level of self-efficacy is noted as having an influence on success and leadership development. Earlier, leadership development was shown to be a function of continued involvement in experiences and activities that improve one's skills, knowledge, and competencies (Figure 1). Since leadership is dynamic and is affected by the situation and the environment (Fairholm, 1991), and since

skills, knowledge and experience develop the judgment necessary for leadership to occur, self-efficacy and its correlates may be the forces underlying the process toward leadership development.

Summary

The purpose of Chapters 2 and 3 was to provide an overview of the literature of factors that contribute to leadership development. The literature recognizes that leadership is an ambiguous term that researchers find difficult to define and operationalize. Much of this is due to the fact that leadership is contingent on the environment and situation in which it is displayed. Furthermore, because leadership is said to be developmental, it is difficult to determine the actual "stage" one is at in the process. The outdoor leadership literature suggests that skills, knowledge, and experience, due to their influence on judgment, facilitate progress toward the development of leadership. Although there have been attempts to operationalize leadership, there continue to be questions and concerns about methods and procedures of measuring leadership. Researchers recommend investigating the components of an outdoor or wilderness experience that may influence the outcomes of the experience rather than only looking at the outcomes (Klint, 1990). The literature suggests that the components of feedback, goal attainment

and mentoring, due to their influence on self-efficacy, are likely to have a positive impact on leadership development.

Research Objectives

The following are the broad objectives of this study:

Objective 1. To assess the short and long-term effects of self-efficacy on leadership development.

Objective 2. To evaluate gender differences in self-efficacy and in outdoor leadership development.

Objective 3. To propose and evaluate a path model. There are two related parts to this objective:

a. To determine the relationships between independent variables (feedback, goal attainment, mentoring) and self-efficacy.

b. To investigate the relationship between self-efficacy and outdoor leadership development.

CHAPTER IV

PROPOSED PATH MODEL AND RESEARCH QUESTIONS

This chapter presents the path model to be evaluated. Discussion of model components and their relationships will be followed by the path model propositions and research questions which were formulated from the objectives of this study.

Figure 3 is the path model depicting the key variables and their interrelationships based on the literature reviewed. A path model illustrates the flow of cause and effect (Turner & Stevens, 1971). More specifically, it is a map of the variables that measure the cause of events at each point in the process (Hunter, 1987).

The independent variables of feedback, goal attainment and mentoring are exogenous variables. Exogenous variables are predetermined variables from the literature. Furthermore, there is no purpose for discussing factors that effect or cause exogenous variables (Pedhazur, 1982). That is, the variability in exogenous variables is thought to be determined by factors (i.e., residual) outside of the causal model and, thus, are not included in the causal chain.

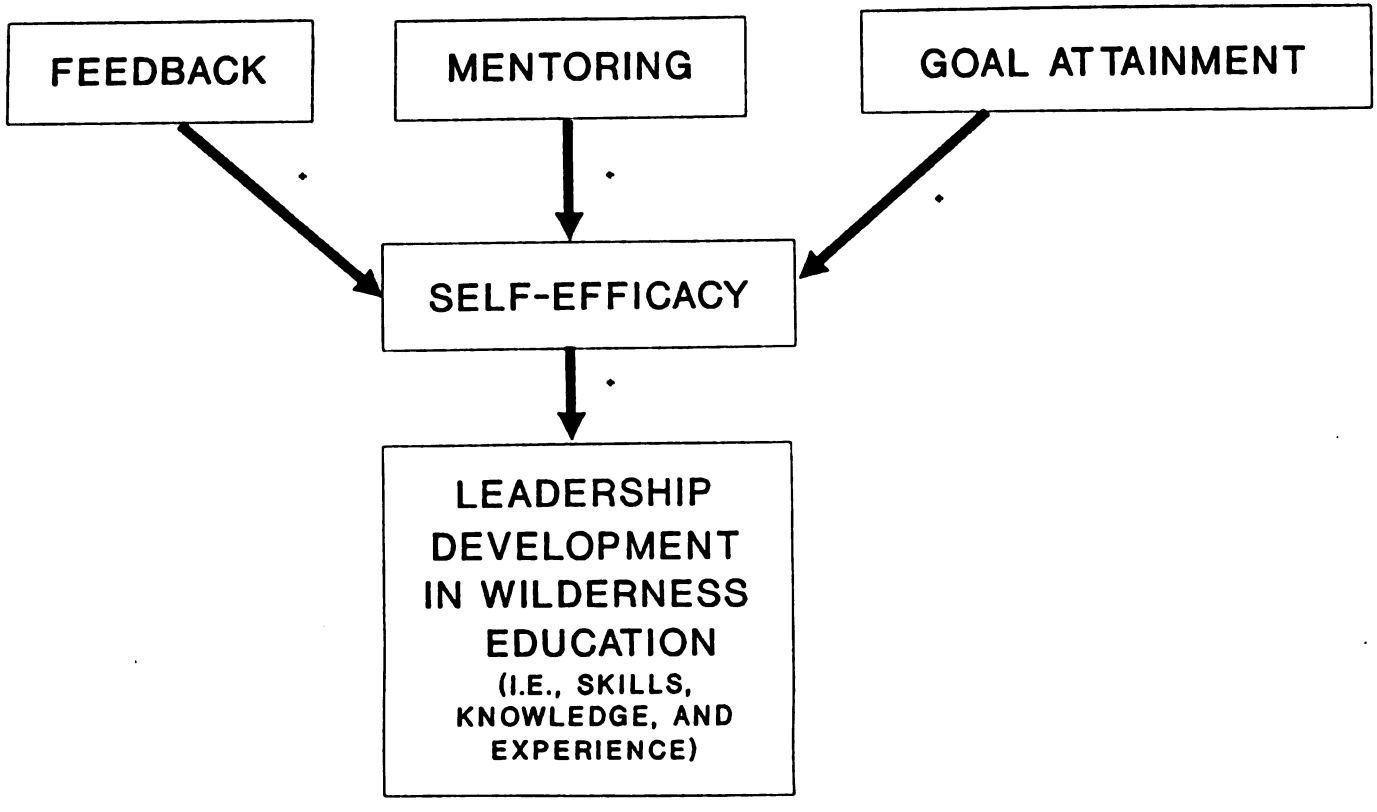


FIGURE 3. PATH MODEL OF LEADERSHIP DEVELOPMENT

In path analysis, the researcher, based on the literature, predetermines the exogenous variables in the path. A potential weakness of path analysis is that there may be key variables that are overlooked. Experience level, age and gender are residual variables that may account for some of the variance that was not explained by the independent variables. Since Bandura did not indicate importance of demographic variables and since too many variables for a small sample size can reduce the power of the analysis (Pedhazur, 1982), they were not included in the model. However, due to the close conceptual and empirical conection between gender and mentoring, gender will be used later as a classification variable to distinguish differences between females and males.

The model is recursive in that causation is considered to be one way (Blalock, 1971). As can be shown in Figure 3, the variables are hierarchically arranged and the arrows point in the direction of influence. Feedback, goal attainment and mentoring are the independent variables that are shown to have a positive impact on levels of self-efficacy. As the influence is moved down the causal chain, self-efficacy now becomes the independent variable to leadership development or the mediating variable between feedback, goal attainment and mentoring and leadership development. Thus, to the extent that feedback, goal attainment and mentoring increase self-efficacy, leadership

development should also be enhanced. Chapter V, Research Methods, will outline the steps in the process of empirically testing the path model.

Path Model Propositions

The following are hypothesized relationships among all variables depicted in Figure 3.

1. Leadership development is directly and positively influenced by self-efficacy.
2. Self-efficacy is positively influenced by goal attainment, mentoring and feedback.
3. Goal attainment, mentoring and feedback have positive relationships with each other.
4. Goal attainment, mentoring and feedback are the only predictors of self-efficacy.
5. Goal attainment, mentoring, and feedback are not direct predictors of leadership development.

The following are specific research questions which emerged from the objectives of this study. These questions guided the direction of the design of the study and its' findings. They encompass, but are not limited to, the propositions suggested by the path model in Figure 3. Specifically, research quesitons 1, 2, and 3 are independent of the path model propositions.

Research Questions

1) Does self-efficacy increase immediately after the completion of a wilderness course (i.e., what are the short-term effects of a wilderness course?)

2) Does the increase in self-efficacy persist over time (i.e., what are the long-term effects of a wilderness course?).

3) Are there differences between female and male self-efficacy scores?

4) Do higher levels of feedback, goal attainment and mentoring show a positive relationship with self-efficacy?

5) Is there a positive relationship between self-efficacy and leadership development?

CHAPTER V

RESEARCH METHODS

The purpose of this chapter is to describe the data collection and analysis. This chapter will begin with the operational definitions of key variables and a description of the study population will be introduced. The research design section will follow which will help clarify the approach towards conducting the research. The ensuing procedures section will describe the measurement instruments developed for this research and provide reasoning behind the organization and administration of the questionnaires. Lastly, the data analysis section will discuss the chosen statistical approach and techniques.

Operational Definitions

Leadership Development

Leadership development was defined in terms of continued involvement in wilderness education activities. These activities involve skills such as backpacking, rockclimbing, camping and also include memberships in outdoor organizations, attending workshops and leading

outdoor/wilderness trips. Leadership is essentially a developmental process which cannot be measured directly. Continued involvement was considered to be an indicator of a progression toward leadership in wilderness education. Individuals were at different stages in the developmental process, and they were identified by the types of activities in which they were involved and their degree of involvement.

Consistent with Figure 1, involvement in wilderness education was classified according to a student's knowledge, skills, and experience in wilderness education activities. The measure ranged from no involvement in wilderness education activities to high involvement, contingent on frequency and type of involvement. High involvement was defined as a combination of knowledge, skills, and experience. Knowledge, skills or experience by themselves are insufficient to develop leadership but a balance of all of these will aid in the development of judgment, noted as a key component of outdoor leadership (Cain & McAvoy, 1990; Petzoldt, 1974; Figure 1).

Involvement was measured in the following ways. Knowledge was defined in terms of a student's subscription to outdoor/environmental magazines, attending workshops and/or conferences, and memberships in outdoor/environmental organizations. Skill involvement was defined in terms of participation in any of the wilderness skills that students

were exposed to on their NOLS course (e.g., backpacking, fishing, rockclimbing, map and compass, camping, mountaineering) or additional outdoor skills such as canoeing, skiing, mountain biking, and so on. Sensation seeking sports, such as bunji jumping and sky diving were not defined as outdoor skills. The purpose of participating in these types of activities is not to develop a skill but rather to experience the feeling or sensation that accompanies these types of activities (Zuckerman, 1976). Experience was defined in terms of involvement in planning and/or executing an outdoor trip (e.g., with family, friends, or outside groups), developing an outdoor education program, or possessing a career or job (volunteer or paid, full or part-time) related to outdoor and wilderness education. These are the behaviors that represent leadership qualities and development.

Self-Efficacy

Based on recommendations in the literature (Bandura, 1986), self-efficacy was operationalized along two dimensions: magnitude and strength. Magnitude was defined as the total number of up to 20 tasks that the students judge they would be able to perform. Those students who identified 10 items that they perceived they could perform with some confidence (greater than 0%) on a 20-item scale would yield an efficacy magnitude (level) of 10. Efficacy

strength judgments were obtained by asking the subjects on a percentage scale with 10-unit intervals (10% to 100%) how certain or confident they were in achieving the particular task (e.g., "how certain are you in leading a small group in a wilderness setting?" ... very uncertain to very certain).

Feedback

According to the literature, feedback is a variable that has an impact on one's self-efficacy. Feedback is a verbal or written report of the result of any behavior which may reinforce or modify subsequent behavior. Feedback was measured on an ordinal scale in terms of frequency/amount (i.e., 1-5 times, 6-10 times, and 11 or more times per course) and type (i.e., direct and indirect feedback). Direct feedback is when the feedback is directed to a student face-to-face by one or more of the instructors. It is generally conducted with the student at the end of course by one or more of the instructors. Indirect feedback is a response given to a student in a casual or informal manner. It may be given to the student in passing or directed to the entire group with the student present. This response from the instructor may occur after participation in an activity (e.g., "Good job") or in a group when instructors are recapping the days events (e.g., "All of you kept a neat and tidy campsite"). Students were asked in a four-point Likert scale from "mostly positive" to "mostly negative" to

indicate perceptions of the kind of feedback they received (e.g., "Was the feedback you received mostly positive?" "Was the feedback mostly immediate?").

Goal Attainment

According to Bandura (1977), achieving goals raises one's level of self-efficacy. Goals are an end to which one directs her/his energies and motivations to attain an objective. In this study, subjects were asked to identify three goals prior to their NOLS course. After their course, subjects were then asked whether they had attained the goals they had listed prior to their course. Students had the opportunity to look at their pretest questionnaire for the goals which they had identified.

Mentoring

The impact of mentoring on self-efficacy was not cited in Bandura's theory. However, the variables of feedback and goal attainment are components of a mentoring process. The mentor teaches, guides (i.e., gives important information and advice), sponsors, advises, coaches (i.e., gives feedback and appraisals), supports, and promotes the protege (Jeruchim & Shapiro, 1992). Based on the descriptions of a mentor, subjects were asked several questions related to the components of mentoring. One dealt with whether any of the instructors were identified as a role model; another whether

the student confided in any one instructor; and third, whether there was one instructor who provided guidance throughout the course. Other questions related to the presence of a friend, an instructor that she/he trusted, and an instructor who provided encouragement throughout the course. A "yes" to all of these questions signified a mentoring relationship for that student. If a student answered "yes" to any of the questions, this indicated that there was some degree of development toward a mentoring relationship.

Study Population

Site and Setting

Measurements of preceding variables occurred at students' homes and at the National Outdoor Leadership School (NOLS) Headquarters during the summers of 1992 and 1993. The NOLS headquarters is located in Lander, Wyoming. The Wind River Mountain Range, located west of Lander, is the site of many NOLS wilderness and mountaineering courses. NOLS is one of many wilderness education programs that provide the student with a variety of skills and experiences that can contribute to one's overall knowledge of the outdoors. NOLS is entering its 29th year of teaching wilderness skills and leadership to an average of 2400 students per year. For more background information about NOLS, see Appendix A & B.

Sample

There were two samples of the total population of NOLS students. The sample for study 1 was derived from former NOLS participants, who were defined as those who completed a NOLS course 1 to 5 years ago. Study 2 participants were selected from current and potential NOLS students, defined as those who were registered for or who were taking a NOLS course. The purpose for using two different samples was to develop a stronger basis for understanding and interpreting the results as well as assessing the short and long-term effects of a NOLS course.

NOLS students were selected for this study because the purpose and mission of the NOLS program is to help the student become the best source and teacher of wilderness skills and leadership. Since leadership development is a primary focus at NOLS, it was appropriate to choose a wilderness education program closely aligned with the purpose of this study.

Since feedback and goal attainment are correlates of mentor influence and since it was not feasible to ask instructors to manipulate purposefully the amount and type of feedback they gave (due to the disruption of natural flow of the course), it was important to choose participants from a range of course types which yielded sufficient variability in feedback to assess its effects. Therefore, students from three types of courses were surveyed: Outdoor Educator's

Course (OEC), Wind River Wilderness (WRW), and Wind River Mountaineering (WMT). Due to the nature and independent content of each of the three course types, it is likely that the timing and extent of feedback were quite different. Although NOLS has similar expectations for all three courses, there were some distinct differences between each of the courses being studied. The following paragraph provides a brief distinction between the 3 course types in this study.

NOLS expects OEC graduates to be safe, competent, responsible wilderness travelers and leaders, familiar with NOLS' outdoor education techniques and philosophies, and able to supervise novices during a basic wilderness experience. The WRW course graduates are expected to be safe, competent, responsible wilderness travelers and leaders. NOLS expects graduates from the WMT course to be safe, responsible wilderness leaders with conservative judgment and a working knowledge of mountain hazards and mountaineering techniques. Another difference that distinguishes one course from the other is the length of time students spend in the field. Both WRW and WMT courses are 30 days in length whereas OEC courses are 23 days in length. Although it may seem logical that students on OEC courses may have more experience than students on WRW and WMT courses, it cannot be assumed that students in OEC course are more experienced. The expectation is to develop

leadership skills upon completion of a NOLS course, yet each of these courses has an added component that makes the course content different from the other two. The following section will describe the design, instrumentation and administration of study one.

Study One: Oral Histories

Design of Study One

Study One was the qualitative portion of this research. Approximately 20 past graduates from OEC, WRW, and WMT NOLS courses were selected and indepth interviews were conducted with each. The oral histories were conducted periodically throughout the summer and fall of 1992. The interviewer intended to obtain an equal representation of students from each type of course in the study. The purpose of the interviews was to gather information about a student's previous NOLS course experience which provided considerable support for interpreting the results of this study. According to Bauman and Greenberg (1992), qualitative interviewing techniques can also provide valuable insights into attitudes and behaviors that otherwise may be lost through quantitative measures. Indepth interviews can help to identify relationships between variables of interest.

Instrumentation of Study One

Study one measures were conducted through interviews in the summer and fall of 1992. The interview began with demographic information (age, date of course, etc.) followed by a series of open-ended questions pertaining to one's course experience and wilderness education involvement since her/his NOLS course (Appendix C).

Administration of Study One

When conducting the oral histories, addresses and phone numbers were retrieved from the NOLS Alumni office. Former students were contacted by phone to inquire about their interest and willingness to be involved in the interview. Whenever possible, a face-to-face interview was conducted. Otherwise, the interviews were conducted by telephone and all interviews were tape recorded with the consent of the interviewee. Once the former student verbally agreed to participate, a designated time and place (if appropriate) was scheduled that was most convenient for the interviewee. Before the interview began, a statement of consent was either read or handed to the former student to sign attesting to her/his willingness to continue and one's understanding of the research (Appendix E). The questionnaire took approximately one hour depending upon the depth and extent of the interviewees' answers.

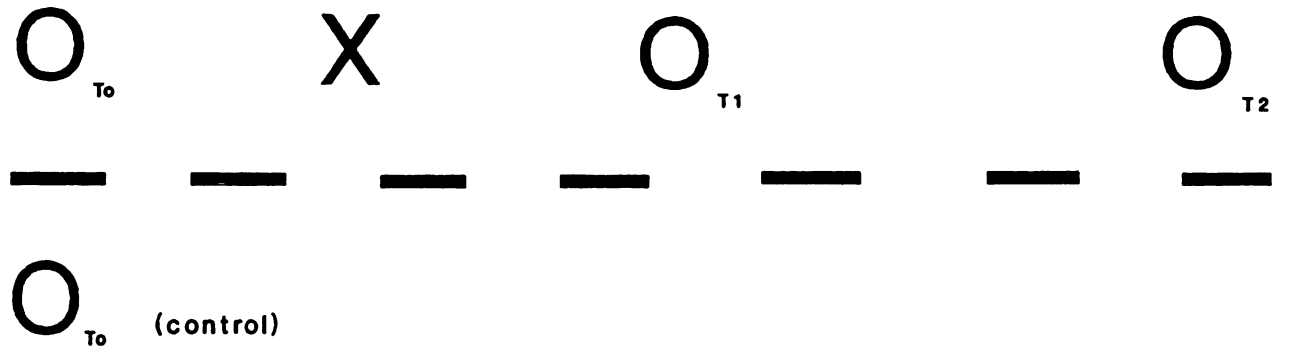
Data Analysis of Study One

The results of the oral histories provided support for the interpretation of the relationship(s) between self-efficacy and leadership development since the time of a student's NOLS course. A frequency distribution helped identify the demographic makeup of the sample. The answers to the open ended questions were categorized into similar content and percentages were computed (Appendix D). This information enhanced the understanding and interpretation of the results from study two.

Study Two: Effect of a NOLS Course

Research Design of Study Two

A quasi-experimental design was chosen for study two. Subjects included current and potential NOLS students. Due to the field setting, it was impossible to randomly assign subjects to groups or to have complete control of all but one variable. Thus, a purely experimental design was infeasible. Instead, a variation of the quasi-experimental, nonequivalent (nonrandom) pretest-posttest control group design, as defined by Campbell and Stanley (1966), was employed with sample two (Figure 4). In this design, experimental and control groups may be given either a pretest and a posttest or just a pretest or posttest. Individuals were not assigned randomly from some larger population to the control and experimental groups. Instead,



O = EXPERIMENTAL/CONTROL GROUP

To = Pretest Measurement

T1 = Posttest Time 1 Measurement (immediately after course)

T2 = Posttest Time 2 Measurement (1 year later)

X = TREATMENT

FIGURE 4. RESEARCH DESIGN FOR SAMPLE TWO. (QUASI-EXPERIMENTAL, NON-EQUIVALENT CONTROL GROUP)

the groups were essentially formed before the study actually began and the groups were similar in a number of characteristics (i.e., NOLS student, similar wilderness environment(s), similar wilderness activities, and exposed to NOLS core curriculum). The one variation from the typical pretest-posttest design was that there was no posttest measure of the control group. This was due to lack of funds and time constraints of the study grant. The limitation imposed by this variation is discussed in the concluding chapter.

The control group consisted of a selection of students from each type of course who were scheduled to participate in a NOLS course later on in the summer. The purpose of the control group was to control for extraneous variables that were likely to impact the pre-measured scores. In particular, Koepke (1973) reported that just before the start of a course, students experience a high anxiety level which may create biases in the pretest measures. To increase validity and account for this bias, the pretest instrument only was administered by mail to the control group of registered students before they arrived in Wyoming.

The pretest experimental group (O_{T_o}) consisted of students already in Lander waiting to depart for a NOLS course. The treatment (X) was the actual NOLS course. The posttest time 1 experimental group (O_{T_1}) consisted of students who had completed their NOLS course. Surveys were

administered to students immediately after they returned from their course. The posttest time 2 experimental group (O_{T2}) consisted of students who participated in the posttest time 1 survey instrument. The posttest time 2 survey was administered to students one year after their NOLS course through a mailback survey questionnaire (See Figure 4).

Instrumentation of Study Two

Study two data consisted of information from a pretest questionnaire and two posttest questionnaires. The pretest questionnaire was designed to collect sociodemographic information from the student and to have each student identify three (3) goals they wished to accomplish on their NOLS course (Appendices F & G). The primary purpose of the posttest time 1 (Appendices H & I) survey was to measure each of the factors in the research questions (goal attainment, feedback, and mentoring). The primary purpose of the posttest time 2 survey was to determine the degree of participation in wilderness education activities one year after a student's course (Appendix J).

The self-efficacy scale, modeled after Bandura's format for measuring self-efficacy (1977a), was included in both control and experimental group instruments. The scale reflected judgments that measure both magnitude (level) and strength. The self-efficacy scale included 20 items: the first 10 items were designated as physical skills and the

second 10 items were designated as cognitive skills, all of which were organized by tasks of graduated difficulty. Self-efficacy level was measured by the total number of tasks greater than 0% that a student perceived she/he could accomplish. Percentage or confidence ratings were summed and divided by the total number of items to create a measure of strength of self-efficacy. For example, a total confidence score of 600% for 10 items on a 20-item scale would yield an efficacy level of 10 and a strength of efficacy of 600/20 = 30. The higher the number the stronger the self-efficacy (McAuley & Gill, 1983).

There is evidence to suggest (Warren, 1990) that males feel more efficacious about activities that involve strength (physical skills) and spatial ability (cognitive skills). However, there are some researchers who would argue that women and men are equally matched in their cognitive abilities (Matlin, 1987). To substantiate these findings, ratings of both physical and cognitive skills were included in the self-efficacy scale.

Administration of Study Two

A total sample of 231 students from each of the three course types (i.e., OEC, WRW, WMT)) were selected and administered pretest and posttest instruments. These courses were not selected randomly. The basis for selecting these course types was presented earlier in this chapter.

The choice of particular offerings of these three course types was based on convenience.

To enhance the validity of the questionnaires, the pretest and posttest questionnaires were administered to 2 different courses that were not selected for this study. The reason for this was to provide a pilot test of the questionnaire for the purposes of eliminating or rewording questions, modifying instructions for greater clarity, and changing administration procedures, if necessary. This trial was conducted in the early part of the summer of 1992 so there was time enough to make changes based on problems with the pilot test instrument before the formal testing began.

The revised instruments were administered to the control group and the 3 experimental groups at four different times over the course of a year (Figure 5).

Control Group.

Pretest instruments mailed to students at least 1 month before the start of their course provided a control sample of 86 students. Control subjects were not the same NOLS students as those administered the pretests/posttests.

Experimental Groups.

In 2 successive years, the instrument was administered to the experimental group at 3 different times: pretest,

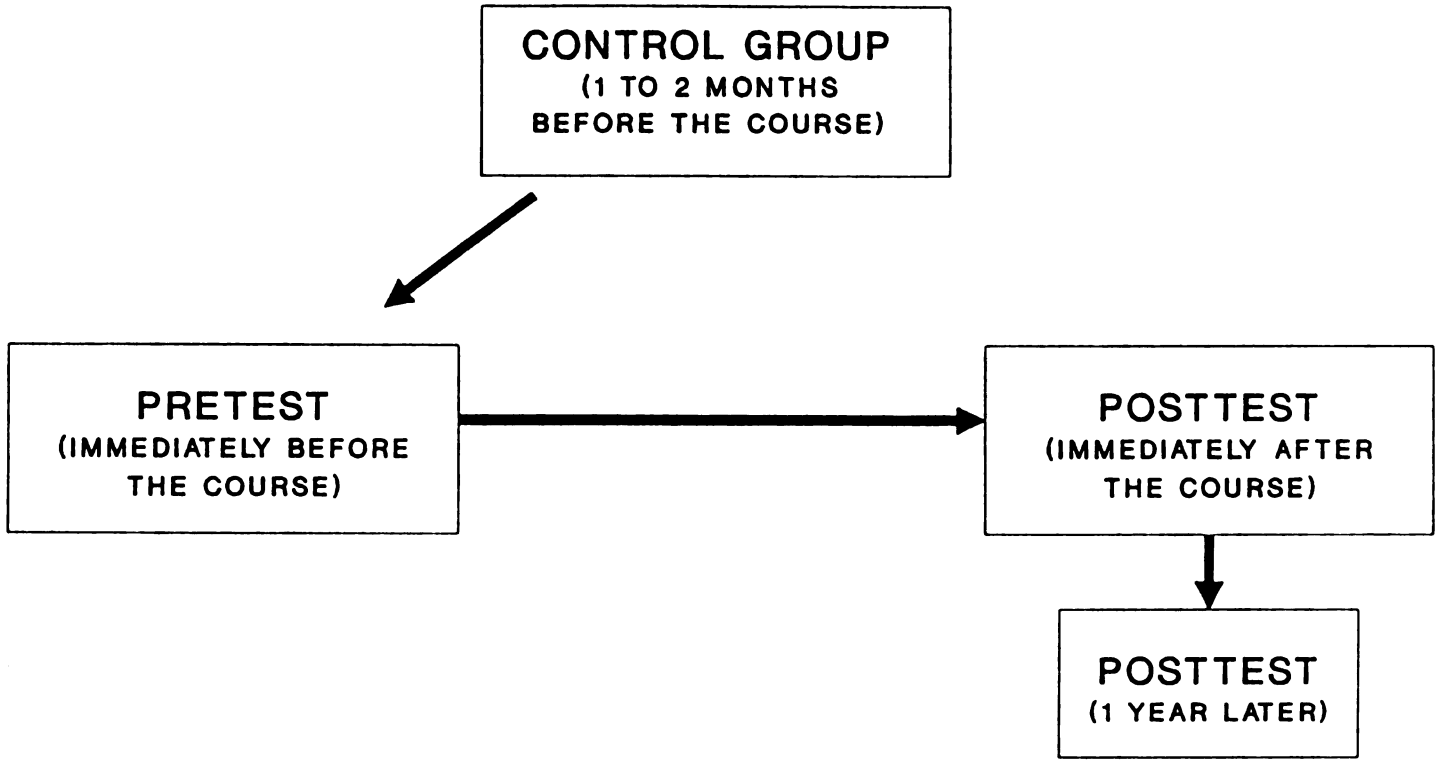


FIGURE 5. SEQUENCE OF INSTRUMENT ADMINISTRATION TO CONTROL AND EXPERIMENTAL GROUPS

posttest time 1 and posttest time 2 (Figure 5). The experimental group was given the instrument the first day of the course (pretest), the last day of the course (posttest time 1) and 1 year later (posttest time 2) to assess the long-term effects of self-efficacy. Individuals in these groups were the same throughout the pretest/posttest sequence. At each point of the administration of the questionnaire, a consent form was either read to the students (i.e., pretest and posttest time 1) or mailed to them as part of the cover letter enclosed with the questionnaire (i.e., control group and posttest time 2). The intent of consent forms was to ensure that each student was aware of the general purpose of the research. The form stated that their participation in the research was voluntary and reflected their actual consent. Students in the pretest and posttest time 1 surveys were currently participating in a NOLS wilderness course conducted by NOLS instructors.

The approximate time it took students to complete the questionnaire was about 15 minutes. Those same students were then mailed the same instrument (posttest time 2) one year later. Dillman's (1978) Total Design Method (TDM) was the method employed in the followup survey with a few modifications. The TDM begins with an initial mailing, then a postcard reminder sent one week later, followed by a third mailing with a replacement survey sent 2 weeks after the

postcard. This third mailing is sent by certified mail. In this study, there were three mailings sent approximately 2 to 3 weeks apart. With each mailing, a survey was sent along with a letter reminding the perspective NOLS student of the purpose of the study and the importance of completing the survey.

Data Analysis

Descriptive Statistics

The statistical package used to perform the following analyses was SPSSPC+ (Norusis, 1988). The first level of analysis conducted was descriptive statistics for the sample including age, gender, experience level, educational background, geographical location and occupation. Cronbach's coefficient alpha was computed for the control, pretest, posttest time 1 and posttest time 2 self-efficacy scales to determine the internal consistency (reliability) of the components being measured in the scale.

MANOVA and T-Tests

To measure the short-term and long-term effects of a wilderness course on self-efficacy (research questions 1 & 2), control and experimental groups were compared. An assessment of the distribution of the data helped to determine the appropriate test (parametric vs. non-parametric) used to compare self-efficacy means between

control and experimental groups. The decision was based upon the normality of the distribution (samples drawn from populations are normally distributed), and the homogeneity of the variance (variances in the study populations are equal) (Shavelson, 1988).

Upon discovering that normality (see Appendix K) and homogeneity assumptions were not violated (given the visual inspection of the distributions were similar), a MANOVA tested the following hypothesis: $\bar{X}$ control = $\bar{X}$To = $\bar{X}$T1 = $\bar{X}$T2. ANOVA is not sensitive to violations of the assumption of homogeneity of variances. "As long as the assumption of normality is defensible, the use of tests for the homogeneity assumption is reasonable" (Shavelson, 1988). The MANOVA procedure in SPSSPC+ was chosen over the ONE-WAY AVOVA procedure. In SPSS, one-way ANOVA does not allow for repeated measures of the same dependent variable for the same individual across time; MANOVA does.

After testing for overall an effect via MANOVA, paired t-tests determined more specific differences. The difference between independent sample t-tests and paired sample t-tests is that independent t-tests identify mean differences in a given variable independent of control or experimental groups (e.g., course type - 1,2,3). A paired sample t-test is a statistic for cases that are related and one value is compared with another (e.g., comparing a particular self-efficacy task with another self-efficacy

task) (Norusis, 1988). For example, when comparing differences in means between self-efficacy scores across control and experimental groups, a paired t-test was performed. When comparing self-efficacy means between each course type or between genders, the independent sample t-test subcommand was used. The analyses used to address research question 3 will be discussed in the following paragraphs.

Path Analysis

To determine the influence of feedback, goal attainment and mentoring on self-efficacy and to assess the relationship between self-efficacy and leadership development (research questions 4 & 5), path analysis was performed. Path analysis is a method applied to a theoretical causal model to determine the direction of cause and effect. It does not discover the cause but rather investigates the potential for cause and helps to interpret causal relations (Pedhazur, 1982). Path analysis involves 2 or more regression equations producing beta weights which help to specify causal relationships among variables. The term path analysis was used in this study to refer to the technique used to test whether the hypothesized model sufficiently fit the data by comparing the observed data with the predicted data. Multiple regression analysis was the statistical approach or method used to obtain path

coefficients between variables in the model. The path coefficients (standardized beta weights), reveal both the relative strength of association between variables and the direction of influence (Agresti & Finley, 1986). Pedhazur (1982) reports, "For each independent variable in the equation there is a path coefficient indicating the amount of expected change in the dependent variable as a result of a unit of change in the independent variable." In other words, as independent variable (X) changes then the dependent variable (Y) is expected to change to that degree as well. If the path coefficient between X and Y variables is relatively strong (.50 and above), then it can be concluded that X has a strong effect on Y and that the result of Y was influenced by X (Pedhazur, 1982).

The linkages and overall design of the path model were formulated, a priori, from careful review of the literature and well established theories. There are five assumptions that underlie the application of path analysis. They are: a)the relations among the variables in the model are linear, additive, and causal; b)residual variables are uncorrelated; c)there is one-way causal flow (nonrecursive); d)variables are measured on an interval scale; and e)variables are measured without error. In this study, the path model was linear in that the values in the independent variables (X) affected the dependent variable (Y), therefore, affecting the path coefficients between them. More specifically, for

"each unit of change of the independent variable, X, there is an expected change equal to the size of the path coefficient in the dependent variable, Y" (Pedhazur, 1982). It was assumed that residual variables were uncorrelated and that variables were measured on an interval scale. Those variables that did not depict an interval scale were changed to a dummy coding scheme to have a more reliable measure. Dummy coding is discussed in greater detail in Chapter 6. The model that was tested was recursive; that is, it depicted a one-way causal flow. Error is always present; its degree and extent will be discussed in Chapter 7.

Figure 3 is the path model under investigation in this study. Once the hypothesized model is in place, the next two steps in the path analysis process are to conduct the regression analysis revealing the path coefficients and to evaluate the full model. Evaluation consisted of eliminating paths and recalculating path coefficients for new models (Agresti & Finley, 1986).

CHAPTER VI

RESULTS AND DISCUSSION

The first section of this chapter will provide the results of the oral histories conducted in the summer and fall of 1992. Following the oral histories, the chapter will present results and provide discussion related to the five research questions of this study. They are: a)Does self-efficacy increase immediately after the completion of a wilderness course; b)Does the increase in self-efficacy persist over time; c)Are there differences between female and male self-efficacy scores; d)Do higher levels of feedback, goal attainment and mentoring show a positive relation with self-efficacy; and e)Is there a positive relationship between self-efficacy and leadership development? These five questions dictate the organization and flow of this chapter. A summary of the results will close this chapter.

Study One
Oral History Results

With the exception of three interviews, the oral histories were obtained by telephone. The three exceptions

were face-to-face interviews conducted in Virginia, Michigan and Wyoming where the interviewer was present. The purpose of the oral histories was to provide richer and more indepth information to support the quantitative findings in this research as well as investigate the long term impacts of a NOLS course on students. Appendix C provides a list of the questions asked during the interview followed by the detailed results of those questions. Demographic information about the oral histories is contained in Table 1. The detailed content of the interviews is provided in Apepndix D.

The interviews revealed that the most common reasons for taking a NOLS course were to learn about the outdoors and the proper way to "conduct oneself in the wilderness", become proficient at outdoor and technical skills, develop skills needed for future jobs, and learn to become an effective teacher (Appendix D). Other reasons for participating in NOLS were to meet people, be in the mountains for 30 days, and face challenges. By far, the most common reasons were related to learning and developing outdoor and wilderness skills.

All 19 students continued their involvement in wilderness skills and wilderness education activities since their NOLS course. The most frequented activities were backpacking, camping, snow skiing and mountain biking. The activities that were least or never pursued since their NOLS

Table 1. Demographic Characteristics of Oral History Sample.

Survey Item	ORAL HISTORIES (n=19) Result	PCT.
GENDER		
Female	10	53%
Male	9	47%
AGE		
Range	21-48 years	
Average	28 yrs.	
EXPERIENCE LEVEL BEFORE TAKING NOLS [a]		
Introductory	1	5%
Development	14	74%
Commitment	4	21%
COURSE TYPE [b]		
OEC	7	36%
WRW	6	32%
WMT	6	32%
YEAR STUDENT TOOK NOLS COURSE		
1987	4	21%
1988	6	32%
1989	2	10%
1990	0	0%
1991	7	37%
NUMBER OF INSTRUCTORS BY GENDER (19 different courses with 3 instructors/course)		
Female	20	35%
Male	37	65%

[a] Introductory: Participants have little or not experience with outdoor adventure activities. Developmental: Participants have some previous experience in outdoor adventure activities. Commitment: Participants have high level slills, experience and commitment to outdoor adventure activities.

[b] Outdoor Educator's Course (OEC) Wind River Wilderness (WRW) Wind River Mountaineering (WMT)

course were mountaineering, snow work, rafting and kayaking. Rock climbing, canoeing and fishing were activities in which students revealed some, but not frequent, participation since their course.

Fifteen out of the 19 students (79%) belonged to either an outdoor/environmental related organization or subscribed to a magazine related to the outdoors. Some of these memberships, such as the Boy Scouts and Sierra Club, involved participation in outdoor adventure activities which implies that these opportunities provided for further development in skills, knowledge and experience after NOLS.

Eight out of the 19 students (42%) believed that their continued involvement in outdoor organizations, outdoor magazine subscriptions, and skills was a result of the NOLS experience. Students stated that NOLS added to their interest, participation, comfort level and commitment to the outdoors. For three of the students, NOLS provided the basis for getting jobs in the future (e.g., outdoor education teacher, summer camp job, outdoor club).

Eighteen out of the 19 students (95%) stated that they would participate in NOLS again. However, money and time were the two strongest reasons that kept them from participating.

Overall, the NOLS experience appeared to be a very positive and worthwhile experience for all students who were interviewed. There is indication (42% of students) that the NOLS course influenced subsequent involvement in wilderness education activities, but not necessarily as leaders. Furthermore, this influence seems to persist over time and the impacts for these students remain strong and still

relatively fresh as they expressed and recounted their experiences. The remaining results of the oral histories pertain to feedback and mentoring. These results will be discussed later in the chapter under "Study Two."

Study Two
Demographic Characteristics and Descriptive Results From Surveys

This section describes the characteristics of persons who were involved in the 1992 and 1993 control groups, the on-site pretests, the on-site posttest time 1 surveys and the mailback posttest time 2 surveys. The purpose of this section is: 1)to provide background information on the sample involved in the study, and 2)to assess the relationship between antecedent variables (i.e., age, educational level and experience level), self-efficacy, and leadership development.

Sample Sizes

The sample sizes derived from the two years of data collection are provided in Table 2.

Table 2. Sample Sizes of Control and Experimental Groups in 1992 and 1993.

Year	Control	Pretest	Posttest Time 1	Posttest Time 2
1992	n=30	n= 86	n= 85	n=66
1993	n=56	n=145	n=109	
TOTAL	n=86	n=231	n=194	Response Rate 78% (66/85)

The discrepancy in sample size between posttest time 1 (1993) and the pretest (1993) was due to an unusually high number of student evacuations throughout the summer. Also, one course did not receive a posttest time 1 survey. Funding limitations imposed by the ending date of the research grant prevented a posttest time 2 survey in 1993.

The data analyzed in this chapter reflects a merging of the two years of data collection to provide more statistical power to the research. According to Keppel & Zedeck (1989), the most common way to increase the power of a statistical analysis, is to increase sample size, thus, enhancing the overall power of the statistical tests.

The sample size (posttest time 2) reflects the return responses from the 1992 posttest time 1 sample. Sixty-six out of 85 students returned the questionnaires: a 78% response rate. This relatively high response rate may be a reflection of the student's interest in the topic in addition to the impact developed from the followup reminders. There were three separate mailings (mailed every 2 weeks) with about 59% of the responses returned after the second mailing.

Demographic Characteristics

Participants in the control group were a different sample from the experimental group (pretest, posttest time 1 and posttest time 2). The same individuals sampled in the

pretest, except for those who dropped out, were also administered the posttest time 1 and posttest time 2 instruments. Nearly half of the students that participated in the control group and experimental group were female (Table 3). The average age in the control group was 24 and the average age in the pretest group was 22.

The data further indicate that 32% of the control group and 37% of the experimental group completed high school. Forty-seven percent of students in the control group and 37% in the pretest group were pursuing some advanced degree beyond high school.

A fairly large percentage of students in both the control group (87%) and pretest group (86%) indicated having some previous outdoor experience before attending NOLS. Thirteen percent of the students in the control group and 14% of students in the pretest group indicated having very little or no outdoor experience before coming to NOLS.

Fifty-six out of 86 (65%) in the control group and 155 out of 231 students (67%) in the experimental group described themselves as full-time students. The full-time college students represented a variety of academic disciplines. Twenty-three percent from the control group and approximately 32% percent of students from the experimental group indicated majors in the natural and social sciences.

Table 3. Demographic Characteristics of Control and Pretest Group Respondents.

Survey items	Control Group (n=86)	PCT.	Pretest Group (n=231)	PCT.
GENDER				
Female	40	47%	102	44%
Male	45	53%	129	56%
		100%		100%
AGE RANGE	16-38yrs.		15-51yrs.	
Average Age	24 yrs.		22 yrs.	
EDUCATION COMPLETED				
Elementary sch.			1	.4%
Junior High	18	21%	60	26%
Senior High	27	32%	85	37%
Associate	2	2%	3	1%
Bachelor's	26	31%	56	23%
Graduate	12	14%	26	12%
		100%		99.4%
EXPER. LEVEL[a]				
Introductory	11	13%	33	14%
Development	62	73%	177	77%
Commitment	12	14%	20	9%
		100%		100%
COLLEGE MAJOR[b]				
Rec., Phys. Ed., Exper. Ed.	5	9%	10	6%
Natural Sci.	8	14%	30	19%
Social Sci.	5	9%	20	13%
Eng/Lang.	1	2%	9	6%
Humanities	4	7%	9	6%
Health, medical	7	13%	4	3%
Other	9	16%	21	13%
No major	17	30%	52	34%
Total Full time students	56	65% (56/86)	155	67% (155/231)

[a]Introductory: Participants have little or no experience with outdoor adventure activities.
Developmental: Participants have some previous experience in outdoor adventure activities.
Commitment: Participants have high level skills, experience and commitment to outdoor adventure activities.

[b]Natural Science (biology, science, forestry, geology, geography, etc.)
Social Sciences (sociology, psychology, history)
Humanities (economics, philosophy, political science)
Other (business, law, engineering, etc.)

(Continued on next page)

Table 3 (cont'd.).

Survey items	Control Group (n=86)	PCT.	Pretest Group (n=231)	PCT.
FULL TIME EMPLOYMENT	45	54%	74	32%
Occupations[c]				
-Teacher	14	31%	39	35%
-Outdoor Related	6	14%	17	15%
-Educ. Services	2	4%	6	5%
-Human Services	3	7%	4	3%
-Health, medical	2	4%	6	5%
-Transition	9	20%	7	6%
-Other	9	20%	34	31%
		100%		100%
COURSE TYPE[d]				
OEC	26	30%	64	28%
WRW	37	43%	94	41%
WMT	23	26%	73	31%
		99%		100%
REGION OF COUNTRY				
Pacific NW	6	7%	24	10%
Rocky Mountain	6	7%	13	6%
Southwest	4	5%	9	4%
Midwest	14	18%	35	15%
South	22	28%	59	26%
Midatlantic	9	11%	42	18%
New England	18	23%	40	17%
Alaska	0	99%	1	.0%
Hawaii	0		1	.0%
Outside U.S.	0		4	.2%
				96.2%

[c]Educational Services (employment within an educational institution such as student activities, school counselor, etc.)
Human Services (day care center, rehabilitation center, medical profession).
Transition (in between school and job, change in career/life goals).
Other (business, advertisement, law, engineering, politics).
Occupation includes both part-time and full-time employment. Although full-time employment and full-time students add up to be more than the sample size in the control group (111 vs. 86), this result may indicate that either students are both full-time employed and full-time students or they misread the question indicating "full-time."
[d]Outdoor Educator's Course (OEC)
Wind River Wilderness (WRW)
Wind River Mountaineering (WMT)
NOTE: All columns do not total to 100% due to missing values.

The remaining students indicated majors in the humanities, business, law, medicine, physical education, recreation, and experiential education.

Forty-five out of 86 students in the control group (54%) and 74 out of 231 students in the experimental group (32%) were employed full-time. Thirty-one percent of

persons employed in the control group and 15% of persons employed in the experimental group were from the teaching profession. Six out of 86 (14%) students in the control group and 17 out of 231 (15%) students in the experimental group were employed in an outdoor-related profession (camp, outdoor agency, forestry, park department, etc.). Nine out of the 86 persons (20%) in the control group and 7 out of the 231 (6%) persons employed in the experimental group were in transition. "Transition" students were either between school and job, exploring new avenues in career/life pursuits, or travelling around the country.

A large percentage of students involved in the study were enrolled in the Wind River Wilderness (WRW) courses: 43% in control group and 41% in the experimental group. The WRW courses are the standard wilderness courses and generally more heavily filled than either the Outdoor Educator's courses (OEC) or the Wind River Mountaineering courses (WMT). The OEC courses are generally limited to 12 persons per course and generally attract people with some previous experience in outdoor education. The WMT courses tend to be more technical in nature (e.g., mountaineering, snow work, more rock climbing) which may attract people with more experience therefore limiting the numbers of people enrolled in those courses.

Many of the participants in this study came from the Southern, Midatlantic and New England regions of the

country: 62% from the control group and 61% from the experimental group. As can be shown in Table 3, there are some distinct similarities between control group and experimental groups in all variables. The only exception appears to have been the difference in employment percentage. This may have been a result of respondents not understanding the question about employment.

Goals

Table 4 displays the categorization of goals students selected before their course. The most common goals that students indicated on their pretest instrument were developing leadership and judgment, learning technical skills (e.g., rock climbing, mountaineering) and improving personal self (e.g., getting in shape, developing confidence and self-esteem, getting to know oneself better, ability to get along with others). This may have been due to the result of students finding leadership and technical skills more tangibly gained and noticed by others. It also may seem more appropriate to list goals that are reflective of the mission and goals of NOLS (i.e., leadership, judgment, skills). Both control and experimental groups were exposed to and aware of the mission of NOLS before registering for a course. An average of 24% of students in the control and experimental groups indicated fun and enjoyment as a goal.

Table 4. Course Goals Indicated by NOLS Students.

Goal Item	Control Group (n=86)	PCT.	Pretest Group (n=231)	PCT.
Leadership and Judgment	42	49%	130	56%
Technical Skills	65	76%	163	71%
Minimum Impact Techniques	16	19%	35	15%
Teaching Strategies	9	11%	18	8%
Personal[a]	66	78%	169	73%
Natural History[b]	12	14%	57	25%
Fun and Enjoyment	29	22%	59	26%
Other[c]	4	5%	31	13%

[a]Personal (get in shape, get to know one self, etc.).
[b]Natural History (wildlife, plants, geology, etc.).
[c]Other (future career, enhance resume).

In posttest time 1 instrument, students were given the opportunity to look at the goals they had written prior to the start of their course (pretest) and asked to assess the degree to which their goals had been achieved. Most of the goals the students selected at the beginning of the course were achieved (96% in Table 5). Out of the 194 participants who answered the open-ended question asking subjects to explain why or why not they thought their goals were achieved (Appendix I, question #2), 32% of the participants indicated that their goals were met beyond their expectations. Only 6% of the students had doubts about meeting the goals they had selected.

Table 5. Degree to Which Students Felt Their Course Goals Were Attained (Posttest Time 1 Surveys).

Survey Item	Posttest Time 1 Group(n=194)	PCT.
Goal Attainment:		
Yes	180	96%
Goals met beyond expectations	55	32%
Goals were met	106	62%
Goals were somewhat met	10	6%
No	7	4%

NOTE: 7 cases had missing values.

Feedback

Research indicates that feedback is a critical determinant of self-efficacy. Feedback is most instrumental when the feedback is positive, immediate, and accurate (Rink, 1985). A large percentage of the students (84%) in the oral histories claimed that they relied on feedback to guide their performance (Appendix D). Feedback was particularly important from instructors and a combination of both instructors and peers. One student said she/he particularly relied upon feedback in areas where she/he did not have a great deal of experience. Another student responded with a "not really" because she/he came into the course with more experience than many other students on her/his course. This may imply that students with more experience rely less on feedback than those students with

less experience. As indicated in the demographic information, a small percentage (14%) of students indicated having a great deal of experience when coming to NOLS. Thus, the remaining students (86%) would be more inclined to expect and depend on feedback to guide their performance.

Among the Study Two sample, students responded with relatively high percentages of positive, accurate, and immediate feedback. In Table 6, 57% of the feedback received from instructors was indicated as mostly positive. Approximately 34% of the students perceived the feedback to be somewhat positive and 3 people perceived feedback to be somewhat negative (3%). Thirty-eight percent of students indicated that the feedback received was mostly immediate and nearly half of the students (49%) indicated that the feedback was somewhat immediate. Thirteen percent of students revealed that the feedback they received from instructors was somewhat or mostly delayed.

Over 90% of the feedback received throughout the course and on written evaluations at the end of the course was perceived as accurate. From the oral histories, some of the reasons why students did not find the feedback to be accurate was due to the instructor incongruity of evaluating a behavior that was not observed. One common example given by students was the absence of instructors on group hikes during the day to witness decision making and judgment. Another example was the absence of instructors around tent

and cooking groups when evaluating and observing expedition behavior and/or how well a student practiced minimum impact camping techniques.

Ninety-two percent of the students indicated receiving direct feedback from instructors and 95% of students indicated receiving indirect feedback from instructors. Over 50% felt that direct and indirect feedback was received from both female and male instructors. For the remaining students, around one-third reported feedback from males only.

The higher proportion of feedback received from males may be a reflection of the number of male instructors on the courses. Out of a total of 75 instructors, 14 were female instructors (19%) and the remaining 61 (81%) were male. Six out of the 14 female instructors were course leaders (CL's) and the second year consisted of a higher percentage of female instructors than in 1992 (27% vs. 22%).

Thirty-six percent of the students in the oral histories indicated that it really did not matter who they received instructor feedback from (See Appendix D). Two students mentioned that they paid particularly close attention to the course leader (CL-head instructor) when listening to feedback, regardless of gender. One particular student mentioned that the feedback "would have meant more from someone she/he had connected with." Another student

Table 6. Types of Feedback, Amount of Feedback, Immediacy of Feedback, and Accuracy of Feedback Received by Respondents During their NOLS Course.

Survey item	Posttest time 1 (n=109)	PCT.
Was the feedback:		
Mostly positive	62	57%
Somewhat positive	37	34%
Somewhat negative	7	6%
Mostly negative	3	3%
Was the verbal feedback:		
Mostly immediate	42	38%
Somewhat immediate	53	49%
Somewhat delayed	13	12%
Mostly delayed	1	1%
Was feedback throughout course accurate?		
Yes	95	89%
No	11	10%
Were final written evaluations from instructor accurate?		
Yes	95	87%
No	9	8%
Did you receive direct feedback from instructors throughout course?		
Yes	100	92%
Female	15	14%
Male	34	31%
Both	56	51%
No	8	7%
Did you receive indirect feedback from instructors throughout course?		
Yes	103	95%
Female	6	6%
Male	38	35%
Both	59	54%
No	5	5%
Amount of direct feedback received:		
1-5 times	45	41%
6-10 times	34	31%
11 or more times	24	22%
Amount of indirect feedback received:		
1-5 times	29	27%
6-10 times	33	30%
11 or more times	42	39%

NOTE: Columns may not add to 100% due to missing values or students responding to more than one item.

[a] Direct feedback--Directed face-to-face by one or more instructors. It is purposeful, planned, and usually carefully thought out.

[b] Indirect feedback--A response given in a casual or informal manner. It may be given in passing or directed to the entire group.

did not particularly care who provided the feedback as long as it was positive.

Students also indicated receiving more indirect feedback as opposed to direct feedback. Thirty-nine percent reported receiving indirect feedback eleven or more times; 22% reported receiving direct feedback eleven or more times.

This is likely due to the time involved in planning and preparing direct feedback so that it is carefully thought out and executed. Secondly, it would take an enormous amount of time to provide carefully thought out, face-to-face feedback to each member of a group (average of 14 per group). For all courses, direct feedback is given to all students at the end of the course by instructors. For some courses, at the discretion of the instructor(s), direct feedback is provided by instructors at mid-course and potentially at another time throughout the course.

Mentoring

Table 7 summarizes the results related to the independent variable of mentoring. The literature indicates that guidance, confiding in another person, trust, friendship, providing encouragement, and role modeling are important factors in developing a mentoring relationship (Beeler, 1988; Jeruchim & Shapiro, 1991). A personal relationship exists between a mentor and a protege, whereas a person can be a role model without developing a personal relationship (Jeruchim and Shapiro, 1991). The difference between a role model and a mentor is that a role model is part of a mentoring relationship.

Questions 11-18 in the posttest time 1 questionnaire (Appendix I) defined the mentoring variable. Students felt less able to find an instructor with whom to confide in and

Table 7. Degree and Nature of Mentoring Variable in Posttest Time 1 and Time 2 Surveys.[a]

Survey item	Posttest time 1 (n=109)[b]	PCT.	Posttest time 2 (n=66)	PCT.
Meet one-on-one with instructor:				
Yes	97	89%	63	96%
No	12	11%	3	4%
One instructor provide guidance:				
Yes	72	66%	52	79%
Female	27	38%	10	19%
Male	44	61%	40	77%
No	37	34%	14	21%
One instructor to confide in:				
Yes	52	48%	35	53%
Female	18	35%	7	20%
Male	33	63%	28	80%
No	56	52%	30	46%
One instructor serving as role model:				
Yes	72	66%	50	76%
Female	26	34%	13	26%
Male	45	61%	36	72%
No	36	33%	16	24%
One instructor to trust:				
Yes	47	43%	32	49%
Female	14	29%	4	13%
Male	33	70%	26	81%
No	61	56%	33	50%
One instructor as a friend:				
Yes	65	60%	40	61%
Female	15	23%	8	20%
Male	47	72%	30	75%
No	42	39%	25	38%
One instructor offered encouragement:				
Yes	76	70%	43	65%
Female	24	32%	5	12%
Male	47	62%	34	79%
No	32	29%	20	30%
Are you identifying with same instructor throughout all your answers above?[c]				
Yes	52	48%	24	36%
No	44	40%	34	52%

[a] Percentages may not add to 100% due to missing values.
[b] 1993 data only - 1992 data excluded because mentoring items were found to be unsatisfactory and replaced in 1993 with more appropriate and longer set of items.
[c] The percentage of students who did not identify with the same instructor implies that they received different mentoring characteristics from more than one instructor.

trust than an instructor who provided guidance and encouragement (Table 7). Over half of the students identified an instructor as a friend and a role model. Nearly half of the students (48%) identified with the same instructor (question 18) which reveals, according to the operational definition for this study, that there may have been a mentoring relationship present for those students.

It appears that there were considerably higher percentages of male instructors providing the mentoring versus the female instructors. This is likely a reflection of the percentage of female instructors (19%) as opposed to male instructors (81%). Both female and male students may have selected a male instructor as a mentor because that may have been their only choice. These results may differ given balanced percentages of female and male instructors.

The posttest time 2 sample pertains to the 1992 data collection period only (n=66). The 1993 data collection in posttest time 1 was used to measure mentoring because of the increase in the number of factors measuring mentoring. The reasons for this change in how mentoring was measured are explained on page 103. Since there were more female instructors the second year of data collection (1993), this may explain why there are higher percentages of students identifying a female instructor as a friend and role model versus in the posttest time 1 mentoring results.

Involvement

Table 8 illustrates that 86% of the students envisioned themselves extremely likely to participate in adventure/wilderness activities in the future. As can be shown in posttest time 2, this anticipated percentage remained the same over the course of a year. Some of these activities pertained to the kinds of activities that

Table 8. Likelihood of Respondents Participating in Wilderness Education as a Career or Voluntary Activity.

Survey item	Posttest Time 1 (n=194)	PCT.	Posttest Time 2 (n=66)	PCT.
Future participation in adventure activities:				
Extremely likely	168	86%	57	86%
Somewhat likely	17	9%	8	12%
Somewhat unlikely	6	3%	0	0%
Extremely unlikely	3	2%	1	2%
Future participation in career related to outdoor adventure:				
Extremely likely	38	21%	22	33%
Somewhat likely	66	35%	23	35%
Somewhat unlikely	45	24%	13	20%
Extremely unlikely	37	20%	8	12%

students experienced on their NOLS course (e.g., rock climbing, backpacking, rappelling), while other activities were characterized as outdoor activities outside of the NOLS course, but still can be considered adventure activities (e.g., skiing, mountain biking, canoeing). Students were asked to report their participation in any adventure activity whether it was NOLS related or not.

Overall, students indicated a 56% likelihood (extremely plus somewhat likely) of pursuing a career related to outdoor adventure at posttest time 1 and a 68% likelihood in posttest time 2. In posttest time 1, 21% of the students indicated an extreme likelihood of pursuing a career related to outdoor adventure yet there was nearly an equal percentage of students indicating that it was somewhat unlikely they would pursue such a career (20%). Students

expressed a higher likelihood of pursuing a career in outdoor adventure/outdoor recreation one year later (33%) versus when they were asked immediately after their course. However, this difference is not statistically significant.

Table 9 summarizes involvement in outdoor related organizations, attendance at conferences and workshops, subscription to outdoor/environmental magazines, participation in various outdoor adventure activities and experience leading outdoor adventure trips. This table reflects students' knowledge, skills, and experience before and after NOLS. According to the literature (Cain & McAvoy, 1990; Green, 1981; Petzoldt, 1984), these factors enhance judgment and hence the development of leadership over time.

There were no significant differences before and after NOLS in participation in knowledge-based activities or wilderness skills. However, there was a significant difference in the number of students leading trips. This result sugggest that the percentage of students leading trips increases over time. Participation in a wilderness course may have provided the opportunity to learn skills and increase confidence in leading others on outdoor trips. There was an 11% decrease (99% in pretest to 88% after NOLS course) in the followup survey in the number of students participating in adventure activities (skills).

Table 9. Participation in Wilderness Education Activities Before and After NOLS.

Survey item	Before NOLS Course Pretest (1993) (n=145)	PCT.[a]	Before NOLS Course Posttest 2 [d] (n=66)	PCT.[a]	After NOLS Course Posttest 2 [d] (n=66)	PCT.[a]	P-Value [b]
Knowledge:							
•Subscribe to magazines							
Yes	68	47%	30	46%	31	47%	
No	77	53%	35	53%	35	53%	1.000
•Attend conferences or workshops							
Yes	44	31%	16	24%	15	23%	
No	100	69%	48	73%	48	73%	1.000
•Participate in organizations							
Yes	54	38%	30	45%	31	47%	
No	90	62%	36	55%	33	50%	.679
Skills:							
•Participate in adventure activities							
Yes	144	99%	63	96%	58	88%	
No	1	1%	3	4%	6	9%	.311
Experience:							
•Lead adventure trips							
Yes	N/A[c]	N/A[c]	12	18%	22	33%	
No			53	80%	40	61%	.008

[a] Percentages may not add to 100% due to missing values.
[b] McNemar Non-parametric test for 2 related samples was used to test significance in posttest time 2 before and after the NOLS course (McNemar, 1969).
[c] Question was not asked in 1992 pretest instrument but was added to the posttest time 2 instrument.
[d] Question was asked in Posttest time 2 questionnaire.

Table 10 outlines the female and male differences in participation level before and after NOLS. Overall, there were few differences between females and males in furthering their knowledge in wilderness education either before or after NOLS. Likewise, there was no relationship between gender and outdoor activity participation or leading outdoor adventure trips (r=.01). In fact, the pattern was reversed for females and males in these two dimensions. Whereas, males increased and females decreased their activity participation level after NOLS, females increased leading outdoor adventure trips after NOLS from 6 to 15 occasions, a 150% increase. The number of males leading outdoor adventure trips after NOLS increased from 6 to 7 (17%). This may suggest that since wilderness activities are in the male domain, males may find it easier to network with other males with whom to participate in activities. Females, on the other hand, may seek leadership opportunities in order to keep up their skills, and choose to remain involved because of the lack of finding other females who also participate in outdoor activities; or, females may prefer social interaction with a group whereas males prefer individual ativities. The data did not actually test these implications. They are merely hypotheses that would require further testing.

Table 10. Comparisons of Female and Male Participation in Activities Before and After NOLS. *

Survey Item	Participation before NOLS Posttest time 2 (n=66)	PCT.	Participation after NOLS Posttest time 2 (n=66)	PCT.
Knowledge				
•Subscribe to magazines				
Yes	30	46%	31	47%
Female	13	20%	15	23%
Male	17	26%	16	24%
No	35	53%	35	53%
Female	21	32%	20	30%
Male	14	21%	15	23%
•Attend conferences or workshops				
Yes	16	24%	15	23%
Female	6	9%	8	12%
Male	10	15%	7	11%
No	48	73%	48	73%
Female	27	41%	25	38%
Male	21	32%	23	35%
•Participate in Organizations				
Yes	30	45%	31	47%
Female	14	21%	12	18%
Male	16	24%	19	29%
No	36	55%	33	50%
Female	21	32%	22	33%
Male	15	23%	11	17%
Skills				
•Participate in adventure activities				
Yes	63	96%	58	88%
Female	35	53%	30	45%
Male	28	42%	38	58%
No	3	4%	6	9%
Female	0	0%	4	6%
Male	3	4%	2	3%
Experience				
•Lead adventure trips				
Yes	12	18%	22	33%
Female	6	9%	15	23%
Male	6	9%	7	11%
No	53	80%	40	61%
Female	29	44%	19	29%
Male	24	36%	21	32%

* Percentages may not add up to 100% due to missing values or students responding to more than one item.

There appears to be a small decrease in females participating in outdoor organizations after one year whereas there is an increase in males participating in outdoor organizations. With newly developed skills

experienced at NOLS, it is possible that females see less of a need to be involved in an organization, yet seem to put more energy into leading trips. Conversely, males may find being involved in an organization to be more important than leading trips. Again, these are conjectures that would need further investigation.

The following section will highlight the differences between the control group and the pretest and posttest time 1 groups to determine the short-term effects of a wilderness course.

Study Two: Short-Term Effects

Research question one asks whether there is an increase in levels of self-efficacy immediately after the completion of a wilderness course. In other words, what are the short-term effects of a wilderness course?

The first action was to determine the normality of the distributions in the control and the experimental groups. Figures K-1 through K-4 (Appendix K) are histograms of the self-efficacy scale indicating the degree of normality across all four distributions. Figures K-3 and K-4 are positively skewed which is expected given that students should feel more efficacious after their NOLS course occurs. In order to ascertain that the normality assumption was not violated, the nonparametric Wilcoxon signed ranks test was used as a backup to the t-test in testing for mean

differences. It was found that the Wilcoxon test and the paired t-test gave identical results in terms of statistical significance.

A MANOVA was used to test for an overall time effect between all three dependent groups (pretest, posttest time 1, and posttest time 2). MANOVA in SPSS was an appropriate method to use because the software allows for repeated measures of the same dependent variable to be analyzed for overall effect (Norusis, 1988). Once the MANOVA revealed that an overall time effect existed, dependent paired t-tests were used to determine more specifically where the differences were. Table 11 shows the t-test grand mean percentages in the control, pretest and posttest time 1 groups.

Table 11. Comparisons Between Control, Pretest, and Posttest Time 1 Self-Efficacy Means.

Control Group (n=86)		Pretest Group (n=231)		Control vs. Pretest	Posttest Time 1 (n=194)		Control vs. Posttest Time 1	Pretest vs. Posttest Time 1
M	SD	M	SD	p-value	M	SD	p-value	p-value
53%	19.22	48%	19.11	.015	82%	9.39	.000	.000

The results of Table 11 clearly demonstrate the positive short-term effects of a NOLS course on self-efficacy. In reference to research question 1, the posttest time 1 self-efficacy mean is significantly higher than the self-efficacy means of the control or the pretest groups (82% vs. 53% and 48%, respectively; p =.000).

Self-efficacy Magnitude (Level) and Strengths

Self-efficacy magnitude (level) was defined by the total number of items from 0 to 20 that the student perceived she/he would be able to perform. Zero indicated that the student had no confidence in performing the task. Any score above zero was included in magnitude computation. To determine the self-efficacy magnitude, the sample size was multiplied by the number of tasks (86 in control group x 20 tasks=1720). Next, the number of zero's present were subtracted from the previous multiplication (1720-222=1498). Lastly, the previous sum was divided by the sample size (1498/86=17.4). The self-efficacy magnitude of the control group was 17.4, pretest group 17.6, the posttest time 1 group 19.7 and the posttest time 2 group 19.5. These numbers indicate that there was an overall increase in self-efficacy magnitude from pretest to posttest scores over the 20 tasks. The student's self-efficacy magnitude (level) increased by a small margin from control to pretest group and increased considerably from pretest to posttest. There was very little decrease in a student's self-efficacy level from posttest time 1 to posttest time 2.

Self-efficacy strength was measured by summing each percentage or confidence rating and dividing by the total number of tasks. The self-efficacy strength reflects the grand mean for control and experimental groups. Self-efficacy strengths were: control group, 53%; pretest group,

48%; posttest time 1 group, 82%; and posttest time 2 group, 76%. The larger self-efficacy strength in the control group from that of the pretest group indicates that there is likely to be less anxiety felt when students fill out the survey away from the NOLS site and in advance of their wilderness course thus, resulting in a stronger self-efficacy toward their ability to perform these wilderness tasks.

Effect of Anxiety

The purpose of the control group was to control for the factor of anxiety. Research indicates that students tend to be more anxious just before they begin their wilderness course (Koepke, 1973). Such anxiety may bias the results. Therefore, the purpose of the control group was to determine whether self-efficacy scores would be different if students were to complete the survey a month before they arrived in Wyoming. There was a significantly higher self-efficacy score in the control group compared to the experimental group (p =.015). These findings concur with Koepke's (1973) findings which indicate that there is an anxiety bias immediately before a student departs for the field. This anxiety bias can impact the validity of the responses (e.g., self-efficacy) at the point of anxiety.

Posttest time 1 self-efficacy was significantly higher than pretest group and control group self-efficacy across

all 20 wilderness tasks (Appendix L-1). However, self-efficacy means in the control group were significantly higher than pretest group means in 6 out of 20 wilderness tasks: fishing (p =.040), rappelling (p =.001), beginner climb (p =.009), backpack 3 miles with 60lbs on ones back (p =.009), intermediate climb (p =.002), and backpack 6 miles with 60lbs on ones back (p =.002). Significant differences occurred mostly in the first 10 wilderness tasks, all of which are defined as physical tasks. Perhaps students feel more anxious about physical than cognitive tasks just before going into the field.

Summary of Short-Term Effects

The question seems to be which testing time (control vs. experimental) would be a more valid measure of one's self-efficacy? Bandura (1986) states that reduced anxiety raises levels of self-efficacy. Results support Bandura's finding, primarly for physical wilderness tasks. For such tasks, reduced anxiety increased self-efficacy. Support of Bandura's thesis was not as strong for most cognitive tasks. It appears that spending at least 2 weeks (short course) in the wilderness performing a variety of wilderness tasks is likely to reduce negative perceptions and anxiety that exist at the beginning of a course and increase levels of self-efficacy in those tasks. Although anxiety was not measured directly, the pattern of self-efficacy scores and Koepke's

study support an anxiety effect. Knowing this effect, wilderness education leaders may want to be aware of the anxiety students feel before a course and attempt to reduce it. Overall, significant differences in posttest time 1 scores from pretest and control scores (Table 11 & Appendix L-1) provide evidence that experience in wilderness tasks over a duration of 23 or 30 days has a positive effect on one's self-efficacy.

Study Two: Long-Term Effects

Research question 2 pertains to whether self-efficacy persists over time (i.e., between posttest time 1 and posttest time 2). Approximately 1 year after the NOLS course, posttest time 2 surveys were mailed to the same sample of students who participated in both the 1992 pretest and posttest time 1 surveys.

Table 12 shows that the posttest time 2 self-efficacy mean (76%) was significantly lower than the posttest time 1 self-efficacy mean (82%). Moreover, posttest time 2 self-efficacy scores decreased from the posttest time 1 scores in all wilderness tasks over a year's time (Appendix L-2). Significant decreases in self-efficacy scores were found in 10 out of the 20 tasks: fishing (p =.000), stream crossing (p =.029), use of an ice axe (p =.000), outdoor cooking (p =.001), identifying weather patterns (p =.000), first aid (p =.000), judging distance from A to B (p =.008), route

Table 12. Comparisons Between Posttest Time 1 and Posttest Time 2 Self-Efficacy Means.

Posttest Time 1 (n=194)		Posttest Time 2 (n=66)[a]		
M	SD	M	SD	P value
82%	9.39	76%	11.56	.000

[a] No Posttest time 2 surveys were conducted in year 2 due to research grant constraints; therefore sample size is small relative to Time 1.

finding (p =.007), leading a small group in a wilderness setting (p =.003), and evacuation procedures (p =.000).

It appears that directly after a NOLS course when skills are fresh and the experience not far removed, self-efficacy scores are at their highest. However, with the passage of time, and the potential of being less involved in wilderness activities as compared to a 30 day NOLS course, self-efficacy scores drop, but not as low as shown in pretest and control group scores. Posttest time 2 self-efficacy was significantly greater than control group self-efficacy (Table 13). Therefore, the NOLS experience provided an avenue for increasing a student's level of self-efficacy in wilderness education, but without continued involvement, the initial high level of self-efficacy declines significantly one year later. But since more lead trips 1 year later (Tables 9 & 10), the decline in self-efficacy is not great enough to curtail leadership entirely.

Table 13. Comparisons Between Control, Pretest and Posttest Time 2 Self-Efficacy Means.

Control Group (n=86)		Pretest Group (n=231)		Posttest Time 2 (n=66)		Control Group vs. Posttest Time 2	Pretest vs. Posttest Time 2
M	SD	M	SD	M	SD	P Value	P Value
53%	19.22	48%	19.11	76%	11.56	.000	.000

In fact, it appears that leadership increases independent of self-efficacy decline.

Study Two: Gender and Self-Efficacy

The literature indicates that males have higher levels of self-efficacy in tasks that involve strength (physical skills) and spatial ability (cognitive skills) (Petersen, 1980). Yet there is also research evidence to suggest that females are equally matched with males in their cognitive abilities (Matlin, 1987). Because of these findings, the self-efficacy scale was divided between physical and cognitive related tasks. The self-efficacy scale consisted of 20 wilderness tasks most commonly found in wilderness education programs. The first ten tasks displayed a more physical orientation involving strength and physical skills and the latter ten tasks consisted of more cognitively related tasks.

T-test comparisons between female and male self-efficacy scores for each individual physical and cognitive wilderness task are shown in Appendix L-3 and L-4. There is clearly an interaction between gender and anxiety. In the control group, females were consistently (but not

statistically) higher in their self-efficacy compared to men (18 out of 20 tasks) and significantly higher in climbing a 12,000 ft. peak (p =.024). Males reported higher but not significantly higher self-efficacy in fishing and in first aid.

In the pretest measures, male self-efficacy scores were significantly higher in 15 out of 20 wilderness tasks and higher in all tasks compared to females. The tasks which were not statistically significant were beginner level climb (p =.060), flora and fauna (p =.761), outdoor cooking (p =.955), first aid (p =.068), and minimum impact camping (p =.098). Females appear to feel more efficacious than males when the potential for anxiety is less (control group). Whereas, males tend to feel more efficacious when the potential for anxiety is greater (pretest group).

There are several alternative interpretations which will require further research. For example, female self-efficacy appears to be more affected by anxiety than males or females may feel more anxious than males at the time just before the course begins. Females may tend to underestimate their abilities at this time, particularly when they are contending with skills that involve strength and are involved in activities that are in the male domain. Males may overestimate their abilities because the activities are socially characterized as male dominated. Therefore, they

may feel a stronger need to achieve or rate themselves higher, even during stressful times.

Table 14 and 15 summarize Appendix Tables L-3 through L-6. The only significant difference in overall self-efficacy between females and males is in the pretest results (Table 14). Females felt significantly less efficacious than males. This finding suggests that anxiety has a greater impact on female self-efficacy than male self-efficacy at the onset of a wilderness course.

Table 14. Comparisons Between Female and Male Self-Efficacy Scores in Control and Experimental Groups.

	Control Group (n=86) (F=39, M=45)			Pretest Group (n=231) (F=102, M=129)			Posttest Time 1 Group (n=194) (F=89, M=105)			Posttest Time 2 Group (n=66) (F=35, M=31)		
Gender	M	SD	P-value	M	SD	P-value	M	SD	P-value	M	SD	P-value
Female	55%	19.51		41%	18.12		82%	9.73		75%	12.43	
Male	51%	18.93	.295	53%	18.16	.000	82%	9.11	.813	76%	12.02	.921

F=Females M=Males

The results in Table 15 reveal that females felt greater, but not significantly greater, self-efficacy in both physical and cognitive tasks in the control group. Males had significantly higher self-efficacy scores in physical and cognitive tasks in the pretest group. There were no significant gender differences in physical and cognitive tasks in either the posttest time 1 or posttest time 2 results.

Table 15. Comparisons Between Female and Male Physical and Cognitive Self-Efficacy Scores in Control and Experimental Groups.

	Control Group (n=86) (F=39, M=45)			Pretest Group (n=231) (F=102, M=129)			Posttest Time 1 Group (n=194) (F=89, M=129)			Posttest Time Group (n=66) (F=35, M=31)		
Task	M	SD	P-value	M	SD	P-value	M	SD	P-value	M	SD	P-value
PHYSICAL												
Female	63%	18.57		42%	19.87		83%	10.62		78%	14.03	
Male	57%	20.17	.161	57%	20.10	.000	83%	10.75	.942	78%	13.16	.890
COGNITIVE												
Female	49%	24.05		39%	20.87		80%	11.50		74%	13.57	
Male	46%	23.66	.604	49%	20.31	.001	81%	9.87	.642	74%	13.45	.997

F=Females M=Males

The comparisons of females to males in physical and cognitive self-efficacy in the posttest time 2 sample are shown in Appendix L-5 and L-6. There were still no significant differences between females and males in self-efficacy strength one year after taking their NOLS course. In 8 out of 20 tasks, females had nonsignificantly higher scores than males in the tasks of fishing, stream crossing, backpacking 3 and 6 miles with 60 lbs, identifying weather patterns, first aid, leading a group in a wilderness setting, and conducting an evacuation procedure. This suggests that both female and male self-efficacy levels have decreased at similar rates over the course of a year.

In posttest time 1 (Appendix L-5), there were no significant differences in self-efficacy between females and males over all wilderness tasks. In 11 out of the 20 wilderness tasks, females had slightly higher self-efficacy scores than males in fishing, stream crossing, use of an ice axe, backpack 3 miles with 60lbs, backpack 6 miles with

60lbs, climb a 12,000 ft. peak, climb an 18,000 ft. peak, outdoor cooking, first aid, minimum impact camping, and evacuation procedures. There are greater increases in self-efficacy strengths for females between pretest and posttest than there are for males suggesting that NOLS may have a stronger impact on females than males. An alternative explanation is that women become less anxious as the course progresses and this may create a greater increase in their level of self-efficacy than it does for men. Comparing control to posttest scores reveals approximately equal increases for men and women, suggesting support for the alternative explanation.

Scale Reliability

The Cronbach's alpha reliability coefficients (Norusis, 1988) pertaining to the control group, pretest, posttest time 1 and posttest time 2 self-efficacy scale are provided in Table 16.

Table 16. Cronbach Alpha Reliability for Self-Efficacy Scales in Control and Experimental Groups.

Tasks	Control Group (n=86)	Pretest Group (n=231)	Posttest Time 1 Group (n=194)	Posttest Time 2 Group (n=66)
All	.92	.93	.83	.88
Physical	.84	.87	.68	.76
Cognitive	.93	.92	.81	.85

Overall, the Cronbach alpha coefficients revealed relatively high degrees of inter-item reliability.

Cognitive tasks have slightly higher reliabilities than physical tasks. The interpretation is that the tasks that comprise the cognitive self-efficacy scale appear to relate to each other better than the tasks in the physical self-efficacy. Decreases in reliability from control and pretest to posttest time 1 and time 2 are likely due to the decrease in variance in the posttest measures. Since students are more competent with the tasks on the self-efficacy scale due to the course, and since they shared common experiences in their course, the variance is likely to be less. In other words, as competency with the tasks increase, variance decreases.

Study Two: Path Analysis of Leadership Development

The path model under investigation was formulated, a priori, from a review of the literature and theories most relevant to the hypothesized predictions. This model is recursive, meaning that the causal flow of influence is unidirectional. Path analysis helps to interpret causal relations among predictor variables (i.e., feedback, goal attainment, mentoring) and criterion variables (i.e., self-efficacy and leadership development). To determine the impact between the independent variables and the dependent variable, a path coefficient (standardized beta weight) is revealed which signifies the relative weight an independent variable contributes to the dependent variable. The larger

the value the greater effect on the dependent variable, controlling for the other independent variables (Agresti & Finlay, 1986). The hypothesized model under investigation included path coefficients, F values (signifying goodness of fit), and R^2 values (signifying the percentage of variance explained by the variables in the model).

The first part of this section is a discussion of the results of regressing self-efficacy on goal attainment, feedback, and mentoring (research question 4). Much of the literature is based upon the effects of these independent variables on self-efficacy. Therefore, it is important to determine the degree to which this research supports the literature and vice versa. The second part of this section investigates the full model which adds the relationship between self-efficacy and leadership development.

Relationship Between Feedback, Goal Attainment and Mentoring with Self-Efficacy

The first step in developing a path model of leadership development was to create a Pearson zero-order correlation matrix (Norusis, 1988) containing the variables of feedback, mentoring, goal attainment, and self-efficacy. The regression equations that follow reflect predictions between the independent variables and the dependent variable. In regression, the value of one variable depends on the value of another. For every unit of change in the independent variable there is an equal or proportionate change in the

dependent variable. Interval data are measured in precise (equal units) units versus nominal or ordinal data. Thus, the predictive value of the regression equation is more interpretable and valid when using interval data (Boyle, 1971; Agresti & Finley, 1986). Since self-efficacy was the only variable that was measured in interval units, mentoring, direct and indirect feedback, and goal attainment were recoded as a dummy sequence to reflect interval data (Boyle, 1971). Each variable was coded either with a 0 or 1 indicating a category (i.e.,level). Dummy coding created standardized beta weights so that the standard deviations in an independent variable would equal the standard deviation in the dependent variable (Pedhazur, 1982).

The ordinal data in this study, such as the measurements of immediate feedback (mostly immediate to mostly delayed feedback) and positive feedback (mostly positive to mostly negative feedback), approximate interval scales and therefore were not dummy coded. Hunter (1994) suggests that ordinal data do not need to be dummy coded because they reflect a form of interval data. Changing these variables to a dummy coding scheme was likely to lead to highly confusing results. However, the regression models were run both ways: dummy coding of immediate and positive feedback and leaving them in their original form. Since no significant differences were found in the correlations, it

was decided to continue the path analysis with the original ordinal coding for positive feedback and immediate feedback.

There were both reliability and validity problems with the way mentoring and feedback were measured in the first year. There were only three questions that measured mentoring in the first year (Question 8, 9, & 10, Appendix H) and the measurement of feedback was complex and difficult for students to understand (Question #6, Appendix H). Therefore, the posttest time 1 (1993) survey data were used to analyze the variables of goal attainment, feedback and mentoring. Compared to the posttest time 1 survey in 1992, the 1993 survey consisted of a more simplified method of gathering information about the amount and type of feedback that was received. In an effort to increase the reliability and validity of the measurement, the number of questions pertaining to the mentoring variable was increased from three to six (Questions 12-17, Appendix I). Goal attainment was measured similarly to the first year but also asked whether or not students attained the goals they had identified in the pretest. Therefore, it is assumed that the 1993 posttest time 1 (Appendix I) instrument consisted of a more valid measure of the independent variables than the corresponding 1992 instrument (Appendix H). In the following paragraph, a description of the procedure for coding mentoring, goal attainment and indirect and direct feedback will be discussed.

Questions 5, 6, 7, and 8 in the posttest time 1 survey were used to assess the amount and type of feedback given during the course (Appendix I). For mentoring, each question (#12-17) was dummy coded (0,1) and a composite (summation) was computed. Although each question was dummy coded, the summation of those factors no longer reflected a dummy coding scheme. The range of values was 0 to 6. If a person said yes to all 6 questions, she/he would have a value of 6. The same is true for the goal attainment questions. A composite of goals 1, 2, 3 in question 1 measured goal attainment. Again, the composite would no longer reflect dummy coding (0,1) but rather a range between 0 and 3. Therefore, the only variables that reflected dummy coding (0,1) without summation were with direct and indirect feedback. The self-efficacy scores for year 2 (1993) were used in the correlational and regression analyses. This was done so that the mentoring, feedback and goal attainment results were analyzed with their corresponding (same year) self-efficacy scores.

The variables found to be most highly correlated with self-efficacy were mentoring (r =.231, p <.01), immediate feedback (r =.210, p <.01) and positive feedback (r =.246, p <.001). The amount of indirect feedback revealed the next strongest relationship with self-efficacy (r =.1454), followed by goal attainment (r =.072) and amount of direct feedback (r =.042). Although the correlations are

relatively low, these findings support the literature by Bandura (1986) that feedback has a positive relationship with self-efficacy. These data also go one step further than Bandura and show differential effects of feedback by type and amount. Direct and indirect feedback were the only two variables that were found to have a negative relationship with self-efficacy (r =-.026; r =-.061).

As shown in Table 17, mentoring was significantly correlated with goal attainment (r =.213, p <.01). There were also positive correlations between mentoring and positive feedback (r =.150), amount of direct feedback (r =.125), indirect feedback (r =.055), immediate feedback (r =.048), and amount of indirect feedback (r =.046). The only negative relationship that mentoring has with feedback was with direct feedback (r =-.021). Although the relationships are weak and nonsignificant, there is some concurrence with the literature that there is a positive relationship between feedback and mentoring.

The only feedback variable that had a negative correlation with both mentoring (r =-.021) and self-efficacy was direct feedback (r =-.026). These findings may reflect that during the end of course evaluations, when students receive direct feedback from instructors, they may not have felt as if they were being mentored (guided, encouraged, supported), but rather evaluated and judged on their overall behavior and performance.

Table 17. Zero-Order Correlation Matrix of Independent Variables With Self-Efficacy in the 1993 Posttest Time 1 Survey. (n=109)

	Goal	Direct Feed	Ind. Feed	Amt. Dir. Feed	Amt. Ind. Feed	Pos. Feed	Imm. Feed	Mentor	Self-Efficacy
Goal									
Dir. Feed	.006								
Ind. Feed	-.076	.273**							
Amt. Dir. Feed	.092	.080	.205*						
Amt. Ind. Feed	.072	.105	-.116	-.058					
Pos. Feed	-.061	.126	.135	.245**	.031				
Imm. Feed	-.034	.210*	.015	.219*	.051	.375**			
Mentor	.213*	-.021	.055	.125	.046	.150	.048		
Self-Eff.	.072	-.026	-.061	.041	.145	.246**	.210*	.231*	

* significance at p< .01
** significance at p< .001
Note: A pairwise command in SPSS was used in computing the zero-order correlation matrix. Pairwise deletion is based on the smallest number of cases but uses as much of the data as possible.

This evaluation may effect a student's self-efficacy, especially females, if the direct feedback was not what she/he had expected or the feedback was not perceived to be accurate (Petruzzello, 1986).

After conducting the correlation analyses, self-efficacy was regressed on goal attainment, feedback, and mentoring. Since positive and immediate feedback revealed the strongest relationships with self-efficacy in the correlation matrix, they were chosen to represent the feedback variables in the regression equation.

Table 18 summarizes the path coefficients of goal attainment, positive feedback, immediate feedback and mentoring with self-efficacy. In addition, the data were split between females and males and self-efficacy was regressed on the three independent variables under investigation.

Table 18. Path Analysis of Positive and Immediate Feedback, Mentoring and Goal Attainment on Self-Efficacy.

Variable	Standardized Beta Weight	T Value Ratio	Significance of Tabled T	Adjusted R Squared	F Statistic for Model
Mentoring					
All	.189173	1.871	.0645		
Female	.388326	2.763	.0090		
Male	.038455	.273	.7861		
Positive Feedback					
All	.167572	1.572	.1193	All: .08004	.0189*
Female	.245369	1.688	.1001	Female: .34480	.0036*
Male	.083744	.553	.5830	Male: .09824	.2705
Immediate Feedback					
All	.140487	1.377	.1845		
Female	-.013501	-.095	.9248		
Male	.257300	1.716	.0925		
Goal Attainment					
All	.046898	.468	.6407		
Female	.249776	1.821	.0770		
Male	-.050499	-.359	.7212		

* = significant F ($p<.05$) for comparison of hypothesized model regressions.

Self-Efficacy Path Coefficients

The following path coefficients (standardized beta weights) will be signified by the letter "B". "B" describes "the partial effect on the dependent variable of a standard deviation change in each independent variable when other

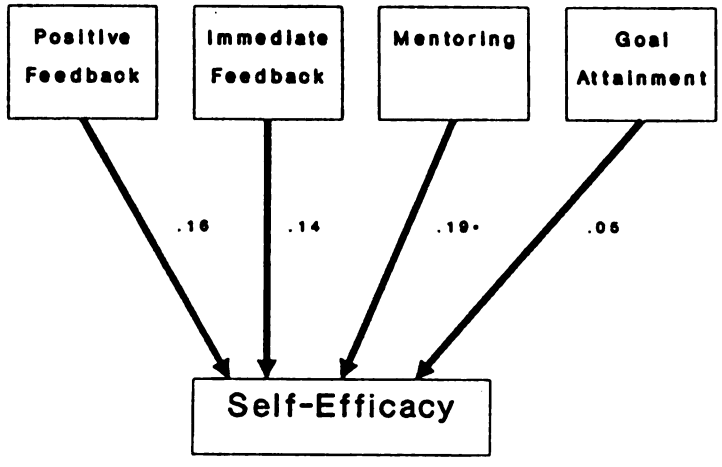
variables in the model are held constant" (Agresti & Finlay, 1986; p. 316). The partial effect is not to be confused with a partial correlation which describes the degree of association between a dependent variable and a set of independent variables, controlling for other variables. For example, to measure the association between mentoring and self-efficacy, controlling for goal attainment, a partial correlation is the proportion of variation in self-efficacy explained by mentoring. Furthermore, the value of the partial correlation does not depend on the units of measurement of the variables such as in the case of standardized path coefficients (Agresti & Finlay, 1986).

The path coefficient between mentoring and self-efficacy was $\underline{B}$ =.19 ($\underline{p}$ =.064), between positive feedback and self-efficacy, $\underline{B}$ =.16 ($\underline{p}$ =.119), between immediate feedback and self-efficacy, $\underline{B}$ =.14 ($\underline{p}$ =.184), and goal attainment and self-efficacy, $\underline{B}$ =.05 ($\underline{p}$ =.640). These findings indicate that mentoring has 1.3 times greater effect (.19 divided by .14) on self-efficacy than immediate feedback does (Pedhazur, 1982). The $\underline{F}$ statistic $\underline{p}$-value 0.02 indicates that overall, the regression model fits the data reasonably well (i.e., goodness of fit). The adjusted $\underline{R}^2$, a better reflection of the goodness of fit than the overall $\underline{R}^2$, was .08004 which indicated that about 8% of the variance was explained by these variables. The adjusted $\underline{R}^2$ will decrease

when a variable is added to the equation while the R^2 will increase, even when there is no effect (Berry & Feldman, 1982). The model explained 34% of the variance in self-efficacy for females, 10% for males.

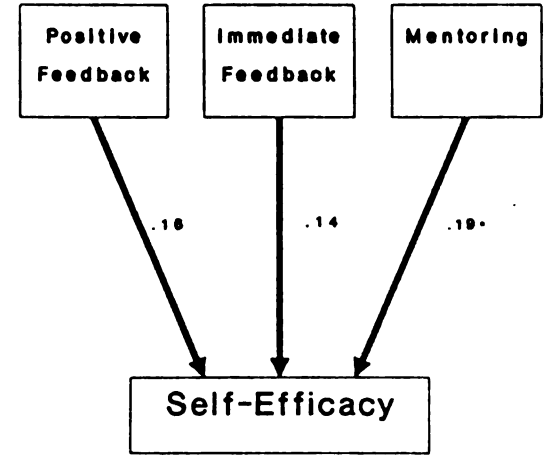
Caution should be considered when analyzing the R squared values. Although R^2 signifies the amount of variance explained by these variables, the interpretation can be misleading due to the multicollinearity (lack of independence) between the independent variables (Achen, 1982; Pedhazur,1982). As was shown in Table 17, there was a significant correlation between goal attainment and mentoring (r =.213) and a significant correlation between positive feedback and immediate feedback (r =.376). Other variables found to be correlated were mentoring and positive feedback (r =.151). Since multicollinearity affects the R^2, the path coefficients (beta weights) will provide a better description of how the strength and predictability of an independent variable has on the dependent variable. According to Achen (1982), the variance in the R^2 can change from one sample to the next. Minimizing the standard error (using adjusted R^2) and examining the path coefficients will provide a better measure of fit rather than relying on the adjusted R^2 alone to explain variance and goodness of fit.

Figure 6 displays the first part of the hypothesized path model and its corresponding path coefficients. Along with the hypothesized model is a display of a new



F= .02
R Squared (adjusted)= .08

HYPOTHESIZED MODEL



F= .007
R Squared (adjusted)= .09

PROPOSED, RESPECIFIED MODEL

• significance < .05

Figure 6. Hypothesized and Proposed, Respecified Path Model of Self-Efficacy

respecified model. Since the path coefficient between goal attainment and self-efficacy in the hypothesized model was low (B=.04), that path link was eliminated in order to create a more parsimonious model. By eliminating the goal attainment link, the adjusted R^2 increased by 1%. The variables of mentoring, positive feedback and immediate feedback explain approximately 9% of the variance in the respecified model.

Female and Male Self-Efficacy Path Coefficients

To determine whether the independent variables in the model have different predictive influences on self-efficacy for females or males, separate regression models were derived for females and males (Table 18). Mentoring (B =.38, p =.009), positive feedback (B =.24, p =.100), and goal attainment (B =.25, p =.077) appear to be the strongest predictors of female self-efficacy. Mentoring was the only significant predictor of self-efficacy for women and appears to be the best indicator out of all of the independentvariables. Immediate feedback revealed a zero path coefficient (B =-.01, p =.924), indicating that it had almost no influence on female self-efficacy. By contrast, the only predictor in the model that appeared to have an influence on male self-efficacy was immediate feedback (B =.25, p =.092). Goal attainment was not significant for

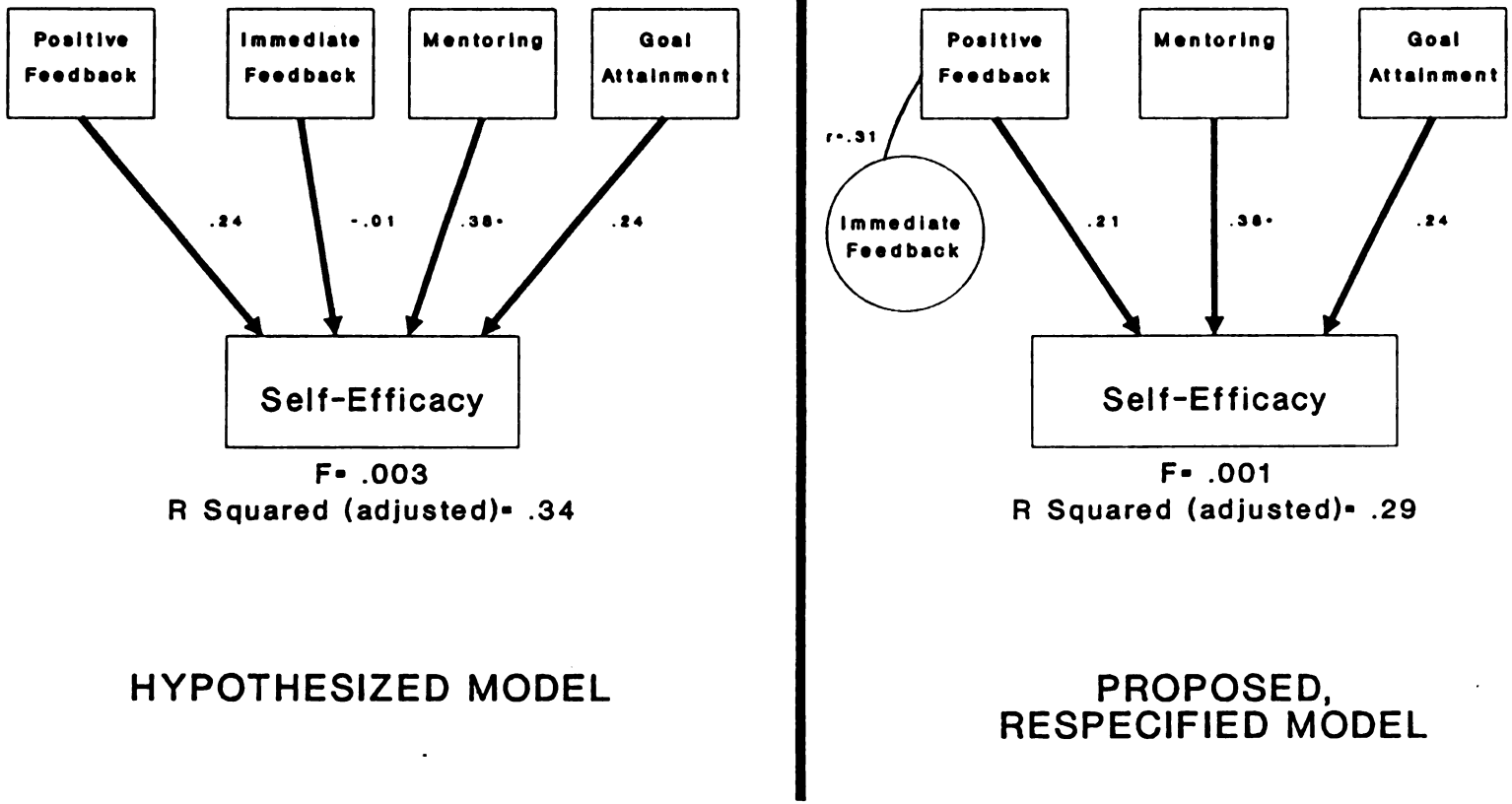
either females or males, but close to significant for females (B =.25, p =.08).

The hypothesized model tended to fit the data well for females (F =.003) but not for males (F =.270). The adjusted R^2 for females was .34480. That is, approximately 34% of the variance was explained by the variables in Table 18. When regressing self-efficacy on mentoring alone, about 23% of the variance was explained by the mentoring variable. The adjusted R^2 for males was .09824 which indicates about 9% of the variance was explained by the variables in Table 18. These findings are consistent with the notion that females tend to be less task oriented than males (Appling, 1989), Also, females may depend on mentoring and positive feedback to impact their self-efficacy which in turn enhances their performance. On the other hand, the literature suggests that males are more task oriented. Feedback which is received immediately after their successes and task performances may have a stronger impact on their self-efficacy. This immediate feedback may be derived from their own success in performing a task rather than the immediate feedback received from their instructors. The success that is received from their performance may be a factor that impacts their level of self-efficacy. In essence, females may need to gather the support first to raise levels of self-efficacy in order to perform a task, whereas males increase their levels of self-efficacy by the

immediate feedback in a task. All of these inferences require further study.

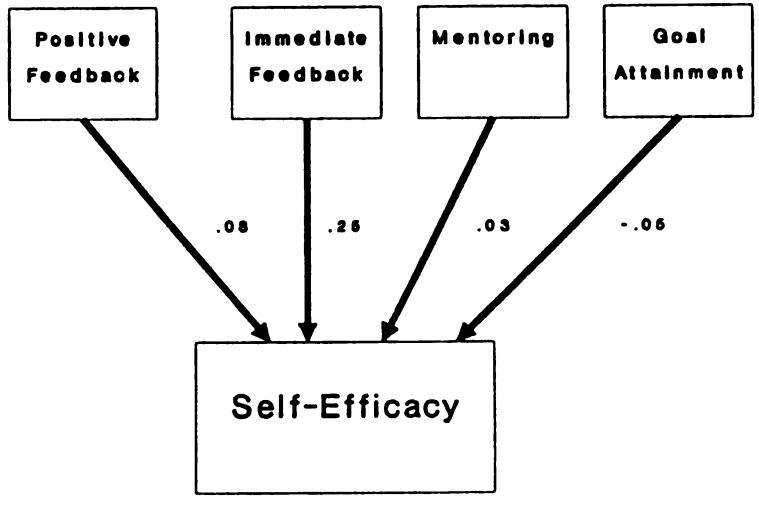
Figure 7 displays the first part of the hypothesized model and the new respecified model for females. Since immediate feedback was found to have little influence on self-efficacy ($\underline{B}$ =-.01) for females, the link was eliminated. Although the variables in the new respecified model created a small difference in the variance explained ($\underline{R}^2$ =.29) from the hypothesized model ($\underline{R}^2$ =.34), it once again lends itself to a more parsimonious model. It is important to acknowledge that both positive and immediate feedback had a significant correlation for females ($\underline{r}$ =.309). This spurious relationship (variables sharing a common cause) is designated in the model by a circle around immediate feedback and a curved line between both types of feedback.

Figure 8 displays the first part of the hypothesized model and the new respecified model for males. Immediate feedback explained most of the variance (9%) found in the hypothesized model. Immediate feedback was found to have a significant influence ($\underline{B}$ =.29, $\underline{p}$ =.024) on male self-efficacy. Although immediate feedback appears to have the most salient impact on a male's self-efficacy, 91% of the variance is not explained. Both full and respecified models left a great a deal of unexplained variance which suggests



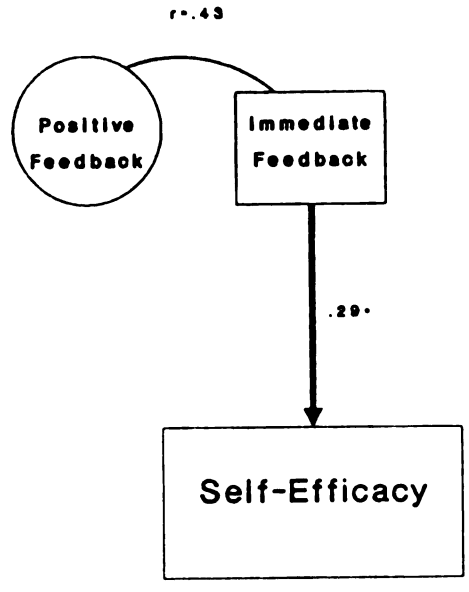
* significance <.05

Figure 7. Hypothesized and Proposed, Respecified Path Model of Self-Efficacy for Females



F= .27
R Squared (adjusted)= .09

HYPOTHESIZED MODEL



F= .02
R Squared (adjusted)= .09

PROPOSED, RESPECIFIED MODEL

* significance <.05

Figure 8. Hypothesized and Proposed, Respecified Path Model of Self-Efficacy for Males

that this model will need to be further investigated, especially for males.

Similar to the respecified model for females, it is important to acknowledge that positive and immediate feedback had a significant correlation for males (r =.426) as well. This is indicated in the model by a circle around positive feedback and a curved line connecting the two types of feedback indicating the relationship between them.

To summarize, path analysis reveals that mentoring has the greatest influence on self-efficacy across the full sample. However, mentoring is a significant determinant of female self-efficacy only. Goal attainment was found to have little influence on self-efficacy in the full hypothesized model. The literature suggests that the attainment of goals has an impact on self-efficacy (Bandura, 1986). The lack of influence in this study was due, in part, to the measurement of goal attainment in the survey. Since most students attained their goals there was little variance in the results. Goal attainment however, had a greater impact on self-efficacy for females than it did for females.

With reference to the impact of feedback on self-efficacy, regardless of how much feedback one receives or how directly or indirectly it is given, it is the positive and immediate feedback that shows the greatest influence on self-efficacy. Although the literature supports the impacts

of positive and immediate feedback on self-efficacy, the results indicate that the impact is different for females and males. The results show that positive feedback is more important for females whereas immediate feedback is more important for males in raising levels of self-efficacy. Rink (1985) states that if the feedback is delayed beyond the point of remembering the behavior, then a person loses out on the benefits of that feedback. For men, such a delay may affect self-efficacy more than for women.

Study Two: Relationship Between Self-Efficacy and Leadership Development

To determine the relationship that self-efficacy had on leadership development (research question 5), a zero-order correlation matrix was developed. This matrix involved all appropriate variables in the hypothesized full model. Leadership development was operationalized as continued involvement in knowledge, skill and experience-enhancing activities. Posttest time 1 (1993) and posttest time 2 (1 year followup) self-efficacy scores were used. In the posttest time 2 survey, questions 10 - 15 measured leadership development (Appendix J). These questions pertained to knowledge (attending conferences, belonging to organizations and subscribing to magazines), participation in wilderness activities after NOLS (skills) and leading outdoor trips (experience) (Figure 1). A composite of knowledge, skills and experience was computed to measure

leadership development. The relationships among those variables included in the path model are shown in Table 19. Amount of feedback, direct feedback and indirect feedback were eliminated from the matrix because of the low correlations found previously (Table 17).

The relationship between posttest time 1 self-efficacy (immediately after a NOLS course) and leadership development (measured one year later) was shown to be positive but not significant (r =.155). Furthermore, leadership development was significantly correlated (r =.249) with a student's self-efficacy one year later (posttest time 2). Thus, self-efficacy and leadership development (as defined) are positively related and this relationship appears to work in both directions. Future models need to test the nonrecursive (two way relationship of leadership development and self-efficacy) nature of this relationship. Path analysis is capable of testing the nonrecursive nature of a model.

In comparing the relationship of these variables based on gender, posttest time 1 self-efficacy for both females and males was positively correlated with leadership development (r =.010; r =.350, respectively). This positive relationship remained one year later as leadership development had a significant relationship with female self-efficacy (r =.453) and a positive, nonsignificant relationship with male self-efficacy (r =.116).

Table 19. Zero-Order Correlation Matrix of Full Hypothesized Path Model of Leadership Development.

	Goal Attain	Positive Feedback	Immediate Feedback	Mentor	Self-Efficacy Posttest Time 1	Self-Efficacy Posttest Time 2	Leader Develop
Goal Attain							
Positive Feedback	-.061						
Immediate Feedback	-.034	.376**					
Mentor	.213*	.151	.048				
Self-Efficacy Posttest Time 1	.072	.246**	.211*	.231*			
Self-Efficacy Posttest Time 2	-.100	-.087	-.011	-.002	-.006		
Leader Develop	.024	-.083	.013	.064	.155	.249*	

* significance at p< .01
** significance at p< .001

Although the relationship remains to be positive for both genders, the relationship is statistically stronger for women. It appears that womens' continued involvement in wilderness education sustains their self-efficacy. The relationship between female self-efficacy and leadership development was also weak (r =.010). The relationship between female self-efficacy at posttest time 1 and posttest time 2 is weak as well (r = -.006). It appears that initial self-efficacy has little effect for women, but it gives them a beginning. Further involvement in wilderness education is the key for women.

Goal attainment, mentoring, and immediate feedback showed weak but positive relationships with leadership

development. The relationships between these variables and self-efficacy were stronger than they were for leadership development. Thus, self-efficacy may function as a mediating variable between the independent variables and leadership development, a proposition which supports the recursive nature of the model.

To test the full hypothesized model, a regression analysis was conducted to assess the impacts of self-efficacy and the other independent variables on leadership development. Table 20 summarizes the overall regression results of the leadership development model and shows the differences between the regression models for females and males.

Self-efficacy (posttest time 1) has a path coefficient of $\underline{B}$ =.15 ($\underline{p}$ =.34) indicating that self-efficacy has a positive but nonsignificant impact on leadership development. However, leadership development has a positive and significant impact on self-efficacy one year later ($\underline{B}$ =.24, $\underline{p}$ =.05). This result provides a strong indication of the revolving impacts that self-efficacy and leadership development have on each other. Self-efficacy affects one's leadership development, yet the continued involvement in wilderness education activities also appears to be important for maintaining and enhancing one's self-efficacy.

Goal attainment, immediate feedback, and mentoring show positive yet weak (near 0) path coefficients toward

Table 20. Path Analysis of the Full Hypothesized Path Model of Leadership Development.

Variable	Beta Weight	T Value Ratio	Significance of Tabled T	R Squared	F Statistic
Goal Attainment					
All	.002899	.020	.9841		
Female	-.024980	-.120	.9056		
Male	.074260	.347	.7319		
Positive Feedback					
All	-.111820	-.719	.4757		
Female	-.229114	-1.045	.3079		
Male	.008311	.036	.9716		
Immediate Feedback					
All	.054248	.355	.7242	All: .09496	.6515
Female	.163702	.794	.4359	Female: .26839	.3997
Male	-.062435	-.266	.7926	Male: .15453	.8292
Mentoring					
All	.080711	.544	.5890		
Female	.373327	1.662	.1113		
Male	-.026283	-.123	.9035		
Self-Efficacy Posttest Time 1					
All	.148938	1.056	.3423		
Female	.008363	.036	.9705		
Male	.390363	1.538	.1449		
Self-Efficacy Posttest Time 2					
All	.249127	1.956	.0549		
Female	.452797	2.539	.0177		
Male	.115814	.649	.5210		

* significance p<.05 ** significance p<.01 *** significance p<.001

leadership development in the full model. These variables explain approximately 9% of the variance in the hypothesized model. Thus, over 90% of the variance that impacts leadership development is captured by other factors. Figure 9 displays the full hypothesized path model and proposed, respecified model of leadership development. The path coefficient between leadership development and self-efficacy

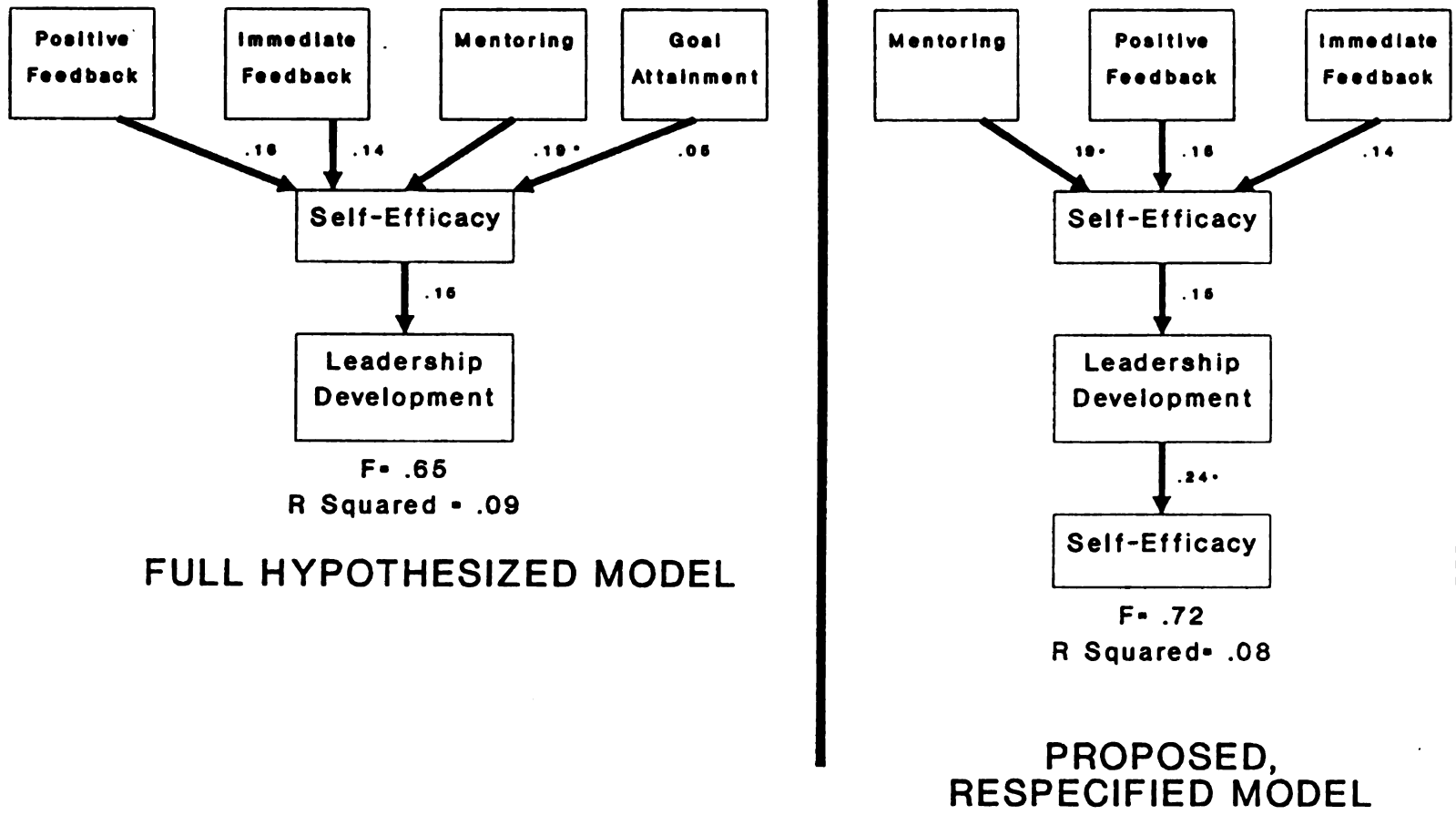
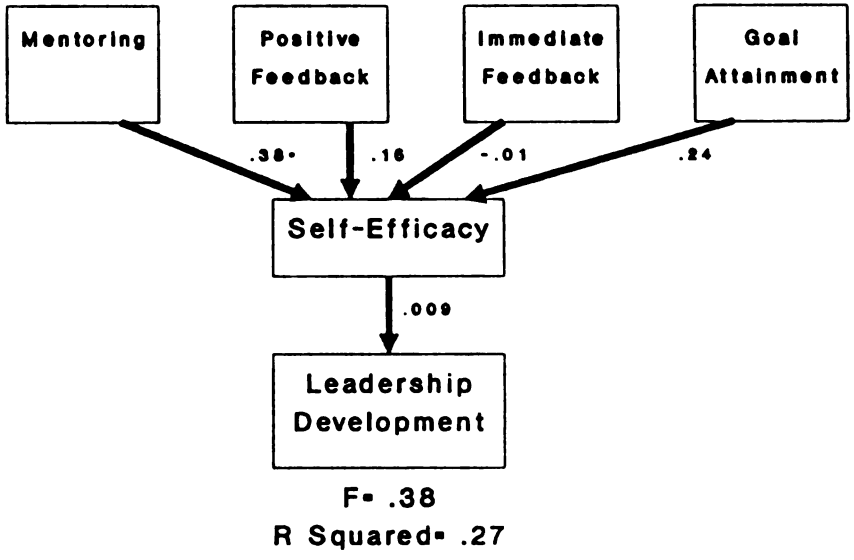


Figure 9. Full Hypothesized and Proposed, Respecified Model of Leadership Development

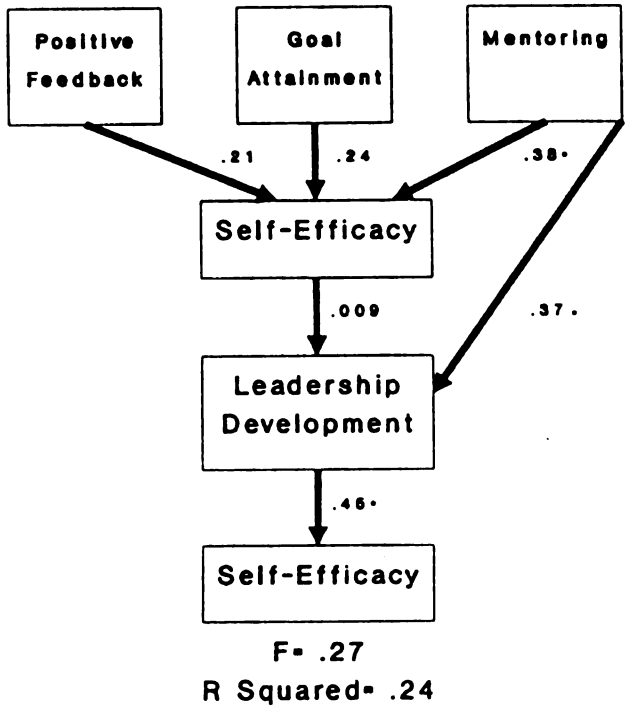
(one year later) was $\underline{B}$ =.24 ($\underline{p}$ =.05), revealing a significant relationship.

When examining the differences between females and males in the full hypothesized model, female self-efficacy immediately after a NOLS course does not appear to be a strong predictor of leadership development ($\underline{B}$ =.009). However, mentoring has a significant impact ($\underline{B}$ =.37). This indicates that mentoring not only has a strong influence on female self-efficacy, but also contributes directly to leadership development in women.

Figure 10 provides an illustration of the full hypothesized model and a proposed, respecified model of leadership development for females. The model does not indicate a good fit ($\underline{F}$ =.38), yet nearly 27% of the variance is explained by these variables. That is, about 73% of the variance remains to be explained by unknown factors that may have an impact on a female's development as a wilderness leader. When adding self-efficacy to the model one year later, leadership development has a significant impact on a female's self-efficacy ($\underline{B}$ =.45). This result indicates that a women's continued involvement in wilderness education activities contributes to her self-efficacy. Self-efficacy makes a positive contribution to female leadership development yet leadership development made an even stronger impact on continued self-efficacy.



FULL HYPOTHESIZED MODEL

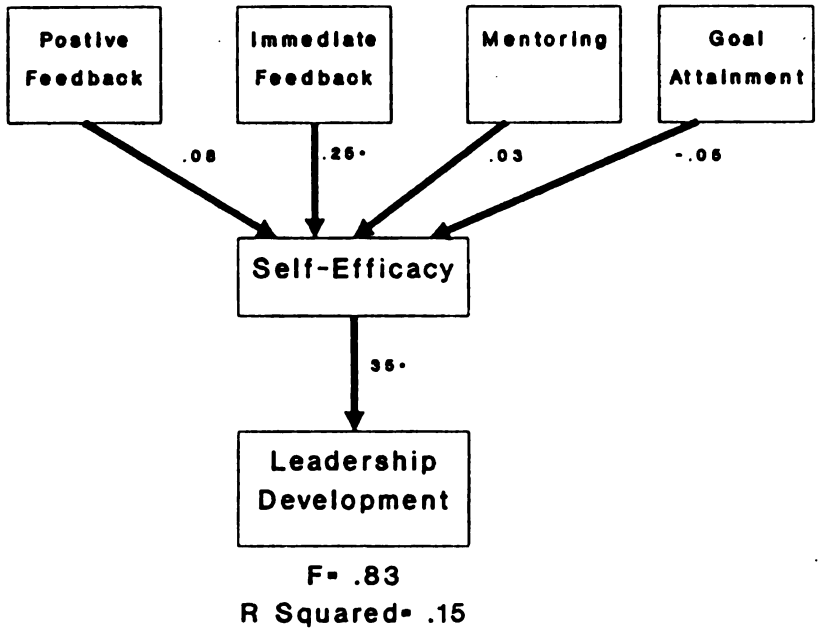


PROPOSED, RESPECIFIED MODEL

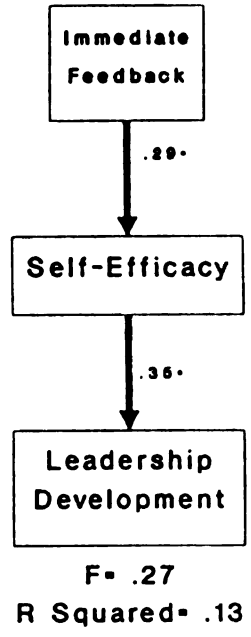
* significance <.05

Figure 10. Full Hypothesized and Proposed, Respecified Path Model of Leadership Development for Females

These revolving relationships do not hold for males. Male self-efficacy is a much stronger predictor on leadership development than female self-efficacy ($\underline{B}$ =.35 vs. $\underline{B}$=.009, respectively) (Figure 11). In other words, the more efficacious males perceive themselves to be in a particular task or tasks, the more likely they will continue their involvement in wilderness education. However, the path coefficient between leadership development and self-efficacy (one year later) is much lower ($\underline{B}$ =.12 vs. $\underline{B}$ =.45), indicating that continued involvement in wilderness education activities does not have as strong of an impact on male self-efficacy as it does for females. The full hypothesized model (Figure 11) does not fit the data, particularly for men, as it shows an F value of .83. Approximately 15% of the variance was explained by self-efficacy and the independent variables for males. Since there is not a strong relationship between leadership development and self-efficacy one year later, the proposed respecified model for males ends at leadership development. Including self-efficacy (one year later) in the model for males decreases the variance explained to 2%.



FULL HYPOTHESIZED MODEL



PROPOSED, RESPECIFIED MODEL

• significance <.05

Figure 11. Full Hypothesized and Proposed, Respecified Path Model of Leadership Development for Males

Summary

In the remaining section of this chapter, an overall summary of the key findings from Study One and Study Two will be presented. Each research question will be restated and results pertinent to that question will be highlighted. Path model propositions will also be addressed.

Key Findings From Study One: Oral Histories

It can be concluded that NOLS has some impact on students' continued involvement in wilderness education, but not necessarily as leaders. The results from the oral histories revealed that everyone (n =19) continued to some degree in wilderness education activities after NOLS. Fifteen out of the nineteen people interviewed belonged to an outdoor or environmental organization. Just under half of the former students indicated that NOLS had an influence on their continued involvement in wilderness education activities. These findings also support the long-term effects of a wilderness course on leadership development.

Approximately 84% of the students relied on feedback to guide their performance on the course. Overall, feedback appeared to be an important element for most students although, it may be more salient for those students who initially had little experience in the outdoors. The results indicated that those with little experience relied on feeedback more than those with more experience. Over a

third of those students interviewed did not particularly care from whom they received feedback, although some paid more attention to the Course Leader (CL). Some appreciated the feedback more when it was positive, and one student in particular would have found the feedback more worthwhile if it had been given from someone with whom she/he had connected.

Key Findings From Study Two

Research Question 1.

Does self-efficacy increase immediately after the completion of a wilderness course? What are the short-term effects of a wilderness course?

In addressing this question, there were two significant findings. The first was in the control group. The purpose of this group was to assess the effects of anxiety on a student's self-efficacy. It was found that there was a significant increase (p =.000) in self-efficacy scores when the factor of anxiety was controlled by measuring self-efficacy one month prior to participation in a wilderness course. In other words, students tend to perceive themselves to be more efficacious when the potential for anxiety is less. Although there may be other factors that impact upon the significant decrease in self-efficacy immediately before going in the field, this supports Koepke's (1973) findings that students tend to be more anxious just before they begin their wilderness course.

The second finding showed that the posttest time 1 self-efficacy scores were signficantly higher than the pretest self-efficacy scores (p =.000). This was primarily due to the drop in self-efficacy for women from control to pretest (See Question #3 for further discussion). Some of this may be due to the afterglow of the course and the good feelings derived from the accomplishments gained over the last month. This may have created a bias in the results similar to the effects that anxiety has on one's self-efficacy. The increase in posttest time 1 self-efficacy may also be due to the intensity and daily exposure to many of the skills on a NOLS course included in the self-efficacy scale.

Research Question 2.

Does the increase in self-efficacy persist over time (what are the long-term effects of a wilderness course?).

Self-efficacy scores were significantly lower at posttest time 2 (one year later) than at posttest time 1 (immediately after a course). This finding suggests that when skills and experiences are fresh and current, self-efficacy tends to be at its highest. Over the course of a year, when outdoor skills were likely to be less frequently used and condensed as compared to a 30-day wilderness course, self-efficacy decreased, but not to the level the students experienced when they began the wilderness course. Since posttest time 2 self-efficacy scores remained significantly higher than control or pretest groups, one can

conclude that the self-efficacy scores persist over time, and therefore provide some indication that the NOLS experience provided an avenue for increasing one's self-efficacy in wilderness education. Furthermore, these results imply that students, particularly female students, need to keep actively and consistently involved to maintain self-efficacy.

Research Question 3.

Are there differences between female and male self-efficacy scores?

The only significant gender difference in self-efficacy scores was found in the pretest measures where males had significantly higher self-efficacy scores than females (p =.000). There were no significant differences in self-efficacy levels between females and males at posttest time 1 or 2. Precourse anxiety potentially explains the pretest difference. Female and male self-efficacy scores were not different when assessed 1 month prior (control group). This suggests that female self-efficacy may tend to be more affected by anxiety than male self-efficacy. Another explanation for pretest differences may be that given a stressful situation, females may underestimate their abilities and rate themselves conservatively on their abilities to perform a task. On the other hand, males may overestimate their abilities and give themselves a generous

rating of their ability to perform a task during stressful and anxious situations.

This difference in self-efficacy between females and males immediately before the course may also have been influenced by the kinds of tasks that were about to be performed. Since the self-efficacy scale consisted of wilderness tasks which tend to be more socially defined as male oriented (i.e., tasks requiring physical strength), a female's perception of her ability to perform such tasks may have decreased her confidence immediately prior to the course.

A third explanation involves females acting more intuitive while males tend to be more action/task oriented. According to Ferrier (1992), males tend to take a course of action without really taking into consideration their intuition about their action. In other words, males tend to be less connected with their socioemotional selves. On the other hand, females tend to intuit their behaviors and are more conservative in perceiving their actions. In relating this information to the study results, the control group may have offered females the time as well as absence of anxiety to cognitively and intuitively think through their perceptions of their ability to perform a task. This more inherent and instinctive ability to first intuit tasks and experiences may be part of the reason for feeling more efficacious than males in the control group and less

efficacious in the pretest group. Women and men employ different strategies to cope with different and stressful situations. For example, males instinctively are less inclined to take the time to intuit their ability to perform a task. Men tend to be more task oriented and consequently become more immediately involved in the task (Appling, 1989). Therefore, they have less time to become anxious. Thus, for them, anxiety may not directly effect their level of self-efficacy as much as it does females.

Path Model Propositions.

The five path model propositions and their key findings are repeated here. In addition, Questions 4 & 5 will be addressed as they related to these five propositions.

1. Leadership development is directly and positively influenced by self-efficacy.

The path coefficients between self-efficacy and leadership development shown in the full hypothesized model (Figure 9) and in the female and male hypothesized models (Figures 10 and 11) were positive and thus in the direction predited by the literature. This indicates that leadership development is positively influenced by self-efficacy.

2. Self-efficacy is positively influenced by goal attainment, mentoring and feedback.

Figure 9 reveals that self-efficacy was positively influenced by goal attainment, mentoring and feedback. In

Figure 10, self-efficacy was negatively influenced by immediate feeback for females ($\underline{B}$ =-.01), yet mentoring significantly influenced female self-efficacy ($\underline{B}$ =.19). Figure 11 illustrates that goal attainment had a negative influence on female self-efficacy ($\underline{B}$ =-.05), and immediate feedback had a strong influence on male self-efficacy ($\underline{B}$ =.25). Although the sample as a whole supported Bandura's (1986) research on the positive impacts that feedback and goal attainment have on self-efficacy, this study did not indicate support when the sample was divided between females and males. If Bandura had considered gender, there may have been different results in his research.

3. Goal attainment, mentoring and feedback are not related to each other.

There was a significant relationship between goal attainment and mentoring ($\underline{r}$ =.21), with positive correlations in evidence between mentoring and indirect feedback, mentoring and immediate feedback, mentoring and positive feedback, and mentoring and amount of direct and indirect feedback. Relationships between goal attainment and the feedback variables were either negative, or close to zero. The positive relationships that occurred among goal attainment, feedback and mentoring supports the literature that describes goal attainment and feedback as positive

components of a mentoring process (Jeruchim & Shapiro, 1992).

4. Goal attainment, mentoring and feedback are the only predictors of self-efficacy.

The results revealed that goal attainment, mentoring and feedback explained some of the variance in predicting self-efficacy (R^2 = .08). However, these variables explained 34% of the variance for females and 9% for males indicating that the hypothesized model is a stronger predictor of leadership development for females than males. Mentoring explained most of the variance for females (23%) which indicates that goal attainment and feedback do not explain much variance for either gender. There is a need to consider and include other factors that can impact self-efficacy.

5. Goal attainment, mentoring and feedback are not direct predictors of leadership development.

The full hypothesized model (Figure 9) revealed that goal attainment, mentoring and feedback are better predictors of self-efficacy than leadership development. However, for females, mentoring had a significant path coefficient (β =.37) with leadership development, indicating a direct influence. Again, this result reveals the significance mentoring has not only on a female's self-efficacy but also on her development as a leader. Since

mentoring reflects a more relational element, this supports Luna & Cullen's (1990) research that women seek interaction and the opportunity to share experiences.

Research Question 4.

Do higher levels of feedback, goal attainment, and mentoring show a positive relationship with self-efficacy?

Positive feedback, immediate feedback, and mentoring were significantly and positively correlated with self-efficacy (r =.246, r =.211, r =.231, respectively). After partialling out the effects of positive and immediate feedback, mentoring (B =.19) had a positive influence on a person's level of self-efficacy. This was followed by positive feedback (B =.16) and immediate feedback (B =.14). Goal attainment revealed little influence (B =.05) on self-efficacy.

The findings were more revealing when the sample was divided by gender. For female students, mentoring (B =.38), positive feedback (B =.21), and goal attainment (B =.24) were the strongest predictors of self-efficacy. Unlike the findings in the overall sample, immediate feedback (B =-.01), was a weak indicator of female self-efficacy. These results show that females rely on mentoring relationships, specifically when those relationships can provide an avenue for positive feedback. There was also a significantly positive correlation (r =.213) between

mentoring and goal attainment. Although not tested in this model, it is possible that mentoring leads to higher goal attainment, and together lead to an increased level of self-efficacy.

In the male population, immediate feedback was the only strong indicator of higher self-efficacy ($\underline{B}$ =.29). The remaining variables had very little, if any, impact on the male students' reported self-efficacy (path coefficients were all less than .081). Since males have been found to be more task oriented (Appling, 1989) than females, perhaps their success in a task provides them with sufficient immediate feedback to boost their self-efficacy.

Research Question 5.

Is there a positive relationship between self-efficacy and leadership development?

For the overall population sampled, the relationship between self-efficacy and leadership development (continuous involvement in wilderness education activities) was positive ($\underline{r}$ =.155). Furthermore, self-efficacy had a positive influence on leadership development ($\underline{B}$ =.15), although not significantly so.

In the female sample, self-efficacy immediately after the course had very little impact on one's leadership development ($\underline{B}$ =.008). However, one year after students completed the course, findings showed that leadership

development had a significant impact on female self-efficacy ($\underline{B}$ =.45, $\underline{p}$ =.02). This may indicate that it is only after females have affirmed their development as a leader (through continuous involvement in wilderness education activities) that they feel self-efficacious. Thus, the process of leadership development enhances female self-efficacy.

Unlike females, male reported self-efficacy immediately following the course had a strong impact on leadership development ($\underline{B}$ =.39). However, self-efficacy one year after the course, had less impact on leadership development ($\underline{B}$ =.11). Because males are more task oriented, they may not require continuous involvement in wilderness education activities to augment their self-efficacy. Rather, males may feel efficacious after a single NOLS course. It is this perceived self-efficacy that encourages them to develop their leadership potential.

Lastly, these findings revealed that self-efficacy not only had an overall positive, nonsignificant relationship with leadership development, but that leadership development also had a positive effect on self-efficacy for females. The only significant impact found was the impact that female self-efficacy (one year later) had on leadership development ($\underline{B}$ =.45, $\underline{p}$ =.02). Since self-efficacy has an impact on leaderhip development and leadership development has an impact on self-efficacy, this suggests that the relationship between self-efficacy and leadership development may not be

linear but rather dynamic, continuous and cyclical. Future research on the recursive nature (two-way causal flow) of this relationship is recommended.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this chapter is to draw conclusions from the major findings and discuss the implications of this study. The first section entails a discussion of changes in self-efficacy over time as well as gender differences that exist between female and male self-efficacy levels. Throughout this first section, the emphasis will be on clarifying the outdoor leadership development process. The next section will provide some implications of this research for wilderness educators. The third section, study limitations, assesses ways in which study reliability and validity were impacted. The last section will provide direction for future research on outdoor leadership and wilderness education.

Conclusions From Major Findings

One of the outcomes that is assumed to result from participating in wilderness education courses is leadership. For example, the National Outdoor Leadership School (NOLS) hopes that students continue their involvement in wilderness

education in the future, yet there has been no assurance that it occurs.

The purpose of this research was to identify those factors which contributed to leadership development in wilderness education. There were three objectives: a)to assess the short and long-term effects of self-efficacy on leadership development; b)to evaluate gender differences in self-efficacy and in outdoor leadership development; c)to propose and evaluate a path model of outdoor leadership development. This section will indicate the extent to which these objectives were achieved and how this information will enhance the body of knowledge on outdoor leadership. To evaluate these objectives, the six most significant findings from this study and their respective conclusions are discussed below.

Major Finding 1 - Short-Term Effects of Self-Efficacy

In the short-term,self-efficacy scores were significantly higher immediately after the wilderness course. This effect was not a surprise since students were engaged in wilderness tasks and activities continually throughout a 23 or 30 day period. These results indicate that experience, opportunities to expand knowledge and skills in the outdoors can enhance one's self-efficacy in wilderness education activities. Formal outdoor education

programs can be an effective vehicle for developing leadership.

Major Finding 2 - Long-Term Effects of Self-Efficacy

One year after their NOLS course, students' self-efficacy scores dropped significantly yet continued to persist at a significantly higher level than their pretest self-efficacy scores. Thus, it is important to continue involvement in wilderness education activities as defined in this study. However, at this point, it is unknown which activities are more important than others in developing higher degrees of self-efficacy.

Major Finding 3 - Gender Differences in Self-Efficacy

Gender differences were most evident in pretest measures as males had significantly higher self-efficacy scores than females. However, there was no difference between female and male self-efficacy at posttest time 1 and posttest time 2. One of the explanations posited for the significant gender differences found during the pretest is the level of anxiety students feel before they begin a wilderness course. Anxiety effects will be further discussed in the Major Finding #6 paragraph (pp. 149).

Major Finding 4 - Proposed, Respecified Model

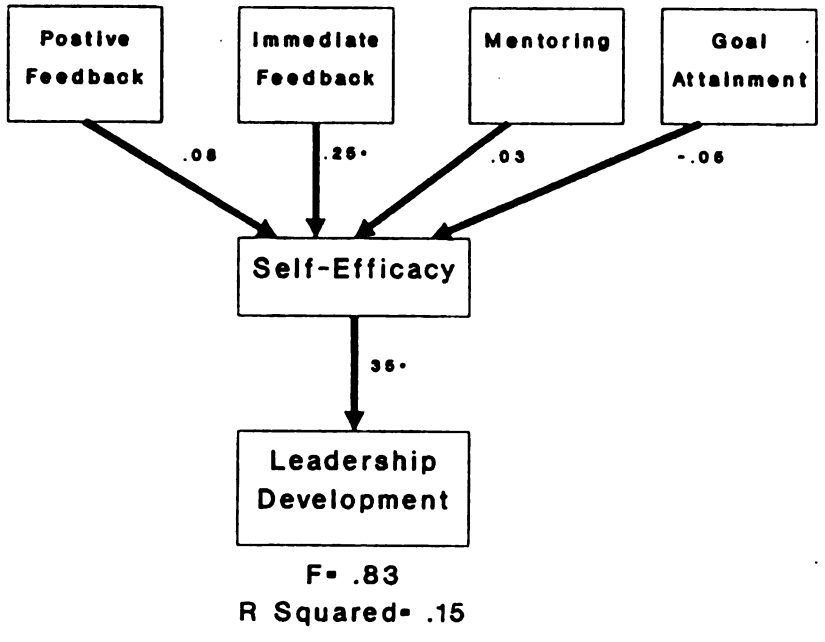
Although wilderness education outcomes (i.e., improved self-esteem, leadership) provide a foundation for supporting the benefits of a wilderness education program, the literature identified the need to investigate the process by which desired outcomes on a wilderness course are achieved (Klint, 1990). The third objective of this study was to identify the process by which the outcome of leadership development was obtained. The proposed process was identified by a review of three bodies of literature and relevant theories. Four variables were selected to investigate the process of leadership development through the use of path analysis. Goal attainment, feedback, and mentoring were supported in the literature as having positive influences on self-efficacy, and self-efficacy was supported as a correlate of leadership development. Leadership development was operationalized in this research to indicate continued involvement in wilderness education. It is important to recognize that this research was concerned with the "process" toward leadership rather than defining who is and is not an outdoor leader.

The full leadership model examined self-efficacy and leadership development linkages via path analysis. About 9% of the variance was explained by the three independent variables and self-efficacy with regard to their influence on leadership development. The new respecified model

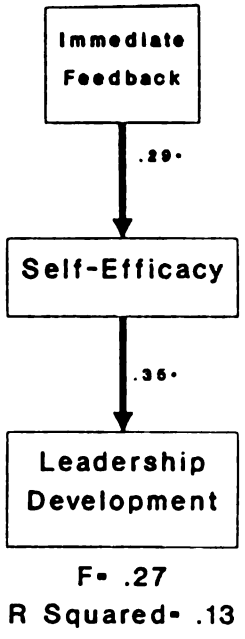
eliminated the link between goal attainment and self-efficacy, thus creating a more parsimonious model of leadership development. However, neither the hypothesized or the respecified model resulted in significant goodness of fit ratios. Thus, Major Finding 4 is that neither model did a complete job of predicting leadership development. The path coefficient between self-efficacy and leadership development was positive indicating that self-efficacy had a positive, yet nonsignificant impact on leadership development. When dividing the sample by gender, self-efficacy was positive but still nonsignificantly related to leadership development for females and males. Since the variables in the full model explained little variance (9%) and since the goodness of fit ratio of the model was nonsignificant (F =.65), there is a need to investigate other variables and/or new measures that minimize the error in regression and enhance understanding of the leadership development process. Gender is one such variable that should be included in the path model.

Leadership development was found to have a positive impact on self-efficacy (one year later). This suggests that self-efficacy may not function merely as a means to leadership development (i.e., recursive relationship) but rather may operate in a cyclical manner whereby leadership development and self-efficacy impact each other in a continuous process. This result provides justification for

These revolving relationships do not hold for males. Male self-efficacy is a much stronger predictor on leadership development than female self-efficacy ($\underline{B}$ =.35 vs. $\underline{B}$=.009, respectively) (Figure 11). In other words, the more efficacious males perceive themselves to be in a particular task or tasks, the more likely they will continue their involvement in wilderness education. However, the path coefficient between leadership development and self-efficacy (one year later) is much lower ($\underline{B}$ =.12 vs. $\underline{B}$ =.45), indicating that continued involvement in wilderness education activities does not have as strong of an impact on male self-efficacy as it does for females. The full hypothesized model (Figure 11) does not fit the data, particularly for men, as it shows an F value of .83. Approximately 15% of the variance was explained by self-efficacy and the independent variables for males. Since there is not a strong relationship between leadership development and self-efficacy one year later, the proposed respecified model for males ends at leadership development. Including self-efficacy (one year later) in the model for males decreases the variance explained to 2%.



FULL HYPOTHESIZED MODEL



PROPOSED, RESPECIFIED MODEL

* significance <.05

Figure 11. Full Hypothesized and Proposed, Respecified Path Model of Leadership Development for Males

Summary

In the remaining section of this chapter, an overall summary of the key findings from Study One and Study Two will be presented. Each research question will be restated and results pertinent to that question will be highlighted. Path model propositions will also be addressed.

Key Findings From Study One: Oral Histories

It can be concluded that NOLS has some impact on students' continued involvement in wilderness education, but not necessarily as leaders. The results from the oral histories revealed that everyone (n =19) continued to some degree in wilderness education activities after NOLS. Fifteen out of the nineteen people interviewed belonged to an outdoor or environmental organization. Just under half of the former students indicated that NOLS had an influence on their continued involvement in wilderness education activities. These findings also support the long-term effects of a wilderness course on leadership development.

Approximately 84% of the students relied on feedback to guide their performance on the course. Overall, feedback appeared to be an important element for most students although, it may be more salient for those students who initially had little experience in the outdoors. The results indicated that those with little experience relied on feeedback more than those with more experience. Over a

third of those students interviewed did not particularly care from whom they received feedback, although some paid more attention to the Course Leader (CL). Some appreciated the feedback more when it was positive, and one student in particular would have found the feedback more worthwhile if it had been given from someone with whom she/he had connected.

Key Findings From Study Two

Research Question 1.

Does self-efficacy increase immediately after the completion of a wilderness course? What are the short-term effects of a wilderness course?

In addressing this question, there were two significant findings. The first was in the control group. The purpose of this group was to assess the effects of anxiety on a student's self-efficacy. It was found that there was a significant increase (p =.000) in self-efficacy scores when the factor of anxiety was controlled by measuring self-efficacy one month prior to participation in a wilderness course. In other words, students tend to perceive themselves to be more efficacious when the potential for anxiety is less. Although there may be other factors that impact upon the significant decrease in self-efficacy immediately before going in the field, this supports Koepke's (1973) findings that students tend to be more anxious just before they begin their wilderness course.

The second finding showed that the posttest time 1 self-efficacy scores were signficantly higher than the pretest self-efficacy scores (p =.000). This was primarily due to the drop in self-efficacy for women from control to pretest (See Question #3 for further discussion). Some of this may be due to the afterglow of the course and the good feelings derived from the accomplishments gained over the last month. This may have created a bias in the results similar to the effects that anxiety has on one's self-efficacy. The increase in posttest time 1 self-efficacy may also be due to the intensity and daily exposure to many of the skills on a NOLS course included in the self-efficacy scale.

Research Question 2.

Does the increase in self-efficacy persist over time (what are the long-term effects of a wilderness course?).

Self-efficacy scores were significantly lower at posttest time 2 (one year later) than at posttest time 1 (immediately after a course). This finding suggests that when skills and experiences are fresh and current, self-efficacy tends to be at its highest. Over the course of a year, when outdoor skills were likely to be less frequently used and condensed as compared to a 30-day wilderness course, self-efficacy decreased, but not to the level the students experienced when they began the wilderness course. Since posttest time 2 self-efficacy scores remained significantly higher than control or pretest groups, one can

conclude that the self-efficacy scores persist over time, and therefore provide some indication that the NOLS experience provided an avenue for increasing one's self-efficacy in wilderness education. Furthermore, these results imply that students, particularly female students, need to keep actively and consistently involved to maintain self-efficacy.

Research Question 3.

Are there differences between female and male self-efficacy scores?

The only significant gender difference in self-efficacy scores was found in the pretest measures where males had significantly higher self-efficacy scores than females (p =.000). There were no significant differences in self-efficacy levels between females and males at posttest time 1 or 2. Precourse anxiety potentially explains the pretest difference. Female and male self-efficacy scores were not different when assessed 1 month prior (control group). This suggests that female self-efficacy may tend to be more affected by anxiety than male self-efficacy. Another explanation for pretest differences may be that given a stressful situation, females may underestimate their abilities and rate themselves conservatively on their abilities to perform a task. On the other hand, males may overestimate their abilities and give themselves a generous

rating of their ability to perform a task during stressful and anxious situations.

This difference in self-efficacy between females and males immediately before the course may also have been influenced by the kinds of tasks that were about to be performed. Since the self-efficacy scale consisted of wilderness tasks which tend to be more socially defined as male oriented (i.e., tasks requiring physical strength), a female's perception of her ability to perform such tasks may have decreased her confidence immediately prior to the course.

A third explanation involves females acting more intuitive while males tend to be more action/task oriented. According to Ferrier (1992), males tend to take a course of action without really taking into consideration their intuition about their action. In other words, males tend to be less connected with their socioemotional selves. On the other hand, females tend to intuit their behaviors and are more conservative in perceiving their actions. In relating this information to the study results, the control group may have offered females the time as well as absence of anxiety to cognitively and intuitively think through their perceptions of their ability to perform a task. This more inherent and instinctive ability to first intuit tasks and experiences may be part of the reason for feeling more efficacious than males in the control group and less

efficacious in the pretest group. Women and men employ different strategies to cope with different and stressful situations. For example, males instinctively are less inclined to take the time to intuit their ability to perform a task. Men tend to be more task oriented and consequently become more immediately involved in the task (Appling, 1989). Therefore, they have less time to become anxious. Thus, for them, anxiety may not directly effect their level of self-efficacy as much as it does females.

Path Model Propositions.

The five path model propositions and their key findings are repeated here. In addition, Questions 4 & 5 will be addressed as they related to these five propositions.

1. Leadership development is directly and positively influenced by self-efficacy.

The path coefficients between self-efficacy and leadership development shown in the full hypothesized model (Figure 9) and in the female and male hypothesized models (Figures 10 and 11) were positive and thus in the direction predited by the literature. This indicates that leadership development is positively influenced by self-efficacy.

2. Self-efficacy is positively influenced by goal attainment, mentoring and feedback.

Figure 9 reveals that self-efficacy was positively influenced by goal attainment, mentoring and feedback. In

Figure 10, self-efficacy was negatively influenced by immediate feeback for females ($\underline{B}$ =-.01), yet mentoring significantly influenced female self-efficacy ($\underline{B}$ =.19). Figure 11 illustrates that goal attainment had a negative influence on female self-efficacy ($\underline{B}$ =-.05), and immediate feedback had a strong influence on male self-efficacy ($\underline{B}$ =.25). Although the sample as a whole supported Bandura's (1986) research on the positive impacts that feedback and goal attainment have on self-efficacy, this study did not indicate support when the sample was divided between females and males. If Bandura had considered gender, there may have been different results in his research.

3. Goal attainment, mentoring and feedback are not related to each other.

There was a significant relationship between goal attainment and mentoring ($\underline{r}$ =.21), with positive correlations in evidence between mentoring and indirect feedback, mentoring and immediate feedback, mentoring and positive feedback, and mentoring and amount of direct and indirect feedback. Relationships between goal attainment and the feedback variables were either negative, or close to zero. The positive relationships that occurred among goal attainment, feedback and mentoring supports the literature that describes goal attainment and feedback as positive

components of a mentoring process (Jeruchim & Shapiro, 1992).

4. Goal attainment, mentoring and feedback are the only predictors of self-efficacy.

The results revealed that goal attainment, mentoring and feedback explained some of the variance in predicting self-efficacy (R^2 = .08). However, these variables explained 34% of the variance for females and 9% for males indicating that the hypothesized model is a stronger predictor of leadership development for females than males. Mentoring explained most of the variance for females (23%) which indicates that goal attainment and feedback do not explain much variance for either gender. There is a need to consider and include other factors that can impact self-efficacy.

5. Goal attainment, mentoring and feedback are not direct predictors of leadership development.

The full hypothesized model (Figure 9) revealed that goal attainment, mentoring and feedback are better predictors of self-efficacy than leadership development. However, for females, mentoring had a significant path coefficient (β =.37) with leadership development, indicating a direct influence. Again, this result reveals the significance mentoring has not only on a female's self-efficacy but also on her development as a leader. Since

mentoring reflects a more relational element, this supports Luna & Cullen's (1990) research that women seek interaction and the opportunity to share experiences.

Research Question 4.

Do higher levels of feedback, goal attainment, and mentoring show a positive relationship with self-efficacy?

Positive feedback, immediate feedback, and mentoring were significantly and positively correlated with self-efficacy (r =.246, r =.211, r =.231, respectively). After partialling out the effects of positive and immediate feedback, mentoring (B =.19) had a positive influence on a person's level of self-efficacy. This was followed by positive feedback (B =.16) and immediate feedback (B =.14). Goal attainment revealed little influence (B =.05) on self-efficacy.

The findings were more revealing when the sample was divided by gender. For female students, mentoring (B =.38), positive feedback (B =.21), and goal attainment (B =.24) were the strongest predictors of self-efficacy. Unlike the findings in the overall sample, immediate feedback (B =-.01), was a weak indicator of female self-efficacy. These results show that females rely on mentoring relationships, specifically when those relationships can provide an avenue for positive feedback. There was also a significantly positive correlation (r =.213) between

mentoring and goal attainment. Although not tested in this model, it is possible that mentoring leads to higher goal attainment, and together lead to an increased level of self-efficacy.

In the male population, immediate feedback was the only strong indicator of higher self-efficacy ($\underline{B}$ =.29). The remaining variables had very little, if any, impact on the male students' reported self-efficacy (path coefficients were all less than .081). Since males have been found to be more task oriented (Appling, 1989) than females, perhaps their success in a task provides them with sufficient immediate feedback to boost their self-efficacy.

Research Question 5.

Is there a positive relationship between self-efficacy and leadership development?

For the overall population sampled, the relationship between self-efficacy and leadership development (continuous involvement in wilderness education activities) was positive ($\underline{r}$ =.155). Furthermore, self-efficacy had a positive influence on leadership development ($\underline{B}$ =.15), although not significantly so.

In the female sample, self-efficacy immediately after the course had very little impact on one's leadership development ($\underline{B}$ =.008). However, one year after students completed the course, findings showed that leadership

development had a significant impact on female self-efficacy (β =.45, p =.02). This may indicate that it is only after females have affirmed their development as a leader (through continuous involvement in wilderness education activities) that they feel self-efficacious. Thus, the process of leadership development enhances female self-efficacy.

Unlike females, male reported self-efficacy immediately following the course had a strong impact on leadership development (β =.39). However, self-efficacy one year after the course, had less impact on leadership development (β =.11). Because males are more task oriented, they may not require continuous involvement in wilderness education activities to augment their self-efficacy. Rather, males may feel efficacious after a single NOLS course. It is this perceived self-efficacy that encourages them to develop their leadership potential.

Lastly, these findings revealed that self-efficacy not only had an overall positive, nonsignificant relationship with leadership development, but that leadership development also had a positive effect on self-efficacy for females. The only significant impact found was the impact that female self-efficacy (one year later) had on leadership development (β =.45, p =.02). Since self-efficacy has an impact on leaderhip development and leadership development has an impact on self-efficacy, this suggests that the relationship between self-efficacy and leadership development may not be

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CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

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One year after their NOLS course, students' self-efficacy scores dropped significantly yet continued to persist at a significantly higher level than their pretest self-efficacy scores. Thus, it is important to continue involvement in wilderness education activities as defined in this study. However, at this point, it is unknown which activities are more important than others in developing higher degrees of self-efficacy.

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Gender differences were most evident in pretest measures as males had significantly higher self-efficacy scores than females. However, there was no difference between female and male self-efficacy at posttest time 1 and posttest time 2. One of the explanations posited for the significant gender differences found during the pretest is the level of anxiety students feel before they begin a wilderness course. Anxiety effects will be further discussed in the Major Finding #6 paragraph (pp. 149).

Major Finding 4 - Proposed, Respecified Model

Although wilderness education outcomes (i.e., improved self-esteem, leadership) provide a foundation for supporting the benefits of a wilderness education program, the literature identified the need to investigate the process by which desired outcomes on a wilderness course are achieved (Klint, 1990). The third objective of this study was to identify the process by which the outcome of leadership development was obtained. The proposed process was identified by a review of three bodies of literature and relevant theories. Four variables were selected to investigate the process of leadership development through the use of path analysis. Goal attainment, feedback, and mentoring were supported in the literature as having positive influences on self-efficacy, and self-efficacy was supported as a correlate of leadership development. Leadership development was operationalized in this research to indicate continued involvement in wilderness education. It is important to recognize that this research was concerned with the "process" toward leadership rather than defining who is and is not an outdoor leader.

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eliminated the link between goal attainment and self-efficacy, thus creating a more parsimonious model of leadership development. However, neither the hypothesized or the respecified model resulted in significant goodness of fit ratios. Thus, Major Finding 4 is that neither model did a complete job of predicting leadership development. The path coefficient between self-efficacy and leadership development was positive indicating that self-efficacy had a positive, yet nonsignificant impact on leadership development. When dividing the sample by gender, self-efficacy was positive but still nonsignificantly related to leadership development for females and males. Since the variables in the full model explained little variance (9%) and since the goodness of fit ratio of the model was nonsignificant (F =.65), there is a need to investigate other variables and/or new measures that minimize the error in regression and enhance understanding of the leadership development process. Gender is one such variable that should be included in the path model.

Leadership development was found to have a positive impact on self-efficacy (one year later). This suggests that self-efficacy may not function merely as a means to leadership development (i.e., recursive relationship) but rather may operate in a cyclical manner whereby leadership development and self-efficacy impact each other in a continuous process. This result provides justification for

future research on the nonrecursive relationship between leadership development and self-efficacy.

Majore Finding 5 - Leadership Development By Gender

The proposed path model did a much better job of describing the process for females, especially via the influence of mentoring and goal attainment. The process of analyzing the model was conducted in two stages. The first stage analyzed the impact the three independent variables (e.g., goal attainment, feedback and mentoring) had on self-efficacy. The second stage analyzed the full model and investigated the relationship self-efficacy had on leadership development.

In the first stage mentoring was a significant determinant of female self-efficacy. For males, immediate feedback became the most significant indicator of self-efficacy. These results imply that females rely on mentoring relationships to boost their self-efficacy whereas males find that the immediate engagement in a task provided them the self-feedback needed to increase self-efficacy. It is important to acknowledge that feedback is also received from instructors and other group members. Since there was a higher percentage of male versus female instructors, male instructors may give different forms of feedback to their male students than their female students. This may have resulted in women seeking more female mentoring and males

counting more on immediate feedback from their male instructor.

In the second stage, female self-efficacy was found to have a positive yet weak impact on leadership development. Male self-efficacy was found to have a stronger impact on leadership development than males, yet nonsignificantly so. The only factor that had a direct and significant impact on female leadership development was mentoring (B =.37).

As an overall evaluation of Objective 3 (path model development), there was some success in capturing part of the process toward leadership development. Specifically, the proposed model in Figure 6 explained 9% of the variance in self-efficacy. This supports Bandura's findings (1986) and collectively, feedback, goal attainment and mentoring appeared to be positive indicators of self-efficacy. Future models need to include additional factors and improve measurement of existing ones. The path model worked especially well for females (i.e., explained more variance). Furthermore, since gender became a salient factor in measuring leadership development in this study, it needs to be included in future models.

Major Finding 6 - Anxiety Results

The literature revealed that anxiety often experienced before a student begins her/his wilderness course can bias one's self-efficacy (Koepke, 1973). This study supported

Koepke's findings. Both females and males had significantly higher scores when their self-efficacy was assessed one month prior to their course. However, females had significantly lower self-efficacy scores than males immediately before their NOLS course. Since the only significant difference between female and male self-efficacy was found in the pretest measure, one may conclude that anxiety existed before the start of a course and that females appear to have been more affected by it than males. Other reasons for the differences may be:

1. Females underestimate their abilities to perform a task and males overestimate their abilities;
2. The heightened anxiety experienced by females may be due to the social construct of the environment (e.g., engagement in a task or experience involving strength and conveying male dominance). In other words, females' perception of themselves as less efficacious in male dominated tasks can create anxiety.

Summary of Findings and Conclusions

In sum, this research supported the need to assess the process of leadership development as a valid way to understanding leadership as an outcome. It is difficult to develop leadership if the factors that influence the process are unknown. Since self-efficacy was found to have a weak influence on leadership development, it is important to

further investigate other factors (i.e., residuals) that are not included in the model, but which may impact leadership development.

Moreover, the results of this research were intended to create linkages between the bodies of knowledge concerning leadership, outdoor leadership and self-efficacy. Situational leadership was assessed by investigating the demographic and situational characteristic of gender. The degree of involvement in wilderness activities after a course was an indication of becoming an outdoor leader. Involvement was evaluated by investigating a student's skills, knowledge and experience before and after a wilderness course.

In essence, there were no significant increases in a student's involvement in skills and attending conferences and workshops one year later. However, there was a significant increase in the number of students leading outdoor/adventure trips after NOLS, especially for females (p =.008). It appears that NOLS had a greater impact on the number of trips led by women than on continuing their involvement in wilderness skills, conferences and workshops. It is important to consider and evaluate the process of leadership, as it was found to be different between females and males.

Implications for Wilderness Educators

The results of this research indicate that given certain conditions, students will continue their involvement in certain wilderness education activities after their NOLS experience. Continued involvement in wilderness courses contributes to self-efficacy in wilderness tasks, particularly for women. This, in turn, may provide the motivation to continue participation in wilderness education activities. NOLS and other wilderness education programs can benefit from the results of this study by re-examining their own process of developing leaders. The following recommendations are offered to help guide wilderness educators in their attempts to improve students' development as leaders.

Perhaps, the most important finding was that the process of leadership development was different for women than men. The literature supplied a plethora of information regarding differences in female and male characteristics (Appling, 1989; Matlin, 1987; Warren, 1985). It is important to be aware of these characteristic differences (e.g., females learn by observation first, males learn by doing first) and provide a variety of teaching methods that would enable the greatest potential for leadership development to occur for each gender. It is recommended to incorporate classes into instructor's courses that help sensitize instructors to the differences between females and

males in their development as confident persons and competent leaders in wilderness education. Furthermore, providing ongoing workshops and seminars concerned with ways to improve leadership potential for both genders would also be helpful.

A notable difference between females and males was seen in their responses to mentoring. While mentoring contributed to improving students' self-efficacy, it was more significant for females than males. This indicated that providing mentoring relationships more consistently as part of the NOLS curriculum may enhance self-efficacy, thus increasing the potential for leadership development. While NOLS instructors provide some one-on-one guidance and sharing of goals with students, this research points to the need for an increase in these interactions. Furthermore, offering more opportunities for females to participate in all-women courses may provide the environment and experience that fosters a greater potential for natural mentoring to occur. According to Luna & Cullen (1990), this opportunity can have an impact on future success.

This research also reveals that the type of feedback given to students throughout a wilderness course is important. Although both positive and immediate feedback contribute to one's self-efficacy, positive feedback was more important for females. Conversely, immediate feedback was more significant for males. Thus, instructors and

wilderness educators need to provide both types of feedback. It is also important that the positive and immediate feedback given to students is not only accurately provided (evaluate things that have been observed) but that it remains continuous throughout a course.

Finally, wilderness educators need to be cognizant of the fact that anxiety is experienced by many students, particularly females, immediately prior to the commencement of a wilderness course. Although NOLS instructors provide some degree of one-on-one guidance and feedback with students, it is suggested that this continue to a larger degree. Because anxiety appears to affect a student's self-efficacy, educators must implement ways to reduce that anxiety, especially for females. One way to accomplish this is to insure that each student is given the opportunity to share information about themselves (i.e., goals, fears, etc.) with another instructor in the first few days of the course. This one-on-one time with students, particularly females, may reduce the effects of anxiety on their self-efficacy. Deemphasizing strength and emphasizing judgment (skills, knowledge and experience) as a means to successful outdoor leadership may provide students, particularly women, a more attainable and realistic goal of leadership development in wilderness education as well as reduce the anxiety experienced before a course.

Limitations of the Study

There were a number of threats to internal and external validity of this study. The quasi-experimental nonequivalent control group design tends to control for all but three threats to internal validity. Below is a brief discussion of the three threats in this research.

1. Selection Bias: Subjects were not randomly selected but rather pre-selected based on type of course and time of course. In other words, the sample was not a probability sample that was randomly selected. In this situation, certain types of people may select a particular type of course which may have affected the overall measurement. Students who take the Outdoor Educator's courses opposed to Wind River Wilderness course may differ demographically, thus creating a bias in the selection of courses. It may be more valid to assess results relating to one type of course rather than examining three different course types.

2. Instrumentation Bias: Scaling problems are usually more revealing the more nonequivalent (nonrandom) the experimental groups (Campbell and Stanley, 1963). Although weak variable measurements in the 1992 data collection instruments (e.g., feedback, mentoring and goal attainment) are changed in the 1993 survey, the validity of the composite goal attainment variable is still in question.

Due to little variance in the goal attainment results (i.e., most students attain their goals), goal attainment may need to be measured differently to solicit greater variances in the answer.

Another measurement error occurred in the posttest time 2 survey. Students were asked to recall what their involvement was in wilderness education and leadership development activities before they came to NOLS. The data would have been more valid and less subject to recall bias if that question was asked in the pretest measurement, before a student started the NOLS course.

Since gender was a salient component to the leadership development process, failure to include it in the path model was a limitation to the study. By including gender in the model, more variance may have been explained.

The oral histories may be more supportive of the survey data, if they were conducted prior to starting the construction and administration of the quantitative portion of the research. Due to time constraints of the research study, oral histories could not be obtained before the administration of the surveys. In this manner, the quantitative surveys may have been built, more than they were, upon the results and information gathered in the oral histories. In addition, the inconsistent method in which the information was obtained (telephone vs. face-to-face)

may create a response error and affect the depth to which people respond.

3. Maturation and History Bias: Due to the longitudinal nature (e.g., maturation) of the design between posttest time 1 and posttest time 2, subjects may change their views and thoughts based on biological as well as intellectual maturation over the course of a year. Furthermore, external stimuli (e.g., home, school environment, working environment) and exposure to their perspective locations (i.e., history), may also affect measurement in the posttest time 2 survey. Although there was some control over history and maturation effects through the acknowledgement of activities students participated in over the course of a year, these effects were not entirely controlled. There was no second control group measure as is typically the case in a non-equivalent control group design (Figure 4). This prevents the conclusion that NOLS was the sole source of enhanced self-efficacy and leadership development.

External Validity

1. Generalizability Across Wilderness Education Programs: The target population assessed in this study involved subjects participating in wilderness education programs whose primary mission is leadership development. Although some of the results may be applicable and generalizable to

other wilderness education programs that have similar structures and missions to NOLS, these results may not be as valid or reliable due to the type of student (e.g., socioeconomic status, region of the country) involved in the program. Differences in the population sample may result in unreliable measures. The sample results can only safely generalize to certain NOLS courses due to the uniqueness of the mission and structure of the program.

2. Generalizability Across NOLS courses:

Although each course selected for this study had characteristics similar to those of all NOLS courses, there may be enough variation to question the generalizability of results to all NOLS students.

Recommendations for Future Research

This research extends the discussion of leadership development. Because the process of leadership development is continuous, further discussion should be representative of this process. This final section contains eight recommendations for future research, stimulated by the instrumentation, administration and results conducted in this study.

1. Since the total variance in the full hypothesized path model of leadership development explains less than 10% of the variance from the pre-selected variables, further

investigation of additional variables from some of the other 90% is needed. Bandura (1977, 1986) addresses the impact that performance attainment has on self-efficacy. Performance attainment and other residual variables such as age and age differentiation between instructor and student, experience level and self-efficacy level before a wilderness course may provide a greater explanation of the variables that contribute to self-efficacy after a wilderness course and the overall leadership development process. Furthermore, gender may also be a factor that would explain more variance in the model. Gender was not included in the model because it was not found in Bandura's (1986) research to be a factor contributing to self-efficacy or a factor that would appear to impact the process toward leadership development.

2. Because mentoring was a strong indicator of self-efficacy and leadership development, especially for females, additional examination of the relationship that mentoring has on leadership development would be beneficial. Conducting indepth interviews with students in outdoor leadership positions may help to develop better measures of mentoring and provide results that further support the influence of mentoring on self-efficacy and leadership development.

3. Since the process of developing leadership was different for females and males, designing a study that

specifically investigates how the gender of leaders effects the performance and leadership outcomes of students would be helpful. Do female leaders have different effects (e.g., building confidence, developing skills, learning about leadership) on female students than they do on male students? Do male leaders have different effects on male students than they would with female students? Because this study does not assess the impact of same-sex mentors and proteges, other studies suggest that female mentors with female protege's may enhance self-efficacy levels of women participants (Luna & Cullen, 1990). Providing more female instructors as mentors and role models may encourage more female students to pursue leadership in wilderness education.

4. While this study looked specifically at the process of leadership development, how established leaders/instructors maintain their leadership skills over time remains unexplored.

5. NOLS is not only interested in training outdoor leaders but is also interested in providing leadership skills and experiences that are transferable to other fields and disciplines. It may be worthy to assess a variety of common leadership characteristics and abilities and measure them similarly to how self-efficacy was measured in this study. This leadership measurement would provide a personal perception of one's ability as a leader before and after a

course. Providing a one-year followup may help assess how the leadership skills gained from a wilderness course have been exercised in other situations or jobs.

6. This study showed that anxiety may deflate a student's self-efficacy immediately prior to a course, particularly for females. Similar research needs to explore if the exhilaration often experienced by students after a course falsely inflates a student's self-efficacy immediately after a course.

7. In determining whether NOLS develops high quality leaders in wilderness education, additional explorations in this area would be helpful. Further research needs to employ the measurement of leadership development defined by this study to compare those people in wilderness education who have not participated in a NOLS course with leaders who have been trained by NOLS. This would show if the self-efficacy and leadership abilities of both NOLS and non-NOLS leaders in wilderness education differ.

8. Past studies have investigated the mediating effects (relationship between a predictor and a criterion variable) between self-efficacy and perceived control (Litt, 1988; Schiaffino & Revenson, 1992). Because the literature demonstrates how these two variables work in concert with each other, it would be beneficial to examine the combined effects of self-efficacy and perceived control on leadership development. This study contains a measure of perceived

control, but the scale items are not specific to the situation (i.e., a NOLS course), and thus are not directly compared to the self-efficacy scale results.

Conclusion

This research offers wilderness educators and researchers greater insight into the process by which outdoor leadership is obtained. The findings provided a strong foundation for further investigation into additional antecedent variables that influence leadership development. Such research will help both course instructors and academicians to better understand the complex and dynamic process of leadership development for both women and men participating in wilderness education.

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APPENDICES

APPENDIX A

Leadership According to NOLS

NOLS believes the best leader is "the person who exercises the common sense and good judgment to help everyone travel safely and enjoyably through any terrain in all situations." (NOLS Catalog of Courses, 1992).

The question that the staff and administration continually deliberate over is, "Does NOLS teach leadership?" Although there are been people who have attempted to provide enlightened answers to that question (Timmons, 1989; Kallgren, 1991) through both verbal and written dialogue, the answer(s) remain(s) unsettled. It would appear appropriate for NOLS to make a strong affirmation that "YES, NOLS does teach leadership and here is the evidence to prove it." However, that is where the gap exists - there is no scientific evidence that leadership indeed is "taught" at NOLS. In fact there seems to be the opinion that leadership cannot be directly taught but rather indirectly learned experientially. Others have changed the verb from "taught" to "developed" which seems to be more broad-based and allows for more flexible methodology (Cain & McAvoy, 1990).

Based on the core curriculum, NOLS uses the wilderness as a means to develop leadership by providing the opportunities to; 1) experience and develop outdoor skills

(campsite selection, shelter and stove use, fire-building, cooking, waste disposal, route finding and navigation, climbing, backpacking, fishing, etc.); 2) become more consciously aware and concerned about the environment through minimum-impact camping and resource protection techniques; 3) develop the knowledge of ecosystems, flora and fauna identification, geology, weather, etc.; 4) understand and experience the significance of safety and judgment in the wilderness, and 5) provide numerous opportunities to strengthen decision making and problem solving skills, expedition planning, and group dynamics. Through this curriculum, NOLS is committed to being the best source and teacher of leadership and wilderness skills.

According to Timmons (1989), NOLS can teach students about leadership but can't make them leaders. In other words, NOLS staff (instructors) can help students develop the tools and skills they deem necessary to be leaders. From that point on it is up to students as to how they use those skills to acquire the judgment needed to become competent outdoor leaders. Many of the skills are transferable to everyday life outside of the outdoor environment. It is hoped that students will continue to use the leadership skills in all facets of their life, including wilderness education, well after they have graduated from NOLS.

APPENDIX B

HISTORY OF THE NATIONAL OUTDOOR LEADERSHIP SCHOOL

"There is nothing more basic to the NOLS mission than taking a leadership role to influence the future of our environment. Our leadership should not just be reflected in the way we build our fires, but rather in the way we teach our students, support our programs, live our lives." (John Gans, 1989).

Paul Petzoldt sensed that wilderness areas were going to become used more frequently and that the general public was going to continue to turn to outdoor and wilderness areas as an alternative yet challenging environment for pursuing outdoor recreation. He strongly felt the need to establish a school that would provide the opportunity to teach and educate people to use and enjoy the environment without harming it. He wanted to offer young people the opportunity to develop wilderness skills and values necessary to carry out a lifetime of recreation. Petzoldt believed that real life experiences in the wild outdoors provided a good foundation for developing judgment and leadership with the education of understanding ecology and conservation for the outdoors (Paul Petzoldt, 1971).

NOLS instituted its' first wilderness course on June 8, 1965. Forty male students arrived in Lander where they were issued supplies and equipment that would begin a 30 day adventure in the Wind River Mountains. The group was

divided into patrols of approximately twelve students each and were sent to various locations in the mountains. In 1966, the first women participated in courses. Primary courses (now called Adventure Courses) for 14 and 15 year old students began in 1967. By 1969, NOLS grew to 250 students. The greatest source of publicity for NOLS was (and continues to be) through word-of-mouth, although occasionally, NOLS has been highlighted nationally (Life Magazine (1969); Alcoa Hour (TV), (1970); Washington Post (1983); Backpacker Magazine (1983, 1985); American Country Magazine (1988); Trilogy Magazine (1991); Public Broadcasting System (PBS) (1991); and Outside Magazine (1992). During the years of 1970-1975, NOLS began to expand the program to include a branch in Washington (1971), Alaska (1971), Mexico (1971), and Africa (1974). In addition, the first mountaineering course, the first outdoor educator's course, the first geology wilderness course, and the first winter instructor's courses were underway. In 1975, Paul Petzoldt stepped down from Executive Director of NOLS and Peter Simer started his tenure at NOLS. The early 80's marked the development of Instructor training seminars and the publications of "Paul Petzoldt's Wilderness Guide", "NOLS Cookery", and "The National Outdoor Leadership School's Wilderness Guide." In 1984, Peter Simer left NOLS and was replaced by the current Executive Director, Jim Ratz. An alumni association and a scholarship fund was

established between 1984 and 1988 to bring graduates together and to offer financial assistance to those students less economically fortunate. Another international branch was established in Patagonia, Chile in 1989. Presently, India is being investigated as a proposed site for a new branch to open. India mountaineering courses began in 1991 and have been outfitted through the Pacific Northwest Branch.

NOLS is the largest backcountry permit holder in the U.S.. It accounts for more backcountry use (101,000 student days per year as of Sept. 1992) than any other organization. This high level of use coupled with its experience in leading outdoor skills are compelling reasons why the U.S. Forest Service and The Bureau of Land Management (BLM) now request NOLS' input for wilderness management plans through the "Leave No Trace Program" (LNT).

ORAL HISTORY INFORMATION
APPENDIX C AND D

APPENDIX C

ORAL HISTORY QUESTIONNAIRE

DATE OF INTERVIEW: _____

AGE _____

GENDER: F ___ M ___

PRESENT OCCUPATION OR WORK: _____

SINCE NOLS, HAS THIS ALWAYS BEEN YOUR OCCUPATION? IF NOT, DESCRIBE CHANGES.

_____

_____

COURSE TYPE: OEC ___ WMT ___ WRW ___

COURSE LENGTH _____

COURSE DATES _____ TO _____ YEAR ____

COURSE LOCATION _____

INSTRUCTORS: F ___ M ___ DON'T REMEMBER ____

COURSE CONTENT AREAS

Rockclimbing ___
Peak ascents ___
Fishing: Fly ___ Spin ___
Tyrolean Traverse ___
Snow Work (Self-arrest) ___
Cooking and Baking ___
Small group expedition (end of course walk out) ____

River crossing(s) ___
Other _____

WHAT WAS YOUR EXPERIENCE LEVEL BEFORE THE COURSE BEGAN?
PLEASE DESCRIBE:

Introductory ___
Developmental ___
Commitment ___

Introductory: participants have little or no experience with any form of adventure recreation activity. Minimal skills are needed and control rests largely with a designated leader and a set of structured procedures.

Development: participants have some previous experience and are interested in further involvement. Skills are still relatively undeveloped. Group leaders or instructors may be present to teach skills and insure safety.

Commitment: participants have high level skills, experience, and commitment to the activity. Participants at this level are prepared to face substantial risks in an environment that is wild and often unpredictable.

OPEN ENDED QUESTIONS

1. What were some of your reasons in taking a NOLS course?

2. Have or are you involved in any outdoor organizations?
Yes ____ No ____

2a. If yes, which organizations?_____

_____

2b. What is your extent of involvement in each (e.g., member only, volunteer, board member, etc.) How much time per month?

_____

_____

Organization	Involvement	Time/month
_____	_____	_____
_____	_____	_____
_____	_____	_____

3. Do you feel your involvement is a result of having participated in NOLS? Yes _____ No _____
Why or why not? _____

_____

4. Have you participated in outdoor adventure activities since your course? Yes ____ No ____

4a. If yes, which activities have you participated in most frequently?

4b. How much do you participate in the following activities?

	Freq.	Infreq.	Never
Backpacking	____	____	____
Rockclimbing	____	____	____
Mountaineering	____	____	____
Fishing (specify fly or spin)	____	____	____
Camping	____	____	____
Snow Work	____	____	____
Canoeing (specify whitewater or flatwater)	____	____	____
Kayaking	____	____	____
Rafting	____	____	____
Skiing (specify cross country or downhill)	____	____	____
Other _____			

5. Would you describe your performance in technical skills on your NOLS course?

6. Would you describe your performance in leadership skills on your NOLS course?

7. To what degree did you rely on feedback to guide your performance throughout the course?

8. Did it make a difference from whom you received feedback?

9. Were you generally satisfied with the NOLS experience?

10. What did you like least about your NOLS experience?

11. What did you like most about your NOLS experience?

12. What has kept you from participating in NOLS again?

13. Would you participate in another NOLS course if you could?

14. Would you encourage others to take a NOLS course? Why or why not?

15. Have you encouraged others to take a NOLS course?

16. Is there anything else you would like to tell me about your NOLS experience?

APPENDIX D

ORAL HISTORY RESULTS

	Course Type	Year	Age	Gender	# Female Instr.	# Male Instr.	Exper.
1	WMT	1991	22	Male	0	3	Dev.
2	OEC	1991	37	Female	1	2	Com.
3	WMT	1987	24	Female	2	1	Dev.
4	WMT	1989	27	Female	0	3	Dev.
5	WMT	1991	23	Female	0	3	Dev.
6	WMT	1988	24	Male	1	2	Dev.
7	WMT	1987	24	Female	1	2	Dev.
8	OEC	1988	28	Female	2	1	Com.
9	OEC	1987	39	Female	1	2	Dev.
10	OEC	1988	44	Male	1	2	Dev.
11	OEC	1988	48	Male	2	1	Dev.
12	OEC	1988	38	Male	1	2	Com.
13	OEC	1991	26	Male	2	1	Dev.
14	WRW	1991	20	Female	1	2	Intro.
15	WRW	1991	25	Male	1	2	Com.
16	WRW	1991	20	Female	1	2	Dev.
17	WRW	1987	27	Male	1	2	Dev.
18	WRW	1989	21	Male	1	2	Dev.
19	WRW	1988	21	Female	1	2	Dev.

WMT Mean Age = 20.8
OEC Mean Age = 33.8
WRW Mean Age = 19.8
Overall Mean Age = 25.3

	Course Loc.	Month	Present Occupation	Past Occup.	Involve in Out.	Types of Organiz.	Result of NOLS
1	Winds	Aug.	Cook	Student - Econ.	NO		
2	Abs.	June/July	Student	Student	YES	Sierra, Inside Gym	NO
3	Winds	July	Production Potter	Student - Soc.	NO		
4	Winds	June/July	Student - Law	Retail-Outdoor	YES	Summit Mag., Sierra	NO
5	Winds	June/July	Sports Marketing Firm	Student-Econ.	YES	Outside Mag.	NO
6	Winds	June/July	Electronic	Student Bus.	YES	Boyscouts - Assnt. Leader	NO
7	Winds	June	Physical Therapy Aid	Retail and Sales	YES	Nat'l Parks & Cons. Assoc., Nat'l Wildlife Fed.	YES, to a degree.
8	Absor	June/July	Library Technician	Sign Lang. Interp	YES	Sierra, Colo. Mtn. Club	NO, but added to comm. level
9	Absor	July	Teacher- 1st grade	Same	YES	Sierra, Green Peace, Western Colo. Cong.	NO
10	Absor	July/Aug	Reg. Nurse & Episc. Minis.	Same	NO		NO
11	Absor	July	Teacher - High School	Same	YES	AEE, Explorers Post, local travel team	YES
12	Absor	July	Apt. Manager	Carpenter, Student P.E.	YES	Wandering Wheels	YES,
13	Absor	Aug.	Student - P.E. & Rancher	Hardware Store	YES	Outside Mag., Advent. Club	YES, Absolut ely
14	Winds	July	Student	Same	YES	Outside Mag., WEA	YES

15	Winds	Aug.	Lawyer	Student	YES	Sierra, Nat'l Geog.	NO
16	Winds	July/Aug	Student-Anthro.	Same	YES	Part-time summer camp job	YES
17	Winds	July/Aug	Banker	Mtn. Guide in CO.	YES	Outside Mag., Mtn. Guide	YES, comfort level
18	Winds	July/Aug	Student-Environ. Studies	Same	NO		
19	Winds	Aug.	Student-Nursing	Same	YES	Sweetwater fishing Exped.	YES, comfort level

	Reasons for taking NOLS	Participate in Outdoor Adventure Activities	BACK	ROCK	MTNEER	FISH	CAMP	SNOW	CANOE	KAYAK	RAFT	SKI	MTNBKE
1	Learn to camp, Enjoy outdoors, Challenge	YES	2	1	3	2	2	2	3	3	3	2	1
2	Good for learning skills, chance to go in mtns.	YES	1	2	3	3	1	3	2	2	3	3	3
3	Rockclimbing skills, meeting new people, success of climbing a mtn.	YES	1	2	3	2	2	3	2	2	3	3	3
4	Bring skills up to speed, to be out in woods for a long time.	YES	1	2	3	2	1	3	1	3	2	3	2
5	Learn mtn. skills, rockclimbing, experience being out for a long time.	YES	1	1	2	3	1	3	2	2	1	1	1
6	Develop outdoor skills.	YES	1	2	2	1	1	2	2	2	2	1	2
7	Expand experience, improve camping skills, be out for 30 days.	YES	2	2	3	2	1	3	3	1	2	1	1
8	More competent in skills, be in backcountry for a long time.	YES	1	2	3	3	1	3	3	2	2	1	1
9	Word of mouth, thought it would be good.	YES	1	2	2	3	1	3	3	2	3	1	1
10	Wanted to take NOLS for a long time.	YES	1	2	3	1	3	2	2	3	3	1	2

11	Stepped down from football coach and needed training for new job.	YES	1	1	2	3	1	2	1	3	1	1	1
12	Learn teaching technique of outdoor adventure activities.	YES	2	1	2	2	1	3	2	3	2	1	1
13	Learn to be an effective teacher, looks good on resume, NOLS is best school in country.	YES	1	1	3	3	1	3	3	3	3	2	1
14	Learn to conduct self in wilderness, be in the wilderness.	YES	2	2	3	3	1	3	1	2	3	1	2
15	Learn technical skills, be comfortable in wild.	YES	1	1	1	2	2	2	1	3	2	1	1
16	Become proficient in skills, be in the wilderness.	YES	2	2	3	2	2	3	1	3	2	1	1
17	Looking for additional experience, technical skills and instruction.	YES	1	1	1	2	1	1	2	2	2	1	1
18	Fathers Idea	YES	2	2	2	1	1	3	2	3	3	1	1
19	For the challenge	YES	1	2	3	2	1	2	2	3	3	1	1

** 1=Frequently 2=Infrequently 3=Never

	Interview Type	State	Performance in Tech. Skills	Performance in Leadership Skills	Rely on Feedback
1	phone	PA	Did well in Rockclimbing and fishing-Not so well in map and compass	I made decisions when necessary.	Pretty much! would have liked to have had more feedback sessions.
2	phone	MI	Average with other people and average with myself. Did good in map and compass.	Below average. I tend to keep mouth shut when I'm not in charge.	A lot! Maybe too much. Evaluation was devastating.
3	phone	MD	Average to below average in comparison to everyone else. Wish I had been in better physical shape.	I complained a lot. I didn't stand out in the group.	About 60%
4	phone	NC	Average to above average. Good endurance - not afraid to put forth effort.	Strong leader. Was oldest in group. More of a facilitator- less in decision making.	Not very much! Really did not seek it out. I believe other students could have gained from it.
5	phone	CT	I was good at rockclimbing-strength. My weakness was map and compass.	I was leader of group on walkout. I learned a lot from leaders.	Very much! I respected leaders.
6	phone	CO	Average. Navigation was my strength.	Average.	Quite a bit.
7	phone	CO	I've improved since NOLS. boulder hopping was a strength.	Adequate in typical NOLS course.	High degree
8	phone	CO	Navigation and climbing were good. Recommended to take Instructors course.	Solid person. Meant something to the group. I had confidence in my responsibility.	A lot from the group. Personal skills and leadership were good.
9	phone	CO	Below average to the rest of the group.	I had difficulty with the rest of the group. I had different philosophies on leadership.	Yes. The instructors helped me with rockclimbing

10	face	MI	Not well in rockclimbing. Navigation was average and fishing was OK.	Good self-evaluation. I was supportive, aware, and had a non-anxious presence.	I appreciated feedback. More interested in soliciting instructor's feedback.
11	phone	IL	Evaluation was good. enjoyed rockclimbing and performance was good.	Leader of off-trail navigation.	It was important to receive feedback in areas that I did not have lots of experience.
12	phone	CO	Quite well! I had a background in most skills.	Good but not an expert. No major errors. Was leader of the day.	I always relied on instructor feedback.
13	phone	MT	More prepared than a lot of students. More advanced in rockclimbing and weakest in snow work. I was pleased with performance.	I felt very comfortable and natural. Would have liked more leadership sessions. I had hoped to refine my leadership skills.	A lot! I was concerned about how I was coming across to others - aggressive.
14	phone	NJ	Average to below average. I could have done more as I look back. I was slow.	Average. I was concentrating on self more. Had a hard time (physically) on the course.	A lot! Instructors were helpful but could have been more patient.
15	phone	FL	Greatly improved in safety procedures and mountaineering	Above average. I took initiative. I was more concerned about tech. skills rather than leadership skills toward end of course.	
16	phone	DC	Not happy with performance. Map reading was tough. Attitude could have been better. Would have liked to push myself more.	I let others lead because it was easier.	Feedback was important. It helped improve my performance.
17	phone	VA	High achiever, eager, interested and motivated. Rockclimbing was weak, map reading was good.	I was leader of orienteering skills and small group expedition. I was self-centered.	Some. I tried to work on my weaknesses.
18	face	VA	Average. I was slow and steady. I was a complainer.	Average. When I was leader I seemed to take it more serious.	I'm not sure.

19	face	WY	Slightly above average.	I would take leadership responsibility if it was given to me. I learned what kind of leaders I was.	I don't remember much feedback. I do remember an instructor instilling confidence in her in a hiking group.

	Make a difference who you received feedback from.	Satisfied with your NOLS experience?	What did you like least about your NOLS experience?	What did you like most about your NOLS experience?
1	No, not really! As long as it was good feedback. Yet, it would have meant more if it was from instructor that I connected with. Would have liked a female instructor.	Yes, definitely!	There were not enough wrap sessions with the entire group.	Being in the mountains. Learning technical skills. Creating bonds with people.
2	Yes. A male instructor. He had a teachers approach.	Yes, I was!	Lack of time for self.	Doing things I've never done. Being out in the wilderness with other people.
3	No, not really! We had a meeting with all three instructors mid course but it would have been more beneficial to have had individual meetings with 1 instructor.	Yes!	Two instructors were somewhat involved and that created some uneasiness in the group. It wasn't bad and I'm not complaining but it was there.	Exposure to wilderness. Instructors made me feel comfortable. The people and the organization of the course.
4	No, not really! If I had a woman instructor on the course it may have made a difference.	Yes!	Age differences. There was disparity of goals among group.	Opportunity to be out in the woods for that amount of time.
5	Yes!	Yes!	I would have liked to have done more rockclimbing.	The whole outdoor experience. Working with other people.
6	No, not really!	Yes, more than satisfied!	Nothing!	Rockclimbing and use of the ice axe. They were most challenging.

7	I don't think so!	Yes!	Authoritative instructor.	The schedule. We were active all of the time. Not overwhelming.
8	All three. However, I respected the CL the most. (i.e., Del).	Oh yes!	It wasn't long enough!	Community of the group. Support of group and instructors.
9	Yes. I particular male instructor. The males seemed to get along with home better.	Yes!	The feeling like I was told what to do.	Being outdoors.
10	I respected all three instructors.	Yes! Very pleased.	Rockclimbing because it was something that I didn't particularly enjoy.	Length of trip. The physical strength one feels. Getting used to no sound. Cooking and the baking.
11	No not really. But I did put Del on a pedestal.	Definitely!	The climbing at Sinks. It was very hot, water was bad to get to, etc. Equipment. Will invest in own climbing harness-shoes were uncomfortable	Approach of the leader - Del. Off-trail hiking. Mountaineering and daily hiking. The continental divide.
12	Yes. A male instructor.	Yes, very!	The drought. The fishing wasn't good.	Quality of instruction. Very professional. Openness of everyone. Overall feel of organization is good.
13	No. But I identified with the male instructor. There was no opportunity for mentoring.	Yes, definitely!	Food.	Snow Work because it was new to me.
14	No.	Yes.	Rockclimbing because there was an evacuation.	Small group expedition.
15	Yes! Feedback from CL (male) carried more weight.	Yes!	The course wasn't explained well enough to people before hand (physical fitness,etc.)	Exposure to the Wind Rivers. Expert instruction. Duration of course.
16	Yes. The CL had so much experience (female)	So satisfied.	Hoping the group was more mature.	The leaders.
17	Any of the instructors but I appreciated the feedback and knowledge from the one female instructor (camp job)	Yea!	Personally, it was the lack of not acknowledging the creator in the wilderness.	Being outdoors. Being in God's creation - spirituality.

18	Definitely! All three instructors were good but I learned a great deal from the one female instructor.	Definitely!	Blisters. The rain at night and being wet. The rain fly's collapsing.	No restraints. The scenery and the friends.
19	Yes, the female instructor.	Yes, it was a positive experience.	Didn't do as many technical skills as I had hoped to.	Being outdoors. Talking to tent mates, sleeping under the stars. The most favorite was the 3.5 days of fasting.

	Kept you from participating in NOLS again?	Would you participate again in NOLS?	Would you encourage others to take NOLS?	Have you encouraged others?	Anything else you would like to say?
1	Money	Possibly. It is once in a life time thing.	Sure!	Yes!	I learned about danger situations. Would have liked to have done more snow work and mountaineering
2	Money and time.	Yes, I think I would if it wasn't as intense.	Yes.	I have!	It's a character builder. I was disappointed that students didn't teach a course. Limited to freedom on the course.
3	Money and time.	I think so!	Absolutely!	Yes!	I support NOLS even though I can't afford to send money to NOLS!
4	Money and time!	Yes, I would!	Definitely. It was beneficial for physical, mental and emotional reasons.	Yes!	No, not really.
5	Time!	Yes!	Definitely!	Yes.	NO.
6	Money and time!	Yes! I'd love to!	Sure!	Yes!	NO.
7	Money and time!	Yes.	Yes.	Yes.	Each instructor was sensitive to the level of each person.

8	Money!	Yes.	Yes.	I have but it's too expensive.	NO.
9	Money and not being able to have choices.	NO!	Yes, but I would preface it.	Yes!	Not really. The CL was good!
10	Money, time, and freedom.	Oh sure!	Yes.	Yes, it's a character builder.	NO.
11	Money and time commitment with job.	Yes, absolutely.	Yes.	Yes.	Have done some work with O.B. but I really like the NOLS approach to wilderness education.
12	Money!	Yes.	Yes.	Yes.	Well prepared instructors. Harmony and the students were good.
13	Money!	Yes.	Yes.	Yes.	Screening process with OEC's.
14	Money and time!	Yes!	Yes.	Yes.	
15	Time!	Sure!	Yes.	I have.	No, not really! NOLS helped bring about the safety issue with me.
16	Money and time!	Absolutely!	Yes.	I do all of the time!	I achieved my goals.
17	Time. Ability to find that length of time.	Yes. I would like to take instructors course.	Yes.	Yes, lots of people.	Appreciated the experience.
18	Money and summer school.	Yes.	Yes.	Yes.	NOLS pushed me into the facts about the outdoors. I have a minor in environmental studies and major in anthropology.
19	Money!	Yes, I think so if it was in another place.	Yes.	To three of my best friends.	

LETTERS AND CONSENT FORMS
APPENDIX E

APPENDIX E

CONSENT FORM
ORAL HISTORIES

I, _____ have agreed to participate in the personal interview conducted by Rena Koesler. I understand that the purpose of this interview is to obtain information about my former NOLS course. This information will be used to determine the long term effects of a NOLS course on continued involvement in wilderness education.

I understand that I may choose not to participate at all or not answer certain questions.

I understand that my answers will be tape recorded and that the tapes will be destroyed upon completion of the research.

I also understand that none of this information will be associated with my name and that the information will be treated with strict confidence.

By signing below, I understand the purpose of the interview and am willing to participate in the project.

SIGNATURE: _____ DATE: _____

COVER LETTER FOR CONTROL GROUP SURVEY MAILING #1

June 16, 1992

Dear NOLS Student:

Greetings! The time is drawing near to when you will be starting your NOLS course. NOLS is conducting several research projects this summer for the purposes of expanding the knowledge of wilderness education and improving the overall program. The enclosed information is a brief description of one of the research projects being conducted this summer.

NOLS and researchers from Michigan State University (MSU) are interested in determining the nature and extent of continued leadership involvement after a NOLS course. NOLS is also interested in determining what factors influence a student's continued involvement in leadership and wilderness education. Your answers are important as you will help to identify some of the factors that contribute to continued leadership.

Enclosed you will find the survey questionnaire. More detailed instructions for completing the survey are given on the first page of the questionnaire. The survey form should take about 15 minutes to complete. Your answers are voluntary and confidential and protected by the Privacy Act of 1974. Your identity will remain anonymous--the answers you provide will be grouped with all others so that they cannot be associated with you or anyone else in your group.

When you have completed the questionnaire, enclose it in the self-addressed stamped envelope. Staff at MSU will be conducting the data analysis. If you have any questions about completing the survey form or about the survey in general, feel free to contact either Dr. Dennis Propst at MSU in the Department of Parks and Recreation Resources: (517) 353-5190, or Ms. Abby Caul Scott at (303) 665-0903. Thank you for your time!

Sincerely,

Dr. Dennis Propst
Associate Professor
Dept. of Parks and
Recreation Resources

Ms. Abby Caul Scott
NOLS Research Manager

COVER LETTER TO CONTROL GROUP SURVEY MAILING #2

July 8, 1992

Dear NOLS Student:

On June 17th, a questionnaire was sent to you regarding research that is being conducted by NOLS over the next two years. If you received the questionnaire, you may recall that NOLS and researchers from Michigan State University (MSU) were asking for your participation in filling out the questionnaire and returning it to Michigan State University. If you received, completed and returned the questionnaire, disregard this reminder and thank you very much for taking the time to fill it out. If you have not received or completed the questionnaire, please continue to read below as I will briefly explain the purpose of the research.

The purpose of the research is to determine the nature and extent of continued leadership involvement after a NOLS course. NOLS is interested in determining what factors influence a student's continued involvement in leadership and wilderness education. We are very interested in your responses as you will represent those people who were not selected to participate in this study.

Enclosed you will find the survey questionnaire. The questionnaire is fairly self-explanatory and should take about 15 minutes to complete. Your answers are <u>voluntary and confidential</u> and protected by the Privacy Act of 1974. Your identity will remain anonymous--the answers you provide will be grouped with all others so that they cannot be associated with you or anyone else in your group. Please take the time to complete the questionnaire as it will be used to improve the overall NOLS program.

When you have completed the questionnaire, enclose it in the self-addressed stamped envelope. Staff at (MSU) will be conducting the data analysis. If you have any questions about completing the survey form or about the survey in general, feel free to contact either Dr. Dennis Propst at MSU in the Department of Parks and Recreation Resources: (517) 3253-5090 or Abby Caul Scott at NOLS: (307) 332-6973. Thank you for your time!

Sincerely,

Dr. Dennis Propst
Associate Professor
Dept. of Parks and
Recreation Resources

Ms. Abby Caul Scott
Research Manager
NOLS

PRETEST INTRODUCTION AND CONSENT
1992 & 1993

Greetings! My name is Rena Koesler and I'm a graduate student at Michigan State University as well as a NOLS Instructor. I'd like to take a few moments of your time to explain the research that we're conducting over the next few years here at NOLS.

As you know, NOLS is a well known and highly respected wilderness education program. Needless to say, NOLS is very committed to teaching leadership. The purpose of this research is to determine what factors on a NOLS course contribute to leadership development in wilderness education after NOLS. We're also interested in finding out what students are doing after they complete a NOLS course and whether they have continued a level of involvement in wilderness education - such as a career in the outdoors, volunteering for outdoor or environmental organizations or simply subscribing to outdoor magazines.

We would like you to participate in the following questionnaire. Your responses are very important as you will help to identify some of the factors that contribute to leadership development in wilderness education. This information will in turn help us to improve the overall NOLS curriculum. The questionnaire should take about 15 minutes to complete.

Before you begin, I will need to read the following statements to you so that you have an understanding of the research and the questionnaire.

You have been fully informed about the nature of the study. You understand the project and you are willing to participate in the project.

You understand that you may choose not to participate at all or not answer certain questions.

You understand that you may ask any questions you have before, during or after the survey questions are administered.

You understand that all answers and information will be treated in strict confidence and your identity will remain anonymous in any report of research findings. No reports will be made on your individual responses.

Your actual participation in this survey represents your consent in filling out the questionnaire.

1. Answer all 17 questions even if you are unsure. Please respond to the "briefly explain" and the "why and why not" statements.

2. Please use the templates for question #17 to follow down the columns in order not to miss placing an "X" in the boxes.

3. Thank you and you may begin whenever you are ready.

POSTTEST INTRODUCTION AND CONSENT
1992 & 1993

Greetings! How was your course? As you recall, I was here on the first day of your course and I gave you a survey to fill out. I'd like to spend a few moments again to re-introduce myself and briefly explain the purpose of the research to you. My name is Rena Koesler, a graduate student from Michigan State University and a NOLS instructor.

As you know, NOLS wants people to learn something about leadership on a course. They strongly believe through practical hands on experience that students leave with some judgments to be able to continue involvement at some level in wilderness education after NOLS. The questionnaire should take about 15 minutes to complete.

Again, we would like you to participate in the following questionnaire. We'd like to look at the changes from pre course to post course to determine the factors that may have an impact on continued involvement. We'd like to do a 1 year follow up with you to investigate any changes that may have taken place after your NOLS course.

Before you begin, I need to read some statements to you so that you have an understanding of the purpose of the research and the questionnaire.

You have been fully informed about the nature of the study. You understand the project and you are willing to participate in the project.

You understand that you may choose not to participate at all or not answer certain questions.

You understand that you may ask any questions you have before, during or after the survey questions are administered.

You understand that all answers and information will be treated in strict confidence and your identity will remain anonymous in any report of research findings. No reports will be made on your individual responses.

Your actual participation in this survey represents your consent
in filling out the questionnaire.

1. Please try to answer all of the questions, even if you are unsure.

2. Put your name and address of where you can be best contacted by mail in 1 years time. It will be very important for the NOLS program to identify some of the long term effects of a NOLS course. If your are not sure, please put your parents or most permanent address down so that we can mail a follow-up questionnaire to you.

3. Please use the templates for question #17 to follow down the columns in order not to miss placing an "X" in the boxes.

4. Thank you very much and you can begin whenever you are ready.

CONTROL AND EXPERIMENTAL GROUP QUESTIONNAIRES

APPENDIX F THROUGH J

APPENDIX F

1992
PRETEST QUESTIONNAIRE

INSTRUCTIONS: Please try to answer ALL 17 questions even if you are uncertain.

1. COURSE TYPE: a. Outdoor Educators Course (OEC) ___
   b. Wind River Wilderness (WRW) ___
   c. Wind River Mountaineering (WMT) ___

2. COURSE LENGTH: _____

3. COURSE DATES: _____ TO _____

4. COURSE LOCATION: _____

5. WHAT IS YOUR AGE? _____ 6. GENDER? F___ M___

7. WHAT IS THE HIGHEST LEVEL OF EDUCATION YOU HAVE COMPLETED? (Please check one)

   a. ___ Elementary school
   b. ___ Junior high school
   c. ___ High school
   d. ___ Associate or technical degree
   e. ___ Bachelor's degree
   f. ___ Graduate or professional degree

8. ARE YOU A FULL-TIME STUDENT? Yes ___ No ___

   8a. If yes and you are a college student, what is your area of study or intended area of study?_____

9. ARE YOU EMPLOYED FULL-TIME? Yes ___ No ___

10. IF EMPLOYED, WHAT IS YOUR MAIN OCCUPATION?

_____

11. IF YOU ARE NEITHER A STUDENT OR EMPLOYED, BRIEFLY IDENTIFY YOUR OCCUPATION?

_____

_____

12. WHAT IS YOUR OVERALL OUTDOOR EXPERIENCE LEVEL?

   a. Introductory___ (I)

   b. Development___ (D)

   c. Commitment___ (C)

INTRODUCTORY: participants have <u>little or no experience</u> with any form of adventure recreation activity. Minimal skills are needed and control rests largely with a designated leader and a set of structured procedures.

DEVELOPMENT: participants have <u>some previous experience</u> and are interested in further involvement. Skills are at the intermediate level but need guidance and expertise from others to improve. Group leaders or instructors may be present to teach skills and insure safety.

COMMITMENT: participants have <u>high level skills, experience,</u> and commitment to the activity. Participants at this level are prepared to face substantial risks in an environment that is wild and often unpredictable.

13. WHAT IS YOUR PERMANENT RESIDENCE?

a. City: _____
b. State: _____
c. Zip Code: _____

PLEASE IDENTIFY THREE (3) GOALS THAT YOU WISH TO ACCOMPLISH ON THE COURSE.

A._____

_____

_____

B._____

_____

_____

C. _____

_____

_____

CHECK HERE IF YOU HAVE NO SPECIFIC GOALS: ____

15. For the three goals that you just stated, please rate the extent to which you agree with the next two statements, using a 5-point scale. A "5" means that you strongly agree with the statement; a "1" means that you strongly disagree with the statement. Intermediate numbers should be used to reflect intermediate levels of agreement, with a "3" indicating that you neither agree or disagree with the statement.

****

5	4	3	2	1
Strongly agree	Agree	neither agree or disagree	disagree	strongly disagree

____ (15a) It is <u>important</u> that I (as opposed to someone else) influence how well I accomplish the above goals that I set for myself on this course.

____ (15b) I <u>expect</u> to be able to influence how well I accomplish the above course goals that I set for myself.

Instructions: Please rate the extent to which you agree with each of the following statements, using a 5-point scale. A "5" means that you strongly agree with the statement; a "1" means that you strongly disagree with the statement. Intermediate numbers should be used to reflect intermediate levels of agreement, with a "3" indicating that you neither agree or disagree with the statement.

****

5	4	3	2	1
Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree

_____ (16a) I am in control of my life.

_____ (16b) I feel that whether or not I am successful is just a matter of luck and chance, rather than my own doing.

_____ (16c) I feel that others are running my life for me.

_____ (16d) I like to stay with the old tried and true ways of doing things.

_____ (16e) No matter how obvious things seem to be, I can always find something to question.

_____ (16f) I like to change the rules to games.

_____ (16g) It's unusual for me to change my first impressions.

_____ (16h) I have trouble seeing other people's points of view.

_____ (16i) I like hidden figure games.

_____ (16j) I don't usually ask a lot of questions.

_____ (16k) I often use tools or furniture for purposes other than what they were meant for.

_____ (16l) I don't like surprises.

_____ (16m) I often see the humor in situations when others don't.

_____ (16n) I can make almost any activity fun for me to do.

_____ (16o) It is <u>important</u> that I (as opposed to someone else) influence how well I accomplish the goals that I set for myself.

_____ (16p) I <u>expect</u> to be able to influence how well I accomplish the goals that I set for myself.

17. INSTRUCTIONS: Please indicate how confident you are in your present (TODAY) ability to perform the following tasks. If you have no confidence about the tasks place an "X" in the 0% box. Otherwise, place an "X" in the box that reflects the most appropriate percentage of confidence.

	VERY UNCERTAIN					SOMEWHAT CERTAIN				VERY CERTAIN
TASKS	0%	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
17a. CASTING A FISHING LINE											
17b. RAPPELLING OFF OF A ROCK FACE											
17c. STREAM CROSSING OVER FAST MOVING WATER											
17d. USING AN ICE AXE TO PROTECT YOURSELF FROM FALLING ON SNOW/ICE											
17e. CLIMBING A BEGINNER LEVEL CLIMB											
17f. BACKPACK 3 MILES WITH 60lbs ON YOUR BACK											
17g. CLIMBING AN INTERMEDIATE LEVEL CLIMB											
17h. BACKPACK 6 MILES WITH 60lbs ON YOUR BACK											
17i. CLIMB A PEAK THAT IS OVER 12,000 FT. IN ELEVATION											
17j. CLIMB A PEAK THAT IS OVER 18,000 FT. IN ELEVATION											
17k. IDENTIFYING FLORA AND FAUNA IN A WILDERNESS AREA											
17l. OUTDOOR COOKING											
17m. IDENTIFYING WEATHER PATTERNS											
17n. ADMINISTERING BASIC FIRST AID											
17o. PRACTICING MINIMUM IMPACT CAMPING AND RESOURCE/ENVIRONMENTAL PROTECTION											
17p. READING AND INTERPRETING A TOPOGRAPHICAL MAP											
17q. JUDGE THE TIME AND DISTANCE IT MAY TAKE TO HIKE FROM POINT A TO POINT B IN A WILDERNESS SETTING											
17r. ROUTE FINDING OFF TRAIL IN A WILDERNESS SETTING											
17s. LEADING A SMALL (3-5) GROUP IN A WILDERNESS SETTING											
17t. ORGANIZING AN EMERGENCY EVACUATION PROCEDURE											

APPENDIX G

1993
PRETEST QUESTIONNAIRE

INSTRUCTIONS: Please try to answer ALL 20 questions even if you are uncertain.

1. COURSE TYPE: a. Outdoor Educators Course (OEC) ___

   b. Wind River Wilderness (WRW) ___

   c. Wind River Mountaineering (WMT) ___

2. COURSE DATES: _____ TO _____

3. COURSE LOCATION: _____

4. WHAT IS YOUR AGE? ____ 5. GENDER? F___ M___

6. WHAT IS THE HIGHEST LEVEL OF EDUCATION YOU HAVE COMPLETED?
   (Please check one)

   a. ___ Elementary school

   b. ___ Junior high school

   c. ___ High school

   d. ___ Associate or technical degree

   e. ___ Bachelor's degree

   f. ___ Graduate or professional degree

7. ARE YOU A FULL-TIME STUDENT?

   Yes ___ No ___

   7a. If yes and you are a college student, what is your area of study or intended area of study?

   _____

8. ARE YOU EMPLOYED: Full-time? Yes ___ No ___

   Part-time? Yes ___ No ___

   Seasonal? Yes ___ No ___

8a. If yes to any of the above, please describe your job or occupation.

_____

9. If you are neither a student nor employed, please describe the work you do.

_____

_____

10. Do you subscribe to any outdoor or environmental magazines?

Yes ____ No ____

10a. If yes, list the names of all the outdoor/environmental magazines you can recall. _____

_____

_____

11. Do you belong to any outdoor or environmental organizations?

Yes ____ No ____

11a. If yes, please identify the name of the organization, your position (member or officer), and whether your position was a paid or volunteer position.

	(check one)	
ORGANIZATION	MEMBER	OFFICER
_____	____	____
_____	____	____
_____	____	____

12. Have you participated in any of the following outdoor adventure or wilderness activities? If so, place a check in the space next to the activity.

Rockclimbing	____	Canoeing	____
Backpacking	____	Kayaking	____
Mountaineering	____	Rafting	____
Fishing	____	Mtn. Biking	____
Skiing	____	Camping	____

13. Have you attended any outdoor or environmental workshops or conferences?

Yes ____ No ____

13a. If yes, please identify the name of the workshop/conference.

_____

_____

14. WHAT IS YOUR OVERALL OUTDOOR EXPERIENCE LEVEL?

a. Introductory ____

b. Development ____ **SEE EXPLANATION BELOW!

c. Commitment ____

INTRODUCTORY: participants have little or no experience with any form of adventure recreation activity. Minimal skills are needed and control rests largely with a designated leader and a set of structured procedures.

DEVELOPMENT: participants have some previous experience and are interested in further involvement. Skills are at the intermediate level but need guidance and expertise from others to improve. Group leaders or instructors may be present to teach skills and insure safety.

COMMITMENT: participants have high level skills, experience, and commitment to the activity. Participants at this level are prepared to face substantial risks in an environment that is wild and often unpredictable.

15. WHAT IS YOUR PERMANENT RESIDENCE?

a. City:_____

b. State: _____

c. Zip Code: _____

16. IDENTIFY THREE (3) GOALS THAT YOU WISH TO ACCOMPLISH ON THE COURSE.

A. _____
_____
_____

B. _____
_____
_____

C. _____
_____
_____

CHECK HERE IF YOU HAVE NO SPECIFIC GOALS: ____

17. For the three goals that you just stated, please rate the extent to which you agree with the next two statements. A "5" means that you strongly agree with the statement; a "1" means that you strongly disagree with the statement. Intermediate numbers should be used to reflect intermediate levels of agreement, with a "3" indicating that you neither agree or disagree with the statement.

****

5	4	3	2	1
Strongly agree	Agree	neither agree or disagree	disagree	strongly disagree

____ (18a) It is important that I (as opposed to someone else) influence how well I accomplish the above goals that I set for myself on this course.

____ (18b) I expect to be able to influence how well I accomplish the above course goals that I set for myself.

19. INSTRUCTIONS: Please indicate how certain you are in your present (TODAY) ability to perform the following tasks. If you have no certainty about the tasks place an "X" in the 0% box. Otherwise, place an "X" in the box that reflects the most appropriate percentage of certainty.

	VERY UNCERTAIN					SOMEWHAT CERTAIN				VERY CERTAIN
TASKS	0%	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
a. CASTING A FISHING LINE											
b. RAPPELLING OFF OF A ROCK FACE											
c. STREAM CROSSING OVER FAST MOVING WATER											
d. USING AN ICE AXE TO PROTECT YOURSELF FROM FALLING ON SNOW/ICE											
e. CLIMBING A BEGINNER LEVEL CLIMB											
f. BACKPACK 3 MILES WITH 60lbs ON YOUR BACK											
g. CLIMBING AN INTERMEDIATE LEVEL CLIMB											
h. BACKPACK 6 MILES WITH 60lbs ON YOUR BACK											
i. CLIMB A PEAK THAT IS OVER 12,000 FT. IN ELEVATION											
j. CLIMB A PEAK THAT IS OVER 18,000 FT. IN ELEVATION											
k. IDENTIFYING FLORA AND FAUNA IN A WILDERNESS AREA											
l. OUTDOOR COOKING											
m. IDENTIFYING WEATHER PATTERNS											
n. ADMINISTERING BASIC FIRST AID											
o. PRACTICING MINIMUM IMPACT CAMPING AND RESOURCE/ENVIRONMENTAL PROTECTION											
p. READING AND INTERPRETING A TOPOGRAPHICAL MAP											
q. JUDGE THE TIME AND DISTANCE IT MAY TAKE TO HIKE FROM POINT A TO POINT B IN A WILDERNESS SETTING											
r. ROUTE FINDING OFF TRAIL IN A WILDERNESS SETTING											
s. LEADING A SMALL (3-5) GROUP IN A WILDERNESS SETTING											
t. ORGANIZING AN EMERGENCY EVACUATION PROCEDURE											

*** Please answer these last questions to the best of your ability. They do not pertain to the NOLS course, but to how you handle certain situations in general.

Instructions: Please rate the extent to which you agree with each of the following statements. A "5" means that you strongly agree with the statement; a "1" means that you strongly disagree with the statement. Intermediate numbers should be used to reflect intermediate levels of agreement, with a "3" indicating that you neither agree or disagree with the statement.

****

		5 Strongly agree	4 Agree	3 Neither agree or disagree	2 Disagree	1 Strongly Disagree
_____	(20a)	I am in control of my life.				
_____	(20b)	I feel that whether or not I am successful is just a matter of luck and chance, rather than my own doing.				
_____	(20c)	I feel that others are running my life for me.				
_____	(20d)	I like to stay with the old tried and true ways of doing things.				
_____	(20e)	No matter how obvious things seem to be, I can always find something to question.				
_____	(20f)	I like to change the rules to games.				
_____	(20g)	It's unusual for me to change my first impressions.				
_____	(20h)	I have trouble seeing other people's points of view.				
_____	(20i)	I don't usually ask a lot of questions.				
_____	(20j)	I often use tools or furniture for purposes other than what they were meant for.				
_____	(20k)	I don't like surprises.				
_____	(20l)	I often see the humor in situations when others don't.				
_____	(20m)	I can make almost any activity fun for me to do.				
_____	(20n)	It is <u>important</u> that I (as opposed to someone else) influence how well I accomplish the goals that I set for myself.				
_____	(20o)	I <u>expect</u> to be able to influence how well I accomplish the goals that I set for myself.				

PLEASE CHECK THAT YOU HAVE ANSWERED ALL 20 QUESTIONS, THANKS!

APPENDIX H

1992
POSTTEST TIME 1 QUESTIONNAIRE

INSTRUCTIONS: Please try to answer ALL 17 questions even if you are uncertain.

1. Check the following skill areas which you participated in during this NOLS course.

a. Backpacking ____
b. Rockclimbing ____
c. Peak Ascents ____
d. Fishing: Fly ____ Spin ____
e. River Crossing(s) ____
f. Tyrolean Traverse ____
g. Snow Work (self-arrest)
h. Cooking and Baking ____
j. map reading ____
i. Other _____

2. Were you able to accomplish the goals you had identified prior to the start of the course? Briefly explain! (for additional space please write on back of this form)

3. How much control over the accomplishment of your goals did you personally have?

no control ____ little control ____ some control ____ a great deal of control ____

4. How much control over the accomplishment of your goals did the instructors and other students have?

no control ____ little control ____ some control ____ a great deal of control ____

5. Leadership Experience on your course:

Did you...
a. Give a presentation? yes___ no____ If yes, please identify the topic:
_____

b. Lead a hiking group? yes___ no___ # of times ____

c. Make a leadership decision impacting more than just yourself?
yes___ no ___ # of times ____

Were you ...
d. A student leader of a climbing group? yes ___ no ___ # of times ____

Other leadership experiences:_____

_____

6. **Feedback:** NOLS is interested in the types and amount of feedback you received on this course. In the appropriate boxes below, please circle one of the following: "F" Female, "M" Male, "B" Both to reflect who gave the feedback most often and how often it was given. Place a check ( ) in the zero "0" box if you received NO feedback of this type. There should be only one answer for each type of feedback.

EXAMPLE: Circle an "M" in the first box if you received "Direct-Personal" feedback (1-5 times) from a male instructor.

AMOUNT OF FEEDBACK

TYPES OF FEEDBACK	1-5	6-10	11 or more	0
DIRECT-PERSONAL FEEDBACK (face to face by instructor)	mostly F M B	mostly F M B	mostly F M B	
DIRECT-GROUP FEEDBACK (entire group by instructor)	mostly F M B	mostly F M B	mostly F M B	
INDIRECT-PERSONAL FEEDBACK (in passing - casual/informal by instructor)	mostly F M B	mostly F M B	mostly F M B	
NON-INSTRUCTOR FEEDBACK (feedback given by anyone other than instructor)	mostly F M B	mostly F M B	mostly F M B	

7. Was the verbal feedback you received on the course:

mostly positive	somewhat positive	somewhat negative	mostly negative
_____	_____	_____	_____

8. Was there one particular instructor that you feel provided periodic guidance and feedback to you throughout the course? Yes ____ No ____

8a. If yes, identify whether the instructor was a male or female: Male ____ Female ____

9. If you had a concern about something, was there an instructor you tended to confide in the most? Yes ____ No____

9a. If yes, identify whether the instructor was a male or female: Male ____ Female____

10. Was there one particular instructor that YOU identified with the most as a role model? Yes ____ No ____

10a. If yes, identify whether the instructor was a male or female: Male ____ Female ____

11. Using the same 1 to 5 criteria that was on your NOLS written evaluation, how would you rate your overall performance on the course? Base your answer on your personal opinion rather than the instructor's written evaluation of you.

Little effort or desire	Effort is ineffective	Meets basic expectations
1	2	3
_____	_____	_____

Exceeds basic expectations	Far exceeds basic expectations
4	5
_____	_____

12. Do you think that the feedback you received on your WRITTEN EVALUATIONS at the end of the course was an accurate account of your performance? Yes ___ No ___
Why or why not? _____
_____

13. Do you think that the feedback you received **THROUGHOUT** the course was an accurate account of your performance?
Yes ___ No ___ Why or why not? _____

_____

14. What is the likelihood that you will continue participating in outdoor adventure activities? (Check one)

Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
_____	_____	_____	_____

15. What is the likelihood that you will pursue a career in outdoor adventure or outdoor recreation?

Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
_____	_____	_____	_____

APPENDIX I

1993
POSTTEST TIME 1 QUESTIONNAIRE

INSTRUCTIONS: Please try to answer ALL 17 questions even if you are uncertain.

1. Were you able to accomplish the goals you had identified prior to the start of the course?

Goal 1: Yes ___ No ___

Goal 2: Yes ___ No ___

Goal 3: Yes ___ No ___

2. If yes, please identify the degree to which you feel you accomplished your goals by placing the appropriate number in the space corresponding to the goal.

Exceeded goal=1
Met goal=2
Somewhat met goal=3

Goal 1: _____

Goal 2: _____

Goal 3: _____

2a. If "no", briefly explain why your goal(s) was not accomplished. (For additional space please write on back of this form).

3. How much control over the accomplishment of your goals did you personally have?

no control	little control	some control	a lot of control
_____	_____	_____	_____

4. How much control over the accomplishment of your goals did the instructors and other students have?

no control	little control	some control	a lot of control
_____	_____	_____	_____

Feedback: Feedback is a verbal or written report of the result of any behavior which may reinforce or modify future behavior. Please respond to the following types of feedback and the amount of times you recall receiving feedback from your instructor(s). Below is a brief description of each type of feedback.

DIRECT FEEDBACK: This type of feedback is directed to you face-to-face by one or more of your instructors.

INDIRECT FEEDBACK: This type of feedback is given to you in a casual or informal manner. It may be given to you in passing or directed to your entire group with you present.

5. Did you receive direct feedback from your instructor(s) throughout the course?

Yes ___ No ___

5a. If yes, please indicate the amount of direct feedback you received throughout the course. (check one)

1-5 times	6-10 times	11 or more times
_____	_____	_____

5b. Was the direct feedback you received on the course given to you mostly from: (check one)

_____ Female Instructor

_____ Male Instructor

_____ Both Female and Male Instructor

6. Did you receive indirect feedback from you instructor(s) throughout the course?

Yes ___ No ___

6a. If yes, please indicate the amount of indirect feedback you received throughout the course. (check one)

1-5 times	6-10 times	11 or more times
_____	_____	_____

6b. Was the indirect feedback you received on the course given to you mostly from: _____ (check one)

_____ Female Instructor

_____ Male Instructor

_____ Both Female and Male Instructor

7. Was the verbal feedback you received on the course:

mostly positive	somewhat positive	somewhat negative	mostly negative
_____	_____	_____	_____

8. Was the verbal feedback you received on the course:

mostly immediate	somewhat immediate	somewhat delayed	mostly delayed
_____	_____	_____	_____

9. Do you think that the feedback you received on your **WRITTEN EVALUATIONS** at the end of the course was an accurate account of your performance?

   Yes ___ No ___ Why or why not? _____

   _____

10. Do you think that the feedback you received **THROUGHOUT** the course was an accurate account of your performance?

    Yes ___ No ___ Why or why not? _____

    _____

11. Did you have the opportunity to meet one-on-one with one of your instructors to discuss goals, exchange thoughts and ideas, or receive guidance?

    Yes ____ No ____

    11a. If yes, how many times did you meet one-on-one throughout the course? ____

12. Was there one particular instructor that YOU felt provided periodic guidance to you throughout the course?

    Yes ____ No ____

    12a. If yes, was the instructor a female ____ or male ____?

13. If you had a concern about something, was there an instructor YOU tended to confide in the most?

    Yes ____ No____

    13a. If yes, was the instructor a female ____ or male ____?

14. A role model is one who exhibits behaviors and competence that is looked up to and admired. Was there one particular instructor that YOU identified with the most as a role model ?

    Yes ____ No ____

    14a. If yes, was the instructor a female ____ or male ____?

15. Was there one particular instructor that YOU tended to trust the most?

    Yes ____ No ____

    15a. If yes, was the instructor a female ____ or male ____?

16. Was there one particular instructor that YOU identified with the most as a friend?

    Yes ____ No ____

    16a. If yes, was the instructor a female ____ or male ____?

17. Was there one particular instructor that YOU thought gave you a great deal of encouragement?

Yes ___ No ___

17a. If yes, was the instructor a female ___ or male ___?

18. For the above "yes" responses, are you identifying with the same male or female instructor?

Yes ___ No ___

19. What is the likelihood that you will continue participating in outdoor adventure activities? (Check one)

Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
_____	_____	_____	_____

20. What is the likelihood that you will pursue any of the following outdoor/environmental related positions? (Check one)

	Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
a. Seek Part-time	_____	_____	_____	_____
b. Seek Full-time	_____	_____	_____	_____
c. Seek Volunteer	_____	_____	_____	_____
d. Seek Career	_____	_____	_____	_____

21. INSTRUCTIONS: Please indicate how confident you are in your present (TODAY) ability to perform the following tasks. If you have no confidence about the tasks place an "X" in the 0% box. Otherwise, place an "X" in the box that reflects the most appropriate percentage of confidence.

	VERY UNCERTAIN				SOMEWHAT CERTAIN					VERY CERTAIN	
TASKS	0%	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
a. CASTING A FISHING LINE											
b. RAPPELLING OFF OF A ROCK FACE											
c. STREAM CROSSING OVER FAST MOVING WATER											
d. USING AN ICE AXE TO PROTECT YOURSELF FROM FALLING ON SNOW/ICE											
e. CLIMBING A BEGINNER LEVEL CLIMB											
f. BACKPACK 3 MILES WITH 60lbs ON YOUR BACK											
g. CLIMBING AN INTERMEDIATE LEVEL CLIMB											
h. BACKPACK 6 MILES WITH 60lbs ON YOUR BACK											
i. CLIMB A PEAK THAT IS OVER 12,000 FT. IN ELEVATION											
j. CLIMB A PEAK THAT IS OVER 18,000 FT. IN ELEVATION											
k. IDENTIFYING FLORA AND FAUNA IN A WILDERNESS AREA											
l. OUTDOOR COOKING											
m. IDENTIFYING WEATHER PATTERNS											
n. ADMINISTERING BASIC FIRST AID											
o. PRACTICING MINIMUM IMPACT CAMPING AND RESOURCE/ENVIRONMENTAL PROTECTION											
p. READING AND INTERPRETING A TOPOGRAPHICAL MAP											
q. JUDGE THE TIME AND DISTANCE IT MAY TAKE TO HIKE FROM POINT A TO POINT B IN A WILDERNESS SETTING											
r. ROUTE FINDING OFF TRAIL IN A WILDERNESS SETTING											
s. LEADING A SMALL (3-5) GROUP IN A WILDERNESS SETTING											
t. ORGANIZING AN EMERGENCY EVACUATION PROCEDURE											

*** Please answer these last questions to the best of your ability. They do not pertain to the NOLS course, but to how you handle certain situations in general.

Instructions: Please rate the extent to which you agree with each of the following statements. A "5" means that you strongly agree with the statement; a "1" means that you strongly disagree with the statement. Intermediate numbers should be used to reflect intermediate levels of agreement, with a "3" indicating that you neither agree or disagree with the statement.

****

5	4	3	2	1
Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree

_____ (22a) I am in control of my life.

_____ (22b) I feel that whether or not I am successful is just a matter of luck and chance, rather than my own doing.

_____ (22c) I feel that others are running my life for me.

_____ (22d) I like to stay with the old tried and true ways of doing things.

_____ (22e) No matter how obvious things seem to be, I can always find something to question.

_____ (22f) I like to change the rules to games.

_____ (22g) It's unusual for me to change my first impressions.

_____ (22h) I have trouble seeing other people's points of view.

_____ (22i) I don't usually ask a lot of questions.

_____ (22j) I often use tools or furniture for purposes other than what they were meant for.

_____ (22k) I don't like surprises.

_____ (22l) I often see the humor in situations when others don't.

_____ (22m) I can make almost any activity fun for me to do.

_____ (22n) It is important that I (as opposed to someone else) influence how well I accomplish the goals that I set for myself.

_____ (22o) I expect to be able to influence how well I accomplish the goals that I set for myself.

APPENDIX J

POSTTEST TIME 2 QUESTIONNAIRE
(1 Year Follow Up)

1. Please identify the NOLS course you participated in last summer (1992).

___ Outdoor Educator's Course (OEC)
___ Wind River Wilderness Course (WRW)
___ Wind River Mountaineering Course (WMT)

2. Had you participated in a NOLS course before last summer?

Yes ___ No ___

2a. If yes, identify the course and the year in which you had participated.

Course: _____ Year ____

3. What is the likelihood that you will continue participating in outdoor adventure activities? (Check one)

Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
_____	_____	_____	_____

4. What is the likelihood that you will pursue a career in outdoor adventure or outdoor recreation? (Check one)

Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
_____	_____	_____	_____

*** The following questions pertain to the guidance and feedback you received on your NOLS course.

5. Was the verbal feedback you received on the course:

mostly positive	somewhat positive	somewhat negative	mostly negative
_____	_____	_____	_____

6. Did you have any opportunity to meet one-on-one with one of your instructors to discuss goals, exchange thoughts and ideas, or receive feedback?

Yes ___ No ___

6a. If yes, how many times did you meet one-on-one throughout the course? ____

7. Was there one particular instructor that YOU felt was helpful in providing periodic guidance to you throughout the course?

Yes ___ No ___

7a. If yes, was the instructor a female ____ or male ____?

8. Was there one particular instructor that you tended to confide in the most?

Yes ___ No ___

8a. If yes, was the instructor a female ____ or male ____?

9. A role model is one who exhibits behaviors and competence that is looked up to and admired. Was there one particular instructor that YOU identified with the most as a role model ?

Yes ___ No ___

9a. If yes, was the instructor a female ____ or male ____?

10. Was there one particular instructor that YOU tended to trust in the most?

Yes ___ No ___

10a. If yes, was the instructor a female ____ or male ____?

11. Was there one particular instructor that YOU identified with the most as a friend?

Yes ___ No ___

11a. If yes, was the instructor a female ____ or male _____?

12. Was there one particular instructor that YOU thought gave you a great deal of encouragement?

Yes ___ No ___

12a. If yes, was the instructor a female ____ or male _____?

13. If you answered "yes" to any of the above responses, are you identifying with the same person/instructor each time?

Yes ___ No ___

*** The following are questions about your experience and involvement in wilderness education activities BEFORE taking the NOLS course last summer.

14. For the 12 month period before taking a NOLS course last summer, did you subscribe to any outdoor or environmental magazines?

Yes ___ No ___

14a. If yes, list the names of all the outdoor/environmental magazines you can recall.

_____
_____

15. Outdoor, wilderness or environmental education workshops and conferences may focus on a set of skills (e.g., mountaineering), or some topic of the natural environment (edible plants, bird watching, etc.) or a professional meeting related to the environment. For the 12 month period before taking a NOLS course last summer, did you attend any workshops or conferences related to the topic of outdoor, wilderness or environmental education?

Yes ___ No ___

15a. If yes, please identify workshops or conferences List all that you can recall.

Name of Workshop(s) or Conference(s):

_____
_____

16. For the 12 month period before taking a NOLS course last summer, were you a member of any outdoor/environmental organization (i.e., scouts, environmental organization, local outing club, etc.)?

Yes ___ No ___

16a. If yes, please identify the organization and your position within the organization.

	ORGANIZATION	MEMBER (check one)	OFFICER (check one)
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____

17. For the 12 month period before taking a NOLS course last summer, did you participate in any of the following outdoor adventure activities?

Yes ___ No ___

17a. If yes, please indicate the frequency of participation by placing a check in the appropriate space corresponding to the activity.

ACTIVITY	FREQUENCY (12 month period before NOLS) (1-3 times)	(4-6 times)	(7 or more times)
Backpacking	____	____	____
Rockclimbing	____	____	____
Canoeing	____	____	____
Kayaking	____	____	____
Rafting	____	____	____
Camping	____	____	____
Fishing	____	____	____
Mountaineering	____	____	____
Mtn. Biking	____	____	____
Skiing	____	____	____
Other	____	____	____

18. For the 12 month period before taking a NOLS course last summer, did you have the opportunity to lead a group on an outdoor trip?

Yes ___ No ___

18a. If yes, please identify:

type of trip (i.e., camping, backpacking, rockclimbing, etc.)
trip's length (i.e., day, weekend, week long or more)
age group (i.e., under 12, 13-21, or 22 yrs. or more).

TYPE OF TRIP	LENGTH	AGE GROUP
_____	_____	_____
_____	_____	_____
_____	_____	_____

(If more than three trips, approximate the number of trips you led beyond the three you have listed above).

# of trips ___

*** The following are questions about your experience and involvement in wilderness education activities SINCE your NOLS course last summer.

19. Since your NOLS course last summer, did you subscribe to any outdoor or environmental magazines?

Yes ___ No ___

19a. If yes, list the names of all the outdoor/environmental magazines you can recall.

_____
_____

20. Since your NOLS course last summer, have you attended any workshops or conferences related to the topic of outdoor, wilderness or environmental education?

Yes ___ No ___

20a. If yes, please identify the name of the workshop or conference that you attended.

Name of workshop(s) or conference(s): _____

_____

_____

(If more than three, approximate the number of workshops you have attended in the past year beyond the three you have listed).

# of workshops ____

21. Since your NOLS course last summer, have you been a member of any outdoor/environmental organization (i.e., scouts, environmental organizations, local outing club, etc.)?

Yes ___ No ___

21a. If yes, identify the name of the organization and your position (member or officer) within the organization.

	ORGANIZATION	(check one) MEMBER	OFFICER
1.	_____	____	_____
2.	_____	____	_____
3.	_____	____	_____

22. Since your NOLS course last summer, have you participated in any of the following outdoor adventure activities?

Yes ___ No ___

22a. If yes, please indicate the frequency of participation by placing a check in the appropriate space corresponding to the activity.

ACTIVITY	FREQUENCY (Since your NOLS course) (1-3 times)	(4-6 times)	(7 or more times)
Backpacking	_____	_____	_____
Rockclimbing	_____	_____	_____
Canoeing	_____	_____	_____
Kayaking	_____	_____	_____
Rafting	_____	_____	_____
Camping	_____	_____	_____
Fishing	_____	_____	_____
Mountaineering	_____	_____	_____
Mtn. Biking	_____	_____	_____
Skiing	_____	_____	_____
Other	_____	_____	_____

23. Since your NOLS course, have you had the opportunity to lead a group on an outdoor trip?

Yes ___ No ___

23a. If yes, please identify:

type of trip (i.e., camping, backpacking, rockclimbing, etc.)

trip's length (i.e., day, weekend, week long or more)

age group (i.e., under 12, 13-21, or 22 yrs. and older).

TYPE OF TRIP	LENGTH	AGE GROUP
_____	_____	_____
_____	_____	_____
_____	_____	_____

(If more than three trips, approximate the number of trips you have led beyond those listed above).

# of trips ____

24. INSTRUCTIONS: Please indicate how certain you are in your present (TODAY) ability to perform the following tasks. If you have no certainty about the tasks place an "X" in the 0% box. Otherwise, place an "X" in the box that reflects the most appropriate percentage of certainty.

	VERY UNCERTAIN				SOMEWHAT CERTAIN					VERY CERTAIN	
TASKS	0%	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
a. CASTING A FISHING LINE											
b. RAPPELLING OFF OF A ROCK FACE											
c. STREAM CROSSING OVER FAST MOVING WATER											
d. USING AN ICE AXE TO PROTECT YOURSELF FROM FALLING ON SNOW/ICE											
e. CLIMBING A BEGINNER LEVEL CLIMB											
f. BACKPACK 3 MILES WITH 60lbs ON YOUR BACK											
g. CLIMBING AN INTERMEDIATE LEVEL CLIMB											
h. BACKPACK 6 MILES WITH 60lbs ON YOUR BACK											
i. CLIMB A PEAK THAT IS OVER 12,000 FT. IN ELEVATION											
j. CLIMB A PEAK THAT IS OVER 18,000 FT. IN ELEVATION											
k. IDENTIFYING FLORA AND FAUNA IN A WILDERNESS AREA											
l. OUTDOOR COOKING											
m. IDENTIFYING WEATHER PATTERNS											
n. ADMINISTERING BASIC FIRST AID											
o. PRACTICING MINIMUM IMPACT CAMPING AND RESOURCE/ENVIRONMENTAL PROTECTION											
p. READING AND INTERPRETING A TOPOGRAPHICAL MAP											
q. JUDGE THE TIME AND DISTANCE IT MAY TAKE TO HIKE FROM POINT A TO POINT B IN A WILDERNESS SETTING											
r. ROUTE FINDING OFF TRAIL IN A WILDERNESS SETTING											
s. LEADING A SMALL (3-5) GROUP IN A WILDERNESS SETTING											
t. ORGANIZING AN EMERGENCY EVACUATION PROCEDURE											

*** Please answer the following questions to the best of your ability. They do not pertain to the NOLS course, but to how you handle certain situations in general.

Instructions: Please rate the extent to which you agree with each of the following statements. A "5" means that you strongly agree with the statement; a "1" means that you strongly disagree with the statement. Intermediate numbers should be used to reflect intermediate levels of agreement, with a "3" indicating that you neither agree or disagree with the statement.

****

5	4	3	2	1
Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree

____ (25a) I am in control of my life.

____ (25b I feel that whether or not I am successful is just a matter of luck and chance, rather than my own doing.

____ (25c) I feel that others are running my life for me.

____ (25d) I like to stay with the old tried and true ways of doing things.

____ (25e) No matter how obvious things seem to be, I can always find something to question.

____ (25f) I like to change the rules to games.

____ (25g) It's unusual for me to change my first impressions.

____ (25h) I have trouble seeing other people's points of view.

____ (25i) I don't usually ask a lot of questions.

____ (25j) I often use tools or furniture for purposes other than what they were meant for.

____ (25k) I don't like surprises.

____ (25l) I often see the humor in situations when others don't.

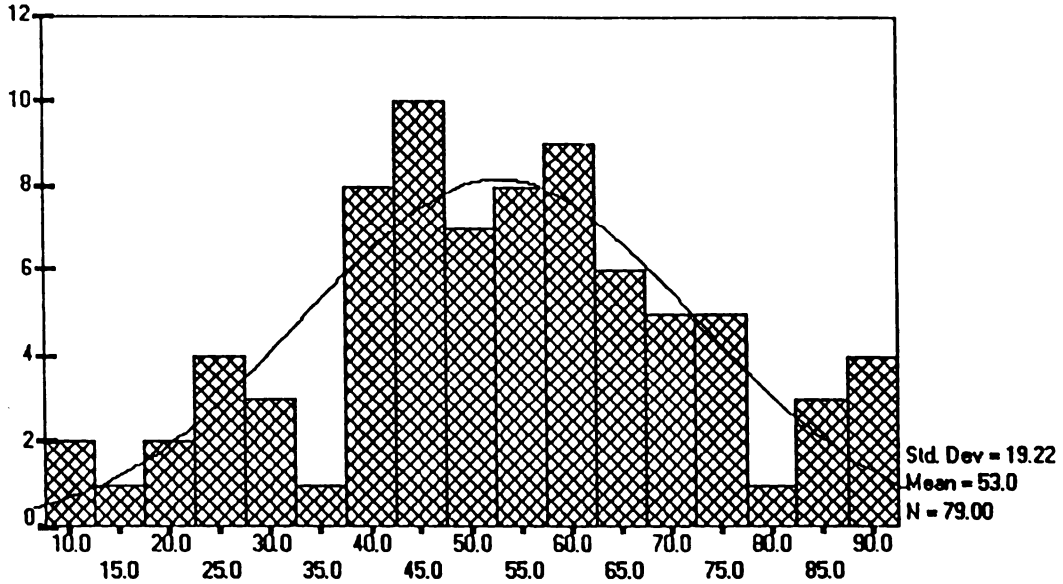
____ (25m) I can make almost any activity fun for me to do.

____ (25n) It is <u>important</u> that I (as opposed to someone else) influence how well I accomplish the goals that I set for myself.

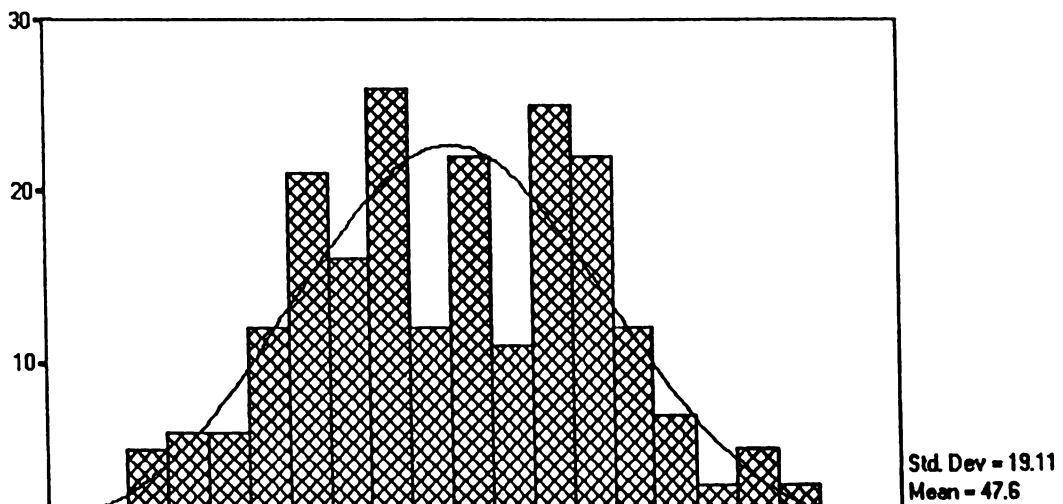
____ (25o) I <u>expect</u> to be able to influence how well I accomplish the goals that I set for myself.

NORMALITY OF SELF-EFFICACY SCALE SCORE DISTRIBUTIONS

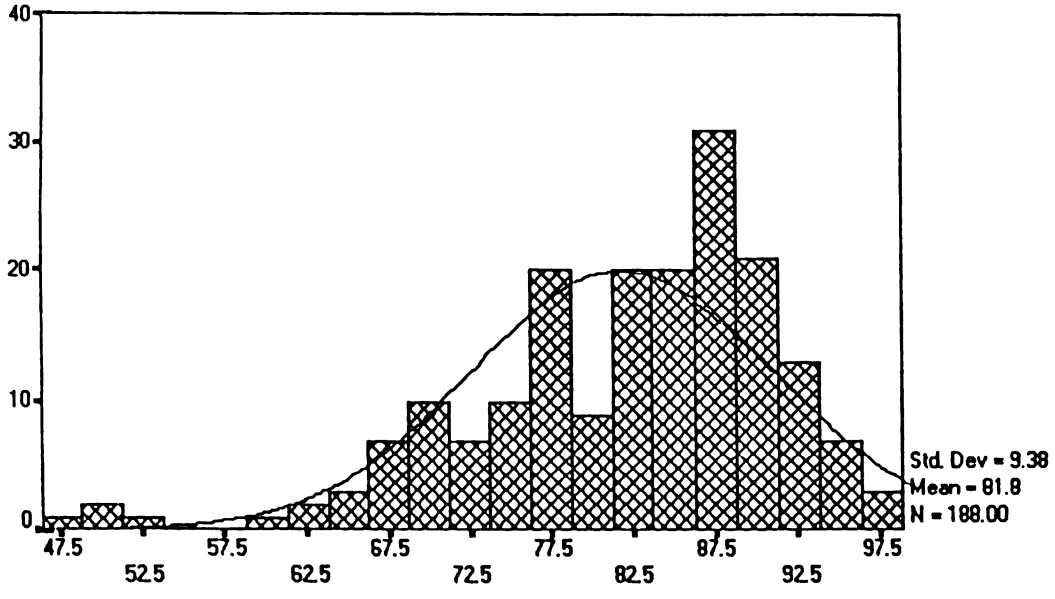
APPENDIX K



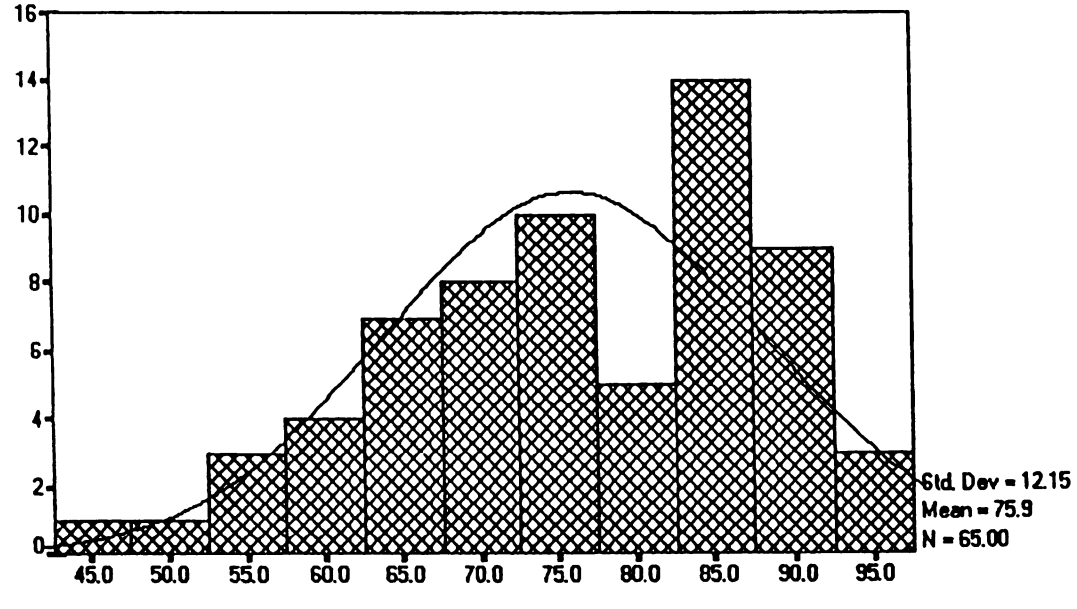
Appendix K-1. Normality of the Control Group Self-Efficacy Scale



Appendix K-2. Normality of the Pretest Self-Efficacy Scale



Appendix K-3. Normality of the Posttest Time 1 Self-Efficacy Scale



Appendix K-4. Normality of the Posttest Time 2 Self-Efficacy Scale

SELF-EFFICACY TABLES
APPENDIX L

Table L-1. Comparison Between Control and Experimental Groups in Self-Efficacy for Wilderness Tasks.

	Control Group (n=86)		Pretest Group (n=231)			Posttest (Time 1) Group (n=194)			
Task	M	SD	M	SD	Control &Pretest p value	M	SD	Control & Posttest (Time 1) p value	Pretest & Posttest (Time 1) p value
Fishing	57%	34.35	46%	34.44	.040	69%	29.34	.000	.000
Rappelling	55%	36.86	37%	35.20	.001	82%	23.86	.000	.000
Stream Crossing	33%	29.16	44%	25.97	.020	87%	16.27	.000	.000
Use of Ice Axe	21%	28.34	21%	28.70	.913	69%	29.34	.000	.000
Beginner Climb	77%	31.18	64%	31.11	.009	94%	10.45	.000	.000
Backpack 3 miles w/60 lbs.	85%	21.87	75%	27.66	.009	99%	4.97	.000	.000
Intermed. Climb	63%	32.74	46%	33.27	.002	82%	19.58	.000	.000
Backpack 6 miles w/60 lbs.	77%	28.22	64%	31.84	.002	96%	10.08	.000	.000
Climb 12,000 ft. Peak	63%	33.18	60%	34.17	.519	92%	18.29	.000	.000
Climb 18,000 ft. Peak	44%	32.30	38%	30.92	.231	61%	24.31	.000	.000

(continued on next page)

Table L-1. (cont'd).

Task	Control Group (n=86) M	Control Group (n=86) SD	Pretest Group (n=231) M	Pretest Group (n=231) SD	Control & Pretest p value	Posttest (Time 1) Group (n=194) M	Posttest (Time 1) Group (n=194) SD	Control & Posttest (Time 1) p value	Pretest & Posttest (Time 1) p value
Flora and Fauna	25%	28.36	26%	26.04	.947	48%	27.74	.000	.000
Outdoor Cooking	62%	27.44	57%	27.73	.148	93%	10.99	.000	.000
Identify Weather Patterns	34%	26.74	36%	24.98	.610	68%	21.19	.000	.000
First-aid	59%	31.09	53%	27.62	.118	79%	17.80	.000	.000
Minimum Impact Camping	62%	27.78	60%	28.76	.667	95%	7.70	.000	.000
Reading a Topo Map	59%	34.26	53%	30.09	.201	88%	13.94	.000	.000
Judge Distance from A to B	47%	29.33	41%	28.96	.169	87%	13.82	.000	.000
Route Finding	43%	30.72	39%	30.35	.409	85%	14.33	.000	.000
Lead a Group	51%	32.37	42%	31.08	.088	89%	14.19	.000	.000
Evacuation Procedures	35%	31.33	32%	29.92	.530	68%	23.35	.000	.000

Table L-2. Comparison Between Posttest Time 1 and Posttest Time 2 Self-Efficacy for Wilderness Tasks.

	Posttest (Time 1) Group (n=194)		Posttest (Time 2) Group (n=66)		
Task	M	SD	M	SD	Posttest 1 & Posttest 2 p value
Fishing	69%	29.34	61%	34.50	.000
Rappelling	82%	23.86	78%	24.37	.329
Stream Crossing	87%	16.27	83%	17.64	.029
Use of Ice Axe	69%	29.34	49%	38.23	.000
Beginner Climb	94%	10.45	92%	16.06	.416
Backpack 3 miles w/60 lbs.	99%	4.97	96%	13.56	.108
Intermed. Climb	82%	19.58	80%	21.37	.416
Backpack 6 miles w/60 lbs.	96%	10.08	92%	17.59	.114
Climb 12,000 ft. Peak	92%	18.29	91%	14.91	.650
Climb 18,000 ft. Peak	61%	24.31	60%	27.53	1.000

(Continued on next page)

Table L-2. (cont'd).

Task	Posttest (Time 1) Group (n=194) M	Posttest (Time 1) Group (n=194) SD	Posttest (Time 2) Group [a] (n=66)[b] M	Posttest (Time 2) Group [a] (n=66)[b] SD	Posttest 1 & Posttest 2 p value
Flora and Fauna	48%	27.74	43%	26.76	.799
Outdoor Cooking	93%	10.99	85%	20.32	.001
Identify Weather Patterns	69%	21.19	59%	22.56	.000
First-aid	80%	17.80	73%	21.19	.000
Minimum Impact Camping	95%	7.70	95%	8.27	.403
Reading a Topo Map	88%	13.94	86%	14.99	.112
Judge Distance from A to B	87%	13.82	81%	14.79	.008
Route Finding	85%	14.33	78%	18.84	.007
Lead a Group	89%	14.19	80%	21.12	.003
Evacuation Procedures	68%	23.35	58%	26.56	.000

[a] Posttest Time 2 sample size reflects the number of responses returned (78%)from mailback surveys in year one (1992; n=86).

[b] No posttest time 2 in year 2 due to research grant constraints; therefore the sample size is small relative to time 1.

Table L-3. Comparisons Between Female and Male Physical Self-Efficacy in Control, Pretest and Posttest Time 1 Groups.

Group	Task	Control Group (n=86) (F=39, M=45) M	SD	P value	Pretest Group (n=231) (F=102, M=129) M	SD	P value	Posttest Time 1 Group (n=194) (F=89, M=105) M	SD	P value
Female	Fishing	55%	35.00	.534	35%	29.57	.000	70%	27.69	.518
Male		59%	34.00		62%	31.93		68%	30.74	
Female	Rappel-	60%	38.76	.227	36%	34.24	.027	81%	25.55	.665
Male	ling	50%	34.87		47%	36.56		83%	22.43	
Female	Stream	54%	28.44	.838	31%	23.87	.000	87%	15.92	.719
Male	Crossing	52%	30.09		47%	26.58		87%	16.63	
Female	Use of an	25%	26.60	.273	15%	23.53	.000	71%	32.37	.362
Male	ice axe	18%	29.74		29%	31.57		67%	35.29	
Female	Beginner	81%	28.42	.190	61%	34.79	.060	94%	11.31	.327
Male	Climb	73%	33.19		69%	31.14		95%	9.65	
Female	Backpack 3	89%	15.66	.118	68%	29.68	.000	99%	4.11	.478
Male	miles w/60lbs	82%	25.69		84%	21.18		98%	5.57	
Female	Interm.	67%	29.30	.212	44%	30.88	.014	80%	17.93	.403
Male	Climb	58%	35.54		54%	33.78		83%	20.81	
Female	Backpack 6	83%	21.85	.093	56%	31.94	.000	97%	9.97	.753
Male	miles w/60lbs	72%	32.27		74%	25.89		96%	10.12	
Female	Climb	71%	27.16	.024	49%	33.59	.002	93%	17.16	.737
Male	12,000 ft.	56%	36.40		62%	31.64		92%	19.28	
Female	Climb	50%	30.91	.093	30%	27.34	.007	60%	23.55	.505
Male	18,000 ft.	38%	32.82		40%	28.93		63%	25.73	

Table L-4. Comparisons Between Female and Male Cognitive Self-Efficacy in Control, Pretest and Posttest Time 1 Groups.

		Control Group (n=86) (F=39, M=45)			Pretest Group (n=231) (F=102, M=129)			Posttest Time 1 Group (n=194) (F=89, M=105)		
Group	Task	M	SD	P value	M	SD	P value	M	SD	P value
Female	Flora and	27%	27.66	.790	25%	25.93	.761	46%	28.42	.395
Male	Fauna	25%	30.53		26%	25.76		50%	27.19	
Female	Outdoor	59%	29.07	.287	58%	28.12	.955	93%	11.42	.609
Male	Cooking	65%	25.83		58%	27.12		92%	10.63	
Female	Identify	38%	27.47	.225	32%	24.77	.000	68%	20.25	.625
Male	Weather Patterns	31%	25.92		46%	25.42		69%	22.03	
Female	First-aid	59%	33.08	.966	50%	29.74	.068	81%	17.31	.410
Male		60%	29.57		57%	27.47		79%	18.24	
Female	Minimum	60%	29.48	.534	58%	28.50	.098	95%	7.54	.877
Male	Impact Camping	64%	26.38		64%	26.46		95%	7.85	
Female	Reading a	63%	35.95	.311	46%	30.11	.001	87%	15.50	.234
Male	Topo Map	55%	32.79		60%	28.71		90%	12.40	
Female	Judge	50%	28.28	.425	34%	26.16	.000	86%	13.27	.662
Male	Distance from A to B	45%	30.35		47%	26.91		87%	14.27	
Female	Route	43%	30.83	.879	27.75	25.25	.000	84%	16.24	.403
Male	Finding	42%	30.96		45.58	28.06		86%	12.52	
Female	Lead a	53%	32.36	.562	34.55	28.86	.000	88%	13.88	.338
Male	Group	49%	32.63		50.08	28.96		90%	14.36	
Female	Evacua-	39%	28.45	.300	25.49	27.38	.008	69%	22.87	.769
Male	tion Procedure	32%	33.41		35.39	28.31		68%	23.83	

Table L-5. Comparisons Between Female and Male Physical Self-Efficacy in Posttest Time 1 and Posttest Time 2 Groups.

		Posttest Time 1 Group (n=194) (F=89, M=105)			Posttest Time 2 Group (n=66) (F=35, M=31)		
Group	Task	M	SD	P value	M	SD	P value
Female	Fishing	70%	27.69	.518	62%	36.47	.676
Male		68%	30.74		59%	32.63	
Female	Rappelling	81%	25.55	.665	76%	26.80	.647
Male		83%	22.43		79%	21.66	
Female	Stream Crossing	87%	15.92	.719	85%	18.05	.340
Male		87%	16.63		81%	17.20	
Female	Use of Ice Axe	71%	32.37	.362	45%	38.53	.434
Male		67%	35.29		53%	38.10	
Female	Beginner Climb	94%	11.31	.327	91%	19.25	.717
Male		95%	9.65		93%	11.89	
Female	Backpack 3	99%	4.11	.478	97%	7.10	.577
Male	miles w/60 lbs.	98%	5.57		95%	18.42	
Female	Intermed. Climb	80%	17.93	.403	78%	21.53	.536
Male		83%	20.81		81%	21.41	
Female	Backpack 6	97%	9.97	.753	93%	13.00	.487
Male	miles w/60 lbs.	96%	10.12		90%	21.76	
Female	Climb 12,000	93%	17.16	.737	90%	15.53	.663
Male	ft. Peak	92%	19.28		92%	14.40	
Female	Climb 18,000	60%	23.55	.505	59%	26.73	.855
Male	ft. Peak	63%	25.60		61%	28.44	

Table L-6. Comparisons Between Female and Male Cognitive Self-Efficacy in Posttest Time 1 and Posttest Time 2 Groups.

		Posttest Time 1 Group (n=194) (F=89, M=105)			Posttest Time 2 Group (n=66) (F=35, M=31)		
Group	Task	M	SD	P value	M	SD	P value
Female	Flora and	46%	28.42	.395	40%	27.92	.405
Male	Fauna	50%	27.19		46%	25.53	
Female	Outdoor	93%	11.42	.609	84%	22.40	.616
Male	Cooking	92%	10.63		87%	17.59	
Female	Identify	68%	20.25	.625	61%	24.23	.352
Male	Weather Patterns	69%	22.03		56%	22.03	
Female	First-aid	81%	17.31	.410	73%	21.69	.649
Male		79%	18.24		71%	21.96	
Female	Minimum	95%	7.54	.877	95%	8.53	.998
Male	Impact Camping	95%	7.85		95%	8.11	
Female	Reading a	87%	15.50	.234	86%	13.74	.832
Male	Topo Map	87%	12.40		85%	16.50	
Female	Judge	86%	13.27	.662	79%	16.34	.259
Male	Distance from A to B	87%	14.27		83%	12.75	
Female	Route	84%	16.24	.403	78%	18.75	.826
Male	Finding	86%	12.52		79%	19.04	
Female	Lead a	88%	13.88	.338	81%	22.09	.913
Male	Group	90%	14.36		80%	20.33	
Female	Evacuation	69%	22.87	.769	60%	26.84	.562
Male	Procedure	68%	23.83		56%	26.53	