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HINTON, TWILLEY, & MITTELSTAEDT

## AN INVESTIGATION OF SELF-EFFICACY IN A FRESHMAN WILDERNESS EXPERIENCE PROGRAM

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### Introduction

*New Adventures* is a wilderness trip led for incoming freshman at a Midwestern University with over 20,000 students. Students self-select to be participants during the week before classes start. While the program has several foci, the website states that students will “form strong friendships with classmates,” “learn about wilderness camping,” and learn about the “ins and outs of college life from upper-class students.” This program takes place in the Boundary Waters Wilderness Area in Minnesota.

This study focused on several aspects regarding the salience of the experience for freshman participants. However, the main conceptual framework for the study came from past participants’ anecdotal evidence suggesting that the trip made them feel that they could be more successful in other pursuits because they “overcame” obstacles or perceived personal limitations while on this trip. This concept directly represents enactive mastery experience (Bandura, 1997) or past performances or accomplishments (Priest & Gass, 2005), which includes the belief in one’s ability to accomplish a goal or task based on past successes and/or failures (Bandura, 1997; Priest & Gass, 2005). Furthermore, success or “overcoming” obstacles is directly related to building an individual’s self-efficacy. Hence, “Once one skill is mastered the next is easier” (Martin, Cashel, Wagstaff, & Breunig, 2006, p. 128). Enactive mastery experiences are the most influential sources of self-efficacy and they provide the most direct evidence of a person’s ability to succeed at a task (Bandura, 1997).

The person most known for work on self-efficacy is Albert Bandura. He defines self-efficacy as, “peoples’ beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (Bandura, 1994, p.1). With regard to freshman wilderness programs, does increasing a person’s belief about their capabilities through challenging events lead that person to believe that s/he can perform better in their university career? This aspect of self-efficacy served as the main construct for the conceptual framework of this investigation.

The purpose of this study was to further investigate the link(s) between wilderness programs and the development of self-efficacy in first-year college students. Self-efficacy in first year college students is important because in order for students to successfully complete college, they have to deal or cope with many challenges and stressors, and the higher one’s self-efficacy the more likely students are to actively cope with the challenges and stresses they face (Davenport & Lane, 2006). The study also explored how participants in the wilderness group were impacted in specific ways, in relation to their self-efficacy – based on self-reported statements provided in their written essays. The researchers hoped to evaluate the benefits of this project for both practical implications and the comparison to self-efficacy theory.

### Literature Review

Research about freshman orientation programs across the country has been plentiful, and it is no wonder. The use of orientation programs began over a century ago, in 1888, at Boston University (Gass, Garvey, & Sugerman, 2003). Almost all institutions of higher learning have implemented some type of orientation program, based on the assumption that it will have a beneficial impact on college adjustment (Brinkerhoff & Sullivan, 1982). Freshman orientation programs vary in scope and purpose. In general, colleges and universities hope to help students transition into the university environment and to increase the likelihood that students will be successful (Upcraft & Farnsworth, 1984). Orientation programs are important because they represent the first “personal meeting” between the student and the institution; it can determine the quality of that relationship over the next four years (Martin & Dixon, 1989). Wilderness orientation programs have goals similar to those that take place on campuses but use the natural environment as a way to teach about adapting to college life. Galloway (2000) defined wilderness orientation “...as a program designed to assist individuals in adapting to a new environment by using wilderness settings and experiences to facilitate or enhance changes or adaptations to university life” (p.75). Using the wilderness environment for freshman orientation programs is well-established. O’Keefe (1988) noted that some programs have been in existence since the 1940s, though Davis-Berman and Berman (1996) indicate that most began in the late 1960s or since that time.

Philosophies and goals for wilderness orientation programs have changed throughout the years. In the 1980s, O’Keefe (1988) found that university freshman orientation programs used three main program models. Programs focused on 1) developing peer group identity, 2) developing positive interaction with faculty, and 3) improving retention. Davis-Berman and Berman (1996) found that the majority of wilderness orientation programs focused their energy on facilitating social interaction and development. Overall, programs continue to have other related goals such as academic (including retention), psychological growth, and social interaction. According to Choi (2005), self-efficacy directly contributes to academic performance. In addition, self-efficacy can be generalized to different skills or tasks – following an experience during which a person masters a task or successfully uses a skill – s/he is more likely to succeed at the next skill or task (Bandura, 1997). With this in mind, one can hypothesize that if a student’s self-efficacy increases due to their orientation program, then they can be expected to perform better academically.

Research about freshman retention is most plentiful in the orientation literature (Davig & Spain, 2004; Galloway, 2000; Gass, 1990; Murtaugh, Burns, & Schuster, 1999). Orientation literature identifies both traditional and wilderness orientation programs. Fewer studies have explored the role of wilderness programs in relation to college adjustment. For example, Devlin (1996) reported the positive effects of a 4-day survival skills program on friendship building and environmental perception; participants noted an improvement in self-confidence.

Long-term effects of freshman wilderness programs are rarely studied. Gass, Garvey, and Sugerman (2003) interviewed participants 17 years after their involvement in a freshman wilderness program. Results indicated that the study group had higher retention rates than the control groups. After 17 years, qualitative interviews were conducted; three themes emerged: 1) challenging assumptions about self and others, 2) identifying peer friendships as a support

network, and 3) identifying long-term positive effects of the orientation program during the undergraduate education experience as well as after graduation.

One of the noted outcomes under “challenging assumptions about self and others” was that of self-examination. Quotes included, “...I think what it did was help to open my eyes and see that I could do things on my own...” and “It kind of gave me the feeling that I could conquer anything...So I figured if I could do this program I could pass college Spanish” (Gass, Garvey, & Sugarman, 2003). These statements specifically refer to the notion of self-efficacy.

Self-efficacy is a long-studied concept, and Albert Bandura has probably written the most on the topic. Bandura’s works are cited heavily in the self-efficacy literature. Recreation studies literature is not exempt; several studies explored if self-efficacy increased as a result of recreational involvement. Many of these studies focused on people with disabilities. Findings show that different types of adventure and wilderness programs (e.g., adventure based therapy, hiking, rock climbing, challenge courses) may increase self-efficacy in persons with disabilities (Lin, 2003; Sutherland, 2001), and persons with mental illnesses (Davis-Berman & Berman, 1989; Ferguson and Jones, 2001; Kelly, Coursey, & Selby, 1997; Richardson, 2003).

Another notable study regarding self-efficacy is Paxton and McAvoy’s (1998) study of 68 participants on Outward Bound courses. They documented an increase in self-efficacy in three areas (general, interpersonal, and sociopolitical) at both the first post-test immediately following a 21-day course and at a follow-up post-test six months later. Participants’ comments provided powerful anecdotal evidence documenting that Outward Bound programs in adventure settings do have a long-term impact on the self-efficacy of participants.

## Methods

### *Participants*

The students who self-selected to participate in the *New Adventures* trip were originally recruited for the program via literature sent to the homes of all incoming freshmen. Twenty-five of the 28 students who signed up for the *New Adventures* program agreed to participate in this study; they represent the “treatment group”. Of these, 14 were male and 11 female, and all were Caucasian. This is representative of the university population, wherein only 5.8% of the student population indicates themselves as being from a race or ethnic group other than Caucasian. Two students resided out-of-state (though both were regional); the remainder represented various cities and towns in-state.

A group of 229 incoming freshmen attending pre-college orientation in July and August of 2005 represented the “control group”. Investigators did not have further contact with control group participants. No demographic information was available for this group of 229 students. The investigators compared this control group to the freshmen who participated in the wilderness program to ascertain if the two groups had similar beginning levels of self efficacy. However, the ability to collect post-test comparison data was void.

### *Quantitative Data Instrumentation, Collection, and Analysis*

Researchers collected quantitative data from the treatment and control groups using the Perceived Competence of Functioning Inventory (PCFI) (Hays & Williams, 2000). The PCFI is a

16-question survey used to measure self competence, role competence, and relational competence. Along with the three scales, the PCFI also measures an overall competence score labeled “General Level of Functioning” (GFL); scores can range from 16-80, with higher scores indicating stronger beliefs about perceived competence. Respondents are asked to rate their ability to do a number of tasks, on a continuum of poor (total scores up to 16), fair (scores range from 17-32), good (33-48), very good (49-64), and excellent (65-80). The PCFI GLF scores have a reported Cronbach’s alpha reliability coefficient of .92 for non-patient groups – comparable to the treatment and control groups in this study (Hays & Williams, 2000). Hays & Williams (2000) have also determined adequate discriminant and concurrent validity for the instrument.

A research assistant approached the control group participants during pre-college events at the university, wherein they were free to visit different booths providing student involvement information. After ascertaining s/he was not a *New Adventures* participant, s/he was asked for consent and to complete the PCFI immediately, on-site. The sample of 229 students represents approximately 5.5% of the entering freshman class of close to 4,200 students. Though most freshmen at the chosen university attend a pre-college event, one limitation is that the control group may not represent all freshmen, especially those who did not attend a pre-college session.

Twenty-five of the 28 freshmen who registered for the *New Adventures* program completed the PCFI questionnaire on-campus before leaving for the trip, and again immediately following the experience before commencing the long drive to return to campus. Approximately eight weeks after completion of the trip, student participants completed the PCFI questionnaire a third and final time. Twenty-one participants completed all three data sets completely, with no missing data, and were used for quantitative analysis.

An independent t-test was used to compare self-efficacy scores for the treatment and control group as a pre-test measurement, before the *New Adventures* trip. A one-way analysis of variance (ANOVA) repeated measures analysis was conducted to determine changes in self-efficacy for the treatment group, comparing the pre-test (T1) to post-test (T2) and post-post test (T3). Effect size tests were also conducted.

#### *Qualitative Data Collection and Analysis*

All 28 students enrolled in the *New Adventures* program completed essays as part of their post-trip assignments, responding to eight key questions (see Table 1). The trip coordinator gave questions to participants six weeks after the trip ended; responses were due two weeks later, eight weeks after the trip.

Two researchers independently reviewed all of the essays using the constant-comparison method to identify common themes. When the researchers came to agreement on the themes identified within each question they were then labeled, and the informants’ responses were categorized and described. For example, all of the responses regarding “social tasks” were put together as they arose naturally within question #1. Note that in Table 1 only the analysis of two of the eight questions is reported here.

TABLE 1

*Essay Questions Asked of Trip Participants*

- 
1. How did the *New Adventures* program challenge your assumptions about yourself? About others?
  2. Some past students have reported a feeling of, "If I can do *this*, I can do anything!" Does this statement resonate with you? Do you feel that this was an outcome of your *New Adventures* experience? If so, please give examples. If not, please explain why you think it may not be so.
  - 3.<sup>a</sup> Did you develop friendships among the other *New Adventures* participants? If yes, did these friendships function as a support network throughout the rest of the quarter? Please give examples. If no, was there anything that you felt hindered your ability to form friendships on the trip?
  - 4.<sup>a</sup> What effect did the wilderness setting have on you during your *New Adventures* trip? Do you now feel any differently about the wilderness than you did before the trip? Please explain.
  - 5.<sup>a</sup> What is the most important knowledge that you feel that you gained on the trip?
  - 6.<sup>a</sup> Is there any one event that stands out to you as a key learning experience for you on the *New Adventures* trip? Tell me about it.
  - 7.<sup>a</sup> What was your planned major before you left for the *New Adventures* trip? Did your major plans change because of the trip?
  - 8.<sup>a</sup> What do you consider the most important impact of the *New Adventures* trip on your first freshman quarter at Ohio University?
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<sup>a</sup> Questions number three through eight were not reported in this study.

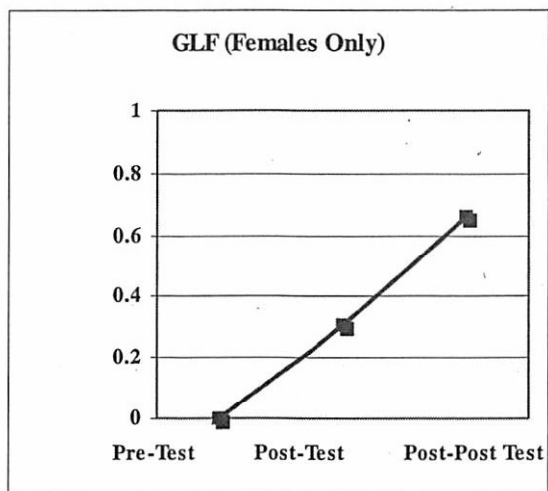
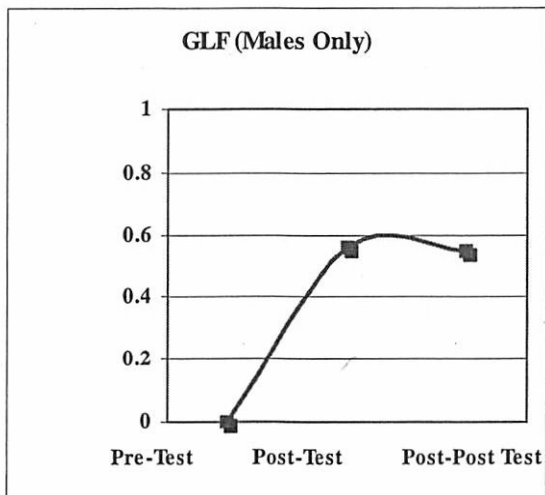
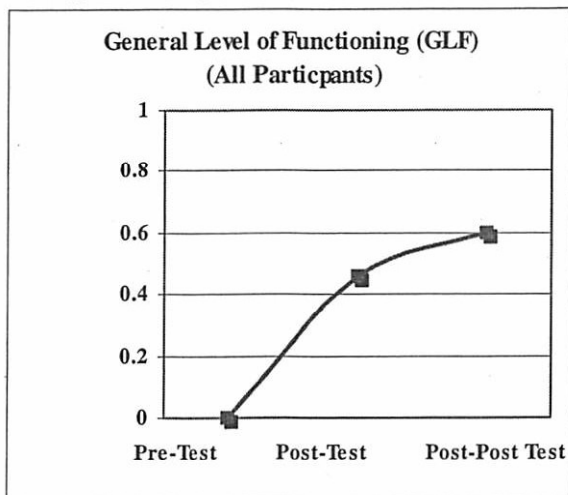
## Results

### *Quantitative Analyses*

An independent t-test was conducted to determine if the treatment and control groups had comparable self-efficacy scores prior to the *New Adventures* trip. Results indicated that the freshmen who elected to participate in the *New Adventures* program (N=21, X=61.00) did not differ on the PCFI from those who did not go on the trip (N=229, X=59.88) ( $t=.420$ ,  $p=.678$ ). Students were all similar on the measure; they all had a "very good" level of self-efficacy.

With the treatment group, one-way ANOVA repeated results indicated no significant increase in self-efficacy scores, statistically [ $F(2,40)=2.865$ ,  $p=.069$ ]. While the results were not statistically significant, it should be noted that there is a strong trend, showing an increase in self-efficacy scores, especially from pre-test (T1) to post-post test (T3). It is important to remember that there are two types of significance: statistical significance, and practical significance. For the student participants, self-efficacy scores increased from a mean score of 61, indicating the group was "very good" on self-efficacy at the beginning of the trip to a mean score of 68.19. This seven-point rise indicated that overall, the group had now achieved an "excellent" level of self-efficacy (see Figure 1). While not statistically significant, the results do approach significance ( $p=.069$ ). These results are due to chance alone only 6-7 times out of 100, instead of the "standard" level at which most statistical analyses are run, at a level of .05 (wherein the researcher is willing to accept that results are due to chance 5 times out of 100). A small sample size can lead to results where even significant differences are not detected, and more importantly that the analysis will fail to indicate real, practical differences that do exist. The researchers believe that this occurred in this study. While not statistically significant, the results do indicate an improvement in self-efficacy that is of practical significance – from "very good" to "excellent." Further, it becomes

FIGURE 1  
*PCFI Effect Sizes for Trip Participants by Gender*



very apparent when reviewing the qualitative data – in the form of the students' written essays – that the self-efficacy of the majority of these participants was significantly impacted as a result of their wilderness experience. Future research on this topic is warranted with a larger sample size, if feasible.

The effect size tests completed for the *New Adventures* participants revealed a positive change in PCFI scores on the general level of functioning (GLF) composite. These findings show an effect size of .46 between T2 and T3, and of .60 between T1 and T3. A review of the literature by Neill (2003) found that outdoor adventure programs typically result in effect sizes between .30 and .40. Though these findings are positive, it is important to use caution when interpreting these results. The only significant difference is found when comparing the pre-test with the post-post test ( $t=-2.32$ ,  $p=.03$ ). When comparing the pre-test with the post-test, although there is a respectable effect size, it is not significant ( $t=-1.59$ ,  $p=.12$ ).

Interestingly, though the men and women did not show significant differences in their effect sizes when examined separately (probably due to the small sample size), they did show different patterns of effect. Men's scores showed a sharp increase at the post-test and then a very slight decline at the final point. The women showed an increase in self-efficacy at the end of the trip, with an even greater increase at eight weeks (see Figure 1).

#### *Qualitative Analysis*

##### *Responses to Question #1a: How did the New Adventures program challenge your assumptions about yourself?*

Three students wrote more of a journal-type of response when reflecting on their wilderness experience and did not respond directly to this question. Three males reported that their assumptions about self were not challenged. Scott (names were changed to assure anonymity) explained that, "I did not go into this trip seeing it as a personal challenge. My main motivation for going...[was] to spend time in one of the most beautiful places on earth doing things I truly enjoy." Robert indicated that, "I went into the program confident in my physical abilities to handle the strain of the trip, and open minded to the possibilities of the new things I could experience and the friends that I could make." Matt reported similarly.

Approximately 79% of the participants (22) reported that the *New Adventures* program did challenge their assumptions about self, in a very positive way. Responses to this question were especially salient to the central concept of personal self-efficacy. Statements seemed to cluster around three main themes: feelings of general self-efficacy, interpersonal self-efficacy, and physical self-efficacy. The themes were similar to those in Paxton and McAvoy (1998) who documented increases in self-efficacy in general, interpersonal, and sociopolitical areas.

Students provided many examples of feelings they had pertaining to overall, or "general self-efficacy." At least seven students noted that they felt better about themselves, in a general sense, often explaining that they felt more confident in themselves. Nathan stated that,

The self-confidence in completing this challenge is so rewarding, socially and mentally... for me it was just awesome...I thought that I would just follow a lot of the time but I was a



leader a lot of the time, which was really cool. I really think that coming out of this challenge I am a changed person.

Steve explained, "After successful completion of our Boundary Water excursion I did recognize a boost in my overall self-confidence, something that has not always been part of my nature." Lynn said that, "It was awesome...and I would like to start backpacking and such now. This trip definitely helped me to reach outside of my comfort zone. I had never really paddled a canoe much before, and by now, I am practically a pro." Kate also felt good about herself, explaining that, "Throughout the trip...I thought 'there is no way our group can do this', but somehow we always got through it whether it was a long portage or a long day of paddling. This changed my perception of myself..." Tammy explained it this way, "The New Adventures program helped me in more ways than I can count...This trip really helped me to cross hurdles in my life." Similarly, Mike said how, "By the first day in the Waters I found out that I had underestimated myself...The whole trip changed the way I look at myself. I know now that if I believe in myself I can accomplish anything."

Many mentioned physical challenges, and their ability to "push through" these tasks when they were unsure that they would be able to succeed. For example, Julie said that,

In the weeks leading up to the New Adventures trip, I questioned my abilities a lot. I wondered if I would be able to physically keep up with everyone else...It was a physical challenge, but I surprised myself in keeping up with everyone and even doing more than I thought I could...It was pretty cool to realize that I can push myself and accomplish things I didn't know I could.

Don explained that, "I wondered many times if I would struggle with the rough lifestyle with camping. However, as the trip went on I was proud to feel very able...It tested my abilities and I felt like I took the situation well." Brad said how the "New Adventures program helped challenge [me]...by showing me I could do a lot more than I knew I could, like portaging a canoe which I had never done before." Amy said the program "challenged a lot of the physical activity aspects about myself I did not know I could do." Kevin explained it this way:

The New Adventures program challenged my assumptions about myself in many ways. There was a lot of challenging events throughout the week in the wilderness that you had to convince yourself that you could do. Some of the portages were long and hard but you just had to bear down and concentrate on one step at a time.

Many other student quotes pertaining to physical self-efficacy are included in the discussion on responses given to question number two.

In addition to physical self-efficacy, a number of students explained that assumptions about self were challenged in the area of interpersonal self-efficacy. Seven participants, or about one-fourth (25%) talked about their social skills. A few indicated that, before the trip, they did not believe that they were going to be able to make friends easily. Tammy stated, "I was a little skittish at the beginning of the trip; I'm kind of shy around people I don't know..." and then she discussed how this was resolved. Rick said:

I realized all I had to do to meet new people was relax and be friendly. Once I had this realization...everything with college just seemed to click and I began to enjoy myself much more...I am quite glad that I had this realization on this trip rather than during the second month of school or something when it might have been too late.

Melissa explained:

I assumed that I was a rather shy person. However, after completing this trip, I realized that participating in a[n] expedition where I did not know anyone, was a good way to meet people and force myself to open up to people who I normally would not. The New Adventures trip...forced me to take social risks, to meet and open up to new people.

*Responses to Question #1b: How did the New Adventures program challenge your assumptions about others?*

When reviewing how the participants challenged their assumptions about others, only one major theme surfaced: "You can't always judge a book by its cover". While not as salient to the topic of self-efficacy as the topic of being challenged about assumptions about one's own self, student responses about one's assumptions about others being challenged did highlight important ways in which the wilderness trip gave them a greater awareness about others, which they recognized as a very important factor in their transition to becoming a college student, and the many diverse and different types of people that they might be meeting in the future, or even rooming with in a residence hall.

Eight of the participants (29%) directly mentioned stereotyping someone by their appearance, and being proven wrong on the trip, another indicator of growth in terms of interpersonal self-efficacy. One female participant was direct in her comments stating, "I saw a girl dressed in khaki capris and a pink tank top and I thought to myself, 'What is she doing on this trip? She looks like she has never even been outside her house!'"

*Responses to Question #2: Some past students have reported a feeling of, "If I can do this, I can do anything!" Does this statement resonate with you? Do you feel that this was an outcome of your New Adventures experience?*

This question, along with question 1a – about having assumptions of self challenged as a result of the wilderness trip – provided a plethora of focused responses directly related to self-efficacy. As before, responses clustered around key themes: especially physical self-efficacy and interpersonal self-efficacy.

Twenty-five students (89%) answered "yes" to this question. Only three males; the same three who indicated that their assumptions about self were not challenged (in question 1a), did not answer "yes." Of the 25 students who said "yes," nine specifically mentioned how the physical nature of the trip gave them the feeling they could do anything, highlighting an increase in their physical self-efficacy. Derek stated, "After completing the loop, a circle around the Boundary Waters, I felt much stronger mentally and physically because I had never challenged myself so greatly. I remember feeling that, 'If I can do this, I can do anything'." Another student specifically mentioned how portaging a canoe gave him a strong sense of accomplishment:

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As sweat is running down your face as you're walking down a dirt trail with a backpack digging into your arms and a 50 pound canoe resting on your shoulders the trail never seems to end. Then you see it. The trees start to thin out and you start seeing the opening in the woods. You did it! You just finished a sixty rod portage! These were the thoughts that were going through my mind as I was finishing the last portage of the trip. At the beginning of the trip I couldn't even finish a 60 rod portage; I never thought I could do a 160 rod. This was when I knew if I could do this I could do anything I wanted to.

Mandy explained, "I definitely learned a lot about wilderness survival...I feel inspired to go on such a trip again because I feel capable and confident and informed."

Ten students, or over one-third (36%) revealed that the New Adventures trip included some of the most physically demanding work they had ever done. As a result of these physical demands, students felt stronger than they thought possible upon completion. For example, Shannon said that, "After doing this trip I know I can do anything. I had a lot of fun but it was also extremely difficult for me." Amy stated that, "This was definitely the toughest physical work I have ever done. It made me feel like I was stronger than I knew I was...being able to not complain...and continue on for the next few days made me very proud of myself and my actions." Jack "believe(s) the statement if I can do this I can do anything is very true with the New Adventures experience. It helped to show me that I can do anything I set my mind to." Rick explained it well, stating:

When I look back at the map of where we went and it has marked on it all the little journeys and the portages that my group went on. When I look at that I have a real sense of accomplishment and that certainly lends to a feeling that anything is possible with hard work.

A few students highlighted again the impact of the trip on their interpersonal self-efficacy and talked about how their assumptions about their social skills were challenged. Steve explained that:

It wasn't the conquering of portages, multi-mile canoe trips, or the creating a one match fire that made me feel like I could do anything, it was once again the tremendous success I had in establishing new friendships and unique relationships with people I had only been acquainted with for two weeks...I knew that college and occupations throughout the rest of my life would demand social skills I thought I lacked...at the realization that I was not a hermit with nothing to offer I felt invigorated and inspired.

In a similar vein, Debra indicated that, "The bigger issue for me was if I could meet people and have fun without...any of my friends from home. I wasn't very independent before this trip and I really wanted to challenge myself to do something on my own. I think that I definitely achieved this...I do feel 'If I can do this, I can do anything.'"

A few students noted that the trip impacted more than one area of self-efficacy. Nathan explained, "I thought to myself that if I could do this, then it would be a great stepping block into the college life. The self confidence in completing this challenge is so rewarding, socially and

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mentally for me was just awesome.” Carolyn shared the rather profound impact that the wilderness trip had on her life:

The statement of, ‘if I can do this, I can do anything!’ embodies my feelings about this experience perfectly. Whenever anything seems remotely difficult or I feel like giving up, I simply look back and remember...This trip gave me not only confidence in my physical abilities but in my personal beliefs as well. I have never been considered a confident individual, but through this trip I learned how to better trust myself and my own decisions above that of others...I learned to believe in myself, and with that new found knowledge I’ve found that everything else just seems to fall into place.

Participants also recognized how the *New Adventures* trip helped them feel better prepared for other trips into similar environments. One student noted, “I feel inspired to go on such a trip again because I feel capable and confident and informed.” Another student stated “...I had a feeling of ‘If I can do this, I want to do it as often as possible!’ I felt almost inspired.” Five participants mentioned how this trip increased their confidence in outdoor skills more than anything. As a slight alteration to answering “yes” four students mentioned that they enjoyed the new experience but feel they will face harder challenges. “While I do have a sense of accomplishment after the trip, I feel like there are tougher things out there,” stated one student. Another student said, “...there are many different kinds of challenges.”

## Discussion

### *Summary of Findings*

Overall, it is apparent that the freshman participants in the *New Adventures* program realized practical benefits in the area of self-efficacy. Interestingly, these effects seemed to grow over time, even more so for the women. This program does appear to have had a positive impact in the areas of overall self-efficacy and, in particular, helped students to improve their physical and interpersonal self-efficacy. Another significant impact of the program was the development of friendships and a sense of belonging; though discussed little in the paper, students reported these as highly valued benefits.

### *Limitations*

There were several limitations associated with this study. First and foremost, there were no post-tests conducted with the control group. There certainly is a possibility that the freshman experience, regardless of participation in any type of orientation, leads to increases in self efficacy. The sample size for the control group was also a convenience sample and it may not be fully representative of the entire freshman class population.

The treatment group sample was small and represents only freshmen on one trip at one university. Therefore, it is not generalizable to any other population. It would be advisable to increase the sample size to enable important differences to be detected by statistical analyses. However, this is a logistical issue which would need to be handled thoughtfully; more groups traveling in a wilderness area could have a greater impact upon the environment.

In addition, students were receiving a grade for the class, and this may have affected the way in which they wrote their essays. Though a response bias was not noted by the investigators (it

appeared that the respondents were genuine in their writing and represented a wide variety of opinions), it is possible that it existed. Both the treatment and control groups may also have exhibited a social desirability bias in their responses to the PCFI. Since questions are of a sensitive nature, it is possible that they would not want the investigators to think “poorly of them” based on their answers to items in their questionnaire.

### **Practical Implications**

Practical implications from this study vary from the ways that a trip might be marketed, to the way(s) leaders are trained, how activities are conducted during a trip, and/or ways to structure the post-trip environment, such as specific debriefing or continuing contacts among trip participants. Though this has been a long, continued discussion among the investigators, only a few salient implications are noted here.

First, it is important to continue to be intentional about retaining difficult or “adverse” situations during a trip. For some, the greatest interpersonal impact of the trip occurred when students persevered when they did not know that they could endure such difficult challenges. In other words, the trip should not be made more “comfortable” for these college participants.

In the past, this program has included reunions for the participants so they could reconnect and share photographs and memories with one another. The possibility of conducting reunions within or across year cohorts of participants should be reconsidered so as to continue to foster the friendships and sense of belonging noted as being extraordinarily important outcomes.

In addition, it would be interesting to investigate the possibility of having trip cohort groups complete a class, or classes (a learning community), together when they return to campus. At least one class could be taught by trip personnel so as to continue to increase the challenge level for the students and/or continue to expose them to further challenging experiences.

Finally, it would be interesting to create an activity or discussion regarding stereotyping that trip leaders could facilitate near the end of the trip. Since stereotyping others was prevalent in the group, bringing the learning implications to the forefront and then helping students to transfer that learning to the university environment could help them with their ability to establish more diverse relationships once on campus.

### **Future Research**

Again, the potential for future research in this area is great. It might start with the current cohort group being studied. At what point does self-efficacy peak? Does it then decline or maintain? Continuing to test one cohort group with the PCFI might help investigators to establish a more longitudinal understanding and would be an appropriate research strategy to look at long-term impacts.

Of course, conducting the study using a continuing control group would be beneficial. Several types of comparative groups could be included, such as incoming freshmen who do not complete any type of freshman experience, freshmen who complete a traditional “university experience” class, or freshmen who are part of a learning community. If measured each quarter throughout

their first year, these cohorts could provide a clearer picture of the effectiveness of each type of experience. Describing differences between men and women is also indicated.

Researching self-efficacy across freshmen wilderness experience participants at different universities would provide valuable information that could provide much more representative, generalizable results. Though the intentionality of each of the programs can vary widely, it might be possible to show which program characteristics impact self-efficacy. In the vein of intentionality, it would also be useful to begin to manipulate the experience to learn about the ability of trip leaders to facilitate self-efficacy gains in students. If the trip leaders on one of the several small groups on the trip are trained in self-efficacy and change their leadership styles or activities to try and enhance this variable, does this make changes in the participants' self-efficacy levels?

Finally, it could be intriguing to investigate the trip leaders themselves. Through discussions with trip leaders and professional staff, it was discovered that upperclass students who helped *lead* the trips are possibly making even greater gains in self-efficacy than the incoming students who are participants on the trip; this important theme needs to be explored in greater depth. Do the responsibilities associated with being a trip leader help these individuals to grow in greater ways than those whose growth they are facilitating?

### Conclusion

It is apparent that this wilderness orientation program provided a number of important benefits to its participants. The most important benefits may still be debated, and other benefits may not yet be realized or fully understood by either the investigators or by the participants. The saliency of these benefits is also nebulous; at what point, if ever, will self-efficacy or the benefits of, for example, quickly formed friendships peak? These answers are unknown, but provide a basis for continued study in the field.

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