

**FACTORS INFLUENCING
LEADERSHIP DEVELOPMENT
IN
WILDERNESS EDUCATION**

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INTRODUCTION

The following report is a synopsis of the 2 year leadership study conducted at NOLS during the 1992 and 1993 summers.¹ More detailed information of results will be forthcoming in a Ph.D. dissertation.² The dissertation will be available to NOLS staff, instructors and future research investigators.

This report will include the overall results and conclusions of the study, implications for future research, and how objectives were met from the initial grant proposal. The reader may refer to a glossary of key terms at the end of this report for clarification of some technical jargon.

STATEMENT OF THE PROBLEM

Until this study, research on leadership outcomes resulting from outdoor programs was practically nonexistent (Easley, 1991). There was little assessment of the degree to which graduates continued their involvement in wilderness education, either as a career or as a voluntary activity. The problem of this study was to propose and evaluate a theoretical model which identified the components of the process by which leadership development in wilderness education occur.

SUMMARY OF LITERATURE REVIEW

The literature review (Koesler, 1994) identifies and interprets the various components of a proposed theoretical model of leadership development. In the next few paragraphs, a brief summary of the literature about each of the components will help clarify the purpose behind the selection of these variables.

The literature recognizes that leadership is an ambiguous term that researchers find difficult to define and operationalize. Although there have been attempts to operationalize leadership, there continue to be questions and concerns about methods and procedures of measuring leadership. The literature supports the idea that leadership, specifically outdoor leadership, is not an end in itself. Rather, it is an ongoing process which requires active involvement in a variety of outdoor related skills and experiences. Active involvement in such experiences leads to better judgment, a prerequisite of effective outdoor leadership.

Judgment is based on acquiring the skills, knowledge, and experience necessary for leading a safe and enjoyable outdoor trip (Cain, 1985; Green, 1981; McAvoy, 1980; Petzoldt, 1984; Swiderski, 1981).

1. Propst, D., & Koesler, R. (1992). Causes and correlates of short and long-term wilderness leadership involvement among national outdoor leadership school (NOLS) participants. East Lansing, MI: Michigan State University, Grant Proposal.

2. Koesler, R. (1994). Factors influencing leadership development in wilderness education. East Lansing, MI: Michigan State University, Ph.D. dissertation.

In the past, much emphasis has been placed on the outcomes (i.e., leadership) of a wilderness experience. However, the literature identified the need to investigate the process by which certain outcomes are achieved rather than centering attention on the outcomes themselves (Klint, 1990). In reviewing the literature, self-efficacy, feedback (amount and type), mentoring, and goal attainment emerged as key determinants leadership development.

The theory of self-efficacy refers to one's perception of her/his ability to act in specific situations or perform certain tasks of varying difficulty (Bandura, 1977). Until this study, researchers had not investigated the theory of self-efficacy as part of the leadership development process. Due to the acclaim of its use across many disciplines to determine the effects it has on success and future development, self-efficacy was expected to contribute to the overall understanding of the process of developing leadership.

The literature indicated that feedback (amount and type), goal attainment and mentoring were additional key elements of the process. Research revealed that feedback and goal attainment have positive influences on self-efficacy (Bandura, 1986). Since part of a mentoring process encourages the establishment of goals and provides an opportunity for periodic feedback, the factor of mentoring received strong support for increasing self-efficacy. Therefore, self-efficacy was expected to mediate the influence of feedback, goal attainment, and mentoring on leadership development.

PURPOSE OF STUDY

The purpose of the study was to identify those factors in a wilderness course that contributed to leadership development in wilderness education. The implications are that certain factors on a wilderness course will contribute to the overall process. Specifically, this research explored the relationship among the factors (self-efficacy, feedback, goal attainment and mentoring) which the literature supports as explaining the long-term leadership development process.

OBJECTIVES OF THE STUDY

1. To assess the short and long-term effects of self-efficacy on leadership development.
2. To evaluate gender differences in self-efficacy and in outdoor leadership development.
3. To propose and evaluate a path model of outdoor leadership development.
4. To evaluate the relationship between self-efficacy and perceived control and its effect on continued leadership.

SUMMARY OF RESEARCH METHODS

A quasi-experimental, pretest-posttest with control group design was employed for this study. The purpose of the control group was to assess the effects of anxiety on self-efficacy. The literature indicated that students tend to be more anxious immediately before going to the field (Koepke, 1973). The factor of anxiety was controlled by measuring self-efficacy 1-2 months prior to arriving in Lander.

SUMMARY OF RESULTS

The sample sizes derived from the two years of data collection are provided below.

Year	Oral Histories	Control	Pretest	Posttest Time 1	Posttest Time 2
1992	n=19	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)
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Note. There was no posttest time 2 sample in 1993 due to the termination of the grant and funding.

Oral Histories (1992)

The purpose of the oral histories was to gather information about a student's previous NOLS course experience. Such qualitative information provided considerable support for interpreting the quantitative results of this study. Qualitative interviewing techniques can also provide valuable insights into attitudes and behaviors that otherwise may be lost through quantitative measures.

Demographic Results of Oral Histories

	# of Students	%age
Sample Size	19	
Female	10	53%
Male	9	47%

Age Range	21-48 years of age
Average age	28 years

Experience Before Taking NOLS

Introductory (little or no experience)	1	5%
Developmental (some previous experience)	14	74%
Commitment (High level of skill & experience)	4	21%

Course Types Represented

Outdoor Education Course (OEC)	7	36%
Wind River Wilderness (WRW)	6	32%
Wind River Mountaineering (WMT)	6	32%

Number of Instructors By Gender

(19 different courses with 3 instructors/course)

Female	20	35%
Male	37	65%

Fifteen of the 19 students (79%) belonged to either an outdoor/environmental related organization or subscribed to a magazine related to the outdoors. 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. Eighteen out of the 19 students (95%) stated that they would participate in NOLS again. Money and time were the two factors that kept students from participating.

Demographic Results of On-site surveys (i.e., Experimental Grp)

The results below represent a merging of 1992 and 1993 data collection of NOLS students without the control group data.

	# of Students	%age
Sample Size Total	231	

Female	102	44%
Male	129	56%

Age Range	15-51 years of age	
Average age	22 years	

Experience Level

Introductory (little or no experience)	33	14%
Developmental (some previous experience)	177	77%
Commitment (High level of skill & experience)	20	9%

Course Types Represented

Outdoor Educator's Course (OEC)	64	28%
Females	35	55%
Males	29	45%
Wind River Wilderness (WRW)	94	41%
Females	45	48%
Males	49	52%
Wind River Mountaineering (WMT)	73	31%
Females	22	30%
Males	51	70%

Regions of the Country

Southern	59	26%
Midatlantic	42	18%
New England	40	17%
Midwest	35	15%
Pacific Northwest	24	10%
Rocky Mountain	13	9%
Southwest	9	4%

Number of Instructors (3 instructors/course)

Female (6 course leaders)	14	19%
Male	61	81%

Likelihood of pursuing a career related to outdoor adventure

Posttest time 1 (immediately after course)	56%
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Posttest time 2 (one year after course) 68%

Likelihood of continued involvement in wilderness activities

Posttest time 1 86%

Posttest time 2 86%

Goals That Were Identified By Students

****Note:** These 3 types of goals were identified the most out of all the goals that students declared.

Personal Goals 25%

Technical Skill Goals 24%

Leadership and Judgment 20%

Fun and Enjoyment 9%

Natural History 8%

Minimum Impact Techniques 5%

Other 5%

Teaching Strategies 4%

Total 100%

*Personal (e.g., get in shape, get to know one self, etc.)

*Technical (e.g., learn to rock climb, mountaineering skills etc.)

*Leadership (e.g., learn how to develop and become a better leader)

*Other (e.g., future career, enhance resume)

****Ninety-six percent of students felt they had achieved their goals.**

Leading Outdoor Trips

The number of students leading outdoor trips before NOLS significantly increased after participating in a NOLS course (from 18% before to 33% after). Participation in NOLS may have provided the opportunity to learn skills and increase confidence in leading others on outdoor trips.

There was a significant increase in females leading outdoor adventure trips after NOLS from 6 to 15 occasions, a 150% increase. Although there was an increase in males leading outdoor trips it was only slightly, from 6 to 7 occasions.

Where there was an increase in females leading outdoor trips, there was a decrease in their participation in outdoor activities after NOLS while males increased their participation in outdoor activities. 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 shortage of other women also participating in outdoor activities.

Feedback Results in Oral Histories

The oral histories revealed that most students (84%) relied on feedback to guide their performance.

One student said s/he particularly relied upon feedback in areas where s/he did not have a great deal of experience. Another student did not rely on feedback much at all. S/he expressed having more experience than many of the other students on the course. This finding may imply that students with more experience rely on feedback less than students with less experience. **Since there was a small percentage of students that had a great deal of experience, it is important to be aware that students expect and depend on feedback to guide their performance.**

A few students indicated that they paid particularly close attention to the course leaders when receiving feedback, but whether gender played a role is not clear. One particular student mentioned that the feedback "would have meant more from someone s/he had connected with." Another student indicated not having a preference in whom to receive feedback from, as long as it was positive.

Feedback Results From On-site Surveys

Ninety-one percent of the feedback received from instructors was perceived by students to be positive. (57% mostly positive, 34% somewhat positive)

Eighty-five percent of the feedback received from instructors was perceived as immediate (38% mostly immediate, 47% somewhat immediate)

Ninety percent of the feedback received from instructors on course evaluations was perceived by students to be accurate. One reason why students felt the feedback was not accurate was related to instructors evaluating a behavior that was not observed

such as in the case of hiking groups and cooking groups. Overall, NOLS appears to be supplying the amount and type of feedback students desire. One unknown, at this point, is whether or not gender-specific feedback is important.

Mentoring Results

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).

Based on survey results, NOLS students felt that at least one instructor:

Offered encouragement	70%
Provided guidance	66%
Served as a role model	66%
Was a friend	60%
Could be confided in	48%
Could be trusted	43%

**Nearly half of the students (48%) identified with the same instructor when answering "yes" to the above questions. This provides some indication that there may have been a mentoring relationship for that person. Due to a small number of female instructors, the influence of gender on mentoring is not clear. However, the literature indicates that females prefer female mentors (Luna & Cullen, 1990).

Self-Efficacy Results

Below is the self-efficacy scale that was developed for this study:

TASKS	very	uncertain			somewhat			certain		very	certain	
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
a. casting a fishing line												
b. rappelling off 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 60 lbs. on your back												
g. climbing an intermediate level climb												
h. backpack 6 miles with 60 lbs on your back												
i. climb a peak that is over 12,000 ft. in elevation												
j. climb a peak that is over 18,000 feet 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												

SELF-EFFICACY SCALE

In the short-term, self-efficacy was significantly higher after the wilderness course (48% to 82%). However, over a long-term (one year later), students' self-efficacy scores dropped significantly (76%) yet continued to persist at a significantly higher level than their pretest self-efficacy scores.

Anxiety and Gender Differences

The literature reveals that anxiety often experienced before a student begins her/his wilderness course can bias one's self-efficacy (Koepke, 1973). The purpose of the control group was to control for this anxiety effect by assessing self-efficacy one month prior to coming to NOLS. There were higher self-efficacy scores at that time. Furthermore, the difference was statistically significant.

Gender differences were most evident in pretest measures when males had significantly higher (53%) self-efficacy scores than females (41%). However, there were no differences between female and male self-efficacy at posttest time 1 or posttest time 2.

Since the only significant difference between female and male self-efficacy was found in the pretest measure, one may infer that anxiety exists before the start of a course and that females appear to be more affected by it than males. Other reasons for the difference 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. In other words, females' perception of themselves as less efficacious in male dominated tasks can create anxiety.

Path Model Results - Relationship of feedback, goal attainment and mentoring on self-efficacy.

For the total population, positive feedback, immediate feedback and mentoring had the strongest influence on self-efficacy. Together these factors explained 8% of the variance in self-efficacy. Goal attainment had the weakest influence on self-efficacy.

The findings were more revealing when the sample was divided by gender. For female students, mentoring, positive feedback, and goal attainment were the strongest predictors of self-efficacy. Mentoring had a statistically significant influence on female self-efficacy. For females, positive feedback, mentoring and goal attainment explained 34% of the variation in self-efficacy.

For male students, none of the four variables was statistically significant, but immediate feedback was the strongest predictor of self-efficacy. Since males have been found to be more task oriented (Applying, 1989) than females, perhaps their success in a task provided them with sufficient immediate feedback to boost their self-efficacy.

Relationship between self-efficacy and leadership development

Self-efficacy had a positive influence on leadership development, although not significantly so.

For the female population, self-efficacy had very little influence on leadership development. However, one year later, leadership development (i.e., continued involvement in wilderness education activities) showed a significant impact in female self-efficacy. This may indicate that it is only after females have affirmed their development as a leader through involvement in wilderness education activities, that they feel efficacious. In the full proposed, respecified model, 27% of the variance in long-term self-efficacy was explained by mentoring, goal attainment, positive feedback short-term self-efficacy and leadership development.

Unlike females, male reported self-efficacy immediately following the course had a strong impact on leadership development (Figure 12). However, self-efficacy one year after the course had less impact on leadership development. This is why long-term self-efficacy does not appear in the models for males as it does for females. 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. The inference is that perceived self-efficacy encourages them to develop their leadership potential. Approximately 15% of the variance was explained in self-efficacy and immediate feedback.

MAJOR CONCLUSIONS

1. The full path model was found to be nonsignificant. It will be important to review other factors that are not in the model that will explain more of the variance that influence leadership development.
2. The pattern of developing leadership is different for females and males. Mentoring had the most significant influence on female self-efficacy, and immediate feedback had the most significant influence on male self-efficacy. Furthermore, continued involvement in leadership activities had a positive impact on self-efficacy for females one year later, but not so for males. Male self-efficacy was clearly most influenced by one factor, immediate feedback. The pattern of female self-efficacy and leadership development was much more complex and more influenced by mentoring than males.
3. Anxiety before the start of a wilderness course has an effect on self-efficacy, especially for females.

LIMITATIONS TO STUDY

Perceived control is a theoretical construct that is closely related to self-efficacy and provides a context for understanding the process by which certain outcomes are achieved. Perceived control is the expectation of having the power to participate in making decisions in order to obtain desirable consequences (Rodin, 1986). The relationship between self-efficacy and perceived control is that self-efficacy mediates the desirability of providing control. In other words, those who benefit most from control are those who are most confident they can exercise it (Litt, 1988). Performance is best if both high levels of self-efficacy and perceived control are present.

1. Although perceived control was measured, the scale used for this study was not specific to wilderness courses (situation specific) which resulted in a low reliability. Therefore, the investigators eliminated the perceived control data from the path analysis. While we believe that perceived control plays an important role, it was not

measured satisfactorily and thus, at this point, can neither be supported nor refuted as a causal force vis-a-vis leadership development.

2. 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 a 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.

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

IMPLICATIONS FOR NOLS

1. Perhaps, the most important finding is that the process of leadership development is different for women than men. The literature supplies 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. This means that instructor training should include material that helps sensitize future 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 be helpful.

2. While mentoring contributed to improving students' self-efficacy, it was more significant for females than males. This indicates 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.

3. Although both positive and immediate feedback contribute to one's self-efficacy, positive feedback was more important for females. Conversely, immediate feedback is 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 accurately provided (evaluate things that have been observed).

4. 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 to 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. Although there may be many ways to reduce the amount of anxiety on a course, one way is to spend a few moments at the introductory meeting to visit with each student individually and share goals, fears, etc. Once the course begins, it may be more appropriate and less threatening to share those thoughts openly in the group.

5. Instructors should acknowledge that some students feel more anxious than others. This anxiety is normal since it psychologically prepares a students for what is ahead. It is important to recognize that after the NOLS experience, female and male students feel equally competent after their course (i.e., self-efficacy scores were found to be the same).

6. It was found in this study that self-efficacy persists over time. However, unless involvement in skills and activities continue, one's self-efficacy will decrease yet not as low as it was at the beginning of the wilderness experience. NOLS provides opportunities for alumni to continue involvement through trips that are sponsored and led by NOLS. Furthermore, NOLS provides encouraging opportunities for women instructors (i.e., current and "soon to be" instructors) to enhance their involvement and expertise in wilderness skills and leadership. It is recommended that these experiences continue, particularly for women.

7. The self-efficacy instrument that was developed can be used to continue assessing self-efficacy levels before and after courses. It may be of interest to compare self-efficacy levels between females on all female courses and females on coed courses. It

will be necessary to develop self-efficacy scales, similar to this one, that reflect the skills at other branches (e.g., Mexico, Alaska, etc.). The self-efficacy scale developed in this study is specific to the mountaineering skills emphasized in Wyoming and the Northwest.

DISSEMINATION

As mentioned earlier, a Ph.D. dissertation will be submitted to NOLS as a reference for future research and use by NOLS instructors. This study has been presented at three research conferences by Rená Koesler: the Northeast Recreation Research (NERR) conference in New York (April, 1993), the Fifth International Symposium on Society and Resource Management conference in Colorado (June, 1994), and the International Conference on Outdoor Recreation and Education in Colorado (October, 1994). There are also plans to present this research at Wilderness Education Association Conference in Colorado (April, 1995), and to submit a journal article in the Journal of Leisure Research in the Fall of 1994.

GLOSSARY OF TERMS

1. Leadership Development: Leadership development was defined as continued involvement in wilderness education activities. The "continued involvement" emphasis stems from the developmental nature of leadership; that is, leadership is a process rather than an end in itself. "Activities" refer to skills such as backpacking, rockclimbing, camping, memberships in outdoor organization, attending workshops and leading outdoor/wilderness trips.
2. Process: Process is not something that happens automatically. Leadership is considered a developmental process of experiences that occur over time.
3. Perceived Control: Perceived control is the expectation of having the power to participate in making decisions in order to obtain desirable consequences (Rodin, 1986). Control does not need to be actually provided, only perceived to be available in order to be effective (Averill, 1973).
4. Self-Efficacy: The theory of self-efficacy refers to one's perception of her/his ability to act in specific situations or perform certain tasks of varying difficulty (Bandura, 1977).

5. Feedback: Feedback is a verbal or written report of the result of any behavior which may reinforce or modify subsequent behavior. Immediate feedback occurs right after the performance. Positive feedback can give persons a positive value judgment of performance.
6. Goal Attainment: Goals are an end to which one directs her/his energies and motivations to attain an objective.
7. Mentoring: A mentor is a person who personalizes the modeling influences for the protege by a direct involvement not necessarily provided by a role model (Bolton, 1980). A person can be a role model without being a mentor.
8. Role Model: A role model is one who exhibits behaviors, values, professionalism and competence that a protege looks up to and admires. In many cases of role modeling, no personal relationship develops (Jeruchim and Shapiro, 1992).
9. Path Model: A path model illustrates the flow of cause and effect. The arrows in the path model for this study determine the direction of influence from one variable to the next.
10. Path Analysis: Based on the support from the literature, the researcher pre-determines the key variables in the path model. Path analysis helps to interpret causal relations among predictor variables and criterion variables.
11. Control Group: The purpose of the control group was to control for the variable of anxiety. Questionnaires were mailed to NOLS participants 1-2 months before arriving at NOLS to assess and compare self-efficacy levels with that of the pretest.
12. Pretest Measures: Surveys were administered to NOLS participants the day they were to go into the field.
13. Posttest Time 1: Surveys were administered to NOLS participants the day they returned from the field. The purpose of this measurement was to assess the short-term effects of self-efficacy on leadership development.
14. Posttest time 2: Surveys were mailed to the posttest time 1 participants 1 year after completing their NOLS course. The purpose of this measurement was to assess the long-term effects of self-efficacy on leadership development.

15. Oral Histories: Face-to-face and telephone interviews were conducted with 19 NOLS graduates to examine the long-term effects of NOLS on leadership development. These qualitative interviews provided information about what NOLS graduates were currently doing and provided insight into their past NOLS experience which may not have been captured in the quantitative surveys.

16. On-site surveys: The pretest and posttest surveys were administered, in person, to NOLS participants at the site (i.e., Lander) where they began and ended their NOLS experience.

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