

5-2015

THE EFFECTS OF UTILIZING HIGH ELEMENT ROPES COURSES AS A TREATMENT INTERVENTION ON SELF- EFFICACY

Jesy Cordle
Clemson University

Follow this and additional works at: https://tigerprints.clemson.edu/all_theses

Recommended Citation

Cordle, Jesy, "THE EFFECTS OF UTILIZING HIGH ELEMENT ROPES COURSES AS A TREATMENT INTERVENTION ON SELF-EFFICACY" (2015). *All Theses*. 2093.

https://tigerprints.clemson.edu/all_theses/2093

This Thesis is brought to you for free and open access by the Theses at TigerPrints. It has been accepted for inclusion in All Theses by an authorized administrator of TigerPrints. For more information, please contact kokeefe@clemson.edu.

THE EFFECTS OF UTILIZING HIGH ELEMENT ROPES COURSES AS A
TREATMENT INTERVENTION ON SELF-EFFICACY

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Parks, Recreation, and Tourism Management

by
Jesy Cordle
May 2015

Accepted by:
Marieke Van Puymbroeck, Committee Chair
Brent Hawkins
Elizabeth Baldwin

ABSTRACT

Adventure-Based Therapy (ABT) is a treatment intervention in Recreational Therapy (RT) that has the capacity to produce a variety of physical, psychological, cognitive, and social outcomes. While there is research on the potential benefits of ABT and ropes course experiences, there is a lack of research on which course types led to specific results, ultimately resulting in inconsistent programming. The purpose of this mixed methods study was to determine the impact of a static belay high ropes course experience on self-efficacy, and to explore the different parts of the course experience that were beneficial in developing self-efficacy. Assessments reflected a significant increase in self-efficacy following the ropes course experience. Focus groups and follow-up interviews reflected the different factors of ropes course experiences that led to the differences between pre- and post-assessment scores. These results supported that high ropes course programming can impact self-efficacy development, including mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological arousal. Based on these findings, recreational therapists should consider the use of the high ropes course as a tool to improve self-efficacy. Additional implications for practice and future research are included.

Key Words: high ropes courses, adventure based therapy, outdoor programming, self-efficacy, recreational therapy

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: REVIEW OF THE LITERATURE	5
Theoretical Basis for Recreational Therapy.....	5
HRC Fundamentals	6
Self-Efficacy Theory	9
Self-Efficacy and Adventure Programming	11
Task Specific and Generalized Self-Efficacy	15
CHAPTER 3: METHOD	17
Research Questions.....	17
Framework	17
Participants and Site.....	18
Instructor Training.....	19
Treatment	20
Procedures	21
Data Collection	23
Data Analysis.....	25
CHAPTER 4: RESULTS	29
Demographics.....	29
Quantitative Pre- and Posttest Results.....	30
Qualitative Focus Group Results.....	32
Focus Group Open Coding Thematic Analysis and Findings.....	33
Focus Group Deductive Categorical Coding.....	39
Initial Mixed Methods Results.....	44
Follow-Up Quantitative Data Analysis	46
Follow-Up Qualitative Data Analysis.....	46
Summary of Results.....	48
CHAPTER 5: DISCUSSION	50
Discussion of Findings	50
Implications for Recreational Therapy Practice.....	52
Future Research	54
CHAPTER 6: ARTICLE	58
APPENDICES	88
A: Team Ventures Participant Assessment.....	89
B: New General Self-Efficacy Scale.....	90
B: Ropes Course Specific Self-Efficacy Scale.....	90
C: Focus Group Questions.....	91
D: Follow-Up Interview Questions.....	92
E: RCSSES Pre- and Posttest Graphs.....	93
F: NGSE Pre- and Posttest Graphs.....	95
G: Pre- and Posttest t-test and Pre- and Follow-Up t-test.....	97
REFERENCES.....	99

LIST OF TABLES AND FIGURES

Figure 1.1	Bandura’s Perspective on Self-Efficacy Development	12
Figure 1.2	Self-Efficacy Development Via High Ropes Courses	15
Figure 2.1	Mixed Methods Design	27
Table 2.2	Mixed Methods Sequence and Products	28
Table 3.1	Demographic Information	29-30
Figure 4.1-4.5	RCSSES Pre- and Post- Score Comparison by Group	93-94
Figure 5.1-5.5	NGSE Pre- and Post- Score Comparison by Group	95-96
Table 6.1	NGSE t-Test	98
Table 6.1	RCSSES t-Test	98

Article Tables and Figures

Table 1	Manuscript Demographic Information	84
Figure 1	Manuscript Mixed Methods Design	85

CHAPTER 1: INTRODUCTION

Outdoor adventure programming (OAP) is becoming increasingly popular as a treatment intervention for a variety of populations. As more programs offer OAP, it is important to understand the specific outcomes related to their use with different populations. Ropes courses, a type of OAP, have increased in popularity amongst camps, schools, hospitals, and community based programs throughout the United States. High ropes courses (HRC), defined as a series of elevated, interconnected, individual obstacles or elements, in particular have incredible potential as a treatment intervention in recreational therapy through their impact on self-esteem, physical fitness variables, group dynamics, and self-efficacy. HRCs impact self-efficacy through the application of Bandura's research on self-efficacy to the HRC environment.

Bandura (1977) initially proposed and documented the impact that cognitive processes have on the acquisition and retention of behavioral changes. Psychological reinforcement impacts behavioral decisions through personal reflection on previous positive or negative feedback. One's beliefs about the results and consequences of an action can have a greater influence on behavior choice and continued behavior processes than the actual result or external reinforcement itself (Baron, Kaufman, & Stauber, 1969). These pre- self-efficacy theories on cognitive processes initially led to questions related to the role that cognitive processes have on behavioral change and regulation. Reinforcement, or the results of behavioral decisions, is understood primarily as the process of encouraging or discouraging behavior. These behavioral decisions are based on previous positive or negative results from past behavior. As individuals create self-prescribed standards, discrepancies between perceived performance and personal

standards influence changes in behaviors. Through these observations, Bandura (1977) described the role of self-efficacy as it relates to creating and strengthening personal expectations. The concept of self-efficacy is based on the belief an individual has that he or she can successfully perform a certain behavior to accomplish previously established outcomes. The influence of self-efficacy is understood as separate from being motivated by the expectation of certain reinforcement. If an individual doubts his or her personal capability of accomplishing a task, the outcome or reinforcement related to the completion of the behavior, has less of an influence than the belief that individual has about his or her capability of accomplishing the task.

Research in many fields reports the impact of self-efficacy on individual confidence, success, development, and adjustment. Self-efficacy, as it relates to outdoor recreation participation, is primarily based on successful performance of a task. For example, Propst and Koesler (1998) proposed that self-efficacy in outdoor activities is influenced by mentoring, consistent feedback, and goal attainment. They found that self-efficacy scores, specific to different outdoor skills, were positively impacted in both the short-term and long-term by participation in outdoor programming through a National Outdoor Leadership School (NOLS) course.

Inconsistent terminology in research makes it difficult to translate research outcomes into interventions for clients who need to meet specific goals and objectives for treatment. For example, Goldberg, Klenosky, O'Leary and Templin (2000), discussed the different outcomes researched as it related to ropes course participation through a Means-End Data Analysis, yet compared significantly different ropes course programs. These programs included name games, energizers, trust building games, low ropes initiatives,

and independent high ropes challenge initiatives. In addition to determining satisfaction as it related to the completion of the ropes course experience, they also asked the subjects of the research to list outcomes related to the ropes course program. While there were consistent themes derived through participant answers, there was no connection between the specific themes and the elements or activities that those participants completed.

Ropes courses can represent group initiatives, low ropes, high ropes, and climbing towers; if the type of course is unspecified in research, it is not clear to the practitioner which programs to implement to achieve a desired outcome.

Gillis and Speelman (2008) completed a meta-analysis on the effectiveness of ropes courses (utilizing the term challenge course synonymously) and included low challenge course activities, high challenge course activities, group initiative activities, and generalized OAP. The outcomes from each of these programs are going to vary based on the different activities included in the “challenge course.” While the results from Gillis and Speelman’s study identified positive changes in self-esteem, self-efficacy, family dynamics, physical variables, group dynamics, personality measures, and academic measures, they also compared many different types of courses and programs, and further, the majority of the research reflected in the meta-analysis were unpublished dissertations and theses.

While there are significant empirical results from research related to participation in OAP and various high and low ropes courses, there is a need for research that reflects course and element specific results (Goldenburg, 2000), in order to lead to facilitation that can be more purposeful in addressing client needs. An issue in research in this topic

is intentionality in terminology regarding specific course use and consistent published results for both generalized populations and populations with special considerations.

This study was structured to determine the both short and long-term impact of HRCs on task specific and generalized self-efficacy as well as determining the different aspects of the HRC experience that influence changes in self-efficacy. In order to effectively reflect the appropriateness of a treatment intervention on a specific population, a base of knowledge needs to be developed for the general population. Following the initial understanding of the impact of HRCs on task specific and generalized self-efficacy, further research can focus on the impact on specific populations such as individuals with physical impairments, psychological disorders, or intellectual disabilities. From this point, practitioners, facilitators, and therapists can determine what populations benefit from participation in HRC programs and what parts of the course are most influential on self-efficacy development.

CHAPTER 2: REVIEW OF THE LITERATURE

While the use of adventure based programming, and ropes courses specifically, is not new; there is difficulty utilizing adventure based programming as a treatment intervention due to the lack of funding and reimbursement (Chakravorty, Trunnell, & Ellis, 1995). Further research may be beneficial in justifying services for the sake of funding and reimbursement. Research related to the use of ropes courses in recreational therapy is typically based on wilderness therapy programs, camps, and community based programs with a variety of ropes courses being represented (Gillis & Speelman, 2008). These ropes courses use a variety of technology including high and low ropes course elements, team building activities, and group initiatives that result in various psychological, intellectual, social, and physical outcomes.

Theoretical Basis for Recreational Therapy

One of the philosophical foundations of recreational therapy is the strengths based approach to assessment and programming. Positive psychology, resilience, and the recovery model in mental health are examples of current perspectives that emphasize the strengths-based approach (Anderson & Heyne, 2013). A strengths based approach has been found to be more effective in facilitating positive change than the previous medical model that focuses on responding to deficits (Heyne & Anderson, 2012). The strengths based approach is characterized by focusing on aspects of an individual's life that would be considered strengths, such as values, skills, goals, and supportive environmental factors, as opposed to concentrating on functional deficits. The main purpose of a strengths based approach is for individuals to reach their goals related to overall

wellbeing, quality of life, and level of functioning. Focusing on individual deficits or weaknesses negatively impacts one's self-concept, self-esteem, and self-efficacy. Strengths based approaches in treatment empower participants to develop their own well-being utilizing personal motivation, which creates longer lasting positive change. Focusing on the individual client's strengths in the physical, psychological, social, intellectual, and spiritual domains reinforces perceived strengths. An individual client's high self-efficacy can be perceived as strength independently, or can be reinforced by intentional focus on strengths and capabilities. In recreational therapy practice, increasing self-efficacy may positively impact an individual's response to a negative situation, including responding to physical, psychological, social, or intellectual health conditions.

HRC Fundamentals

Experiential education is based on the concept of learning by doing through hands on experiences (AEE, 2014; Dewey, 1938). Generally research supports the view that hands on experiences lead to faster learning, better retention, and a greater understanding of learned material, which is beneficial for application into everyday life (Shellman, 2014). The concepts of experiential learning impact the cognitive, affective, and physical domains and relate to combining knowledge, skills, and/or attitudes to lead to a fuller understanding. This process requires active engagement and investment from the learner. Although the facilitator provides and structures an experience, the participant is responsible for application of knowledge and skills; the implementation of experience following the course is reliant on the participant's intentionality, awareness, and continued commitment in the learning process. Ropes courses are one type of experiential learning.

The primary goal of a ropes course is for the participant to transfer skills and perspectives from the HRC into everyday life (Haras, Bunting, & Witt, 2005). Both high and low ropes courses are designed to engage participants on multiple levels of functioning, including physical, psychological, intellectual, and social domains (Association for Experiential Education, 2004). This is accomplished through the utilization of individual and series of obstacles made from cables, ropes, logs, wood, and climbing holds. In the United States, courses and equipment are maintained based on safety regulations developed by the Association of Challenge Course Technology (2004). These obstacles are primarily separated into two categories, high or low courses. HRCs are designed primarily for individual challenge and development, with some exceptions including high element teams courses. HRCs are separated into static and dynamic courses: a static course is a series of interconnected high course elements which the participant uses a self-belay system; dynamic courses typically are stand-alone elements with participants being belayed through the element (Rohnke, Wall, Tait, & Rogers, 2003). Low-element courses are typically focused on group development through problem solving activities and group initiatives; these typically take place less than twelve to thirteen feet off of the ground.

Previous research reflects that ropes courses increase interpersonal growth through building positive social interactions, testing perceived personal limits, and reinforcing group development and cohesion (Faulner, 2002). Individual studies have been completed on the outcomes related to ropes course participation including heightened self-esteem and self concept, improved group decision making capabilities, and cooperation and trust (Goldenberg, Klenosky, O'Leary, & Templin, 2000). Larger

studies have been completed reflecting the overall efficacy of ropes courses towards these desired outcomes (Gillis & Speelman, 2008), and also compared the outcomes from a variety of pre-existing research on ropes courses (Goldenberg et al., 2000).

Goldenberg et al. (2000) completed a means-end investigation of ropes course experiences, attempting to understand the different meanings individuals associate with ropes course experiences to better understand the benefits derived from the experience and why they are viewed as important. They separated potential benefits into two different categories group-oriented benefits, for example enhancing trust, communication skills, leadership, and individual-oriented benefits such as overcoming preconceived limitations, increasing confidence and self esteem, and enhancing understanding and respect for individual differences. They compared 125 respondents and found that values of fun and enjoyment, self-fulfillment, and accomplishment led to results such as task accomplishment, teamwork, relationship building, increased communication. This overview of participants reflects outcomes that can be attained through different ropes course experiences.

Gillis and Speelman (2008) also studied the effect of challenge courses, comparing 34 different studies that evaluated low challenge courses (n=12), low and high challenge courses (n=22), and unspecified types of challenge courses (n=10). A majority of the research compared in this article are unpublished thesis and dissertations (n=36), and represent a variety of ages, focuses (educational, therapeutic, or developmental), and duration of course participation. Of the literature they studied, they found that the most frequent outcomes of challenge course studies were self-esteem or self-concept, group dynamics, personality measures, and self-efficacy.

Goldberg et al. (2000) conducted a means-end investigation of ropes courses, including both high and low-element courses. They found the majority of outcomes related to ropes courses were: teamwork, communication, leadership, trust development, relationship building, and task accomplishment. The research from this study primarily focused on group development more than individual development. Gillis and Speelman (2008) tested the overall efficacy of challenge courses, again including both high and low-element challenge courses, but had a greater emphasis on individual benefit with outcomes related to increased self-esteem and internalized locus of control. Their research primarily reflected outcomes related to self-esteem/self-concept, group dynamics, personality measures, and self-efficacy. Both of these studies (Gillis & Speelman 2008; Goldenberg et al., 2000) included a variety of populations, activities, duration, and measures.

Although research regarding HRCs is limited, there is initial evidence supporting their use with certain populations. High and low ropes courses are used in therapeutic settings including psychiatric hospitals, rehabilitation programs, wilderness programs, corporate training programs, and school based recreation programs (Gillis & Speelman, 2008). This study was designed to better understand the impact of a high-ropes course on task specific and generalized self-efficacy.

Self-Efficacy Theory

Bandura (1977) defined self-efficacy as an individual's belief in his or her personal competency in a specific task. Self-efficacy is based on one's expectations of how well he or she will perform in a task. These expectations are a major influence for an individual's choice in activities, the level of participation and effort given in each activity,

and how long he or she will continue to persist when facing a stressful situation (Bandura 1986). Bandura suggested that if a person has a high level of self-efficacy for a given task, he or she is more likely to anticipate positive results and challenge him or herself more. This results in an increased commitment to a challenge at an elevated capability level than an individual who has lower self-efficacy expectations. Just as self-efficacy beliefs affect cognitive processes, they also impact motivational processes, such as setting, evaluating, and adjusting goals. This also affects how long an individual is likely to persevere and how he or she will respond to obstacles and performance failures (Bandura). In addition to the cognitive and motivational processes, self-efficacy beliefs impact psychological and affective responses, including emotional regulation.

Self-efficacy helps regulate one's ability to respond and cope with stressful situations. An individual with high self-efficacy has a greater potential to positively respond and cope with a stressful situation, effectively controlling negative thought patterns and creating a less stressful and threatening environment (Bandura, 1977).

The major development from cognitive processing theories to Bandura's self-efficacy theory is seen in the difference between response expectations and efficacy. Response-outcome expectations are defined by a person's choice to participate in an activity based on the belief that a behavior will result in a specific outcome, as seen in reinforcement/punishment theories of motivation. Self-efficacy theories are differentiated by the belief that an individual has the ability to perform a certain behavior that will result in a specific outcome; the motivation for participation in the activity is seen in his or her confidence in accomplishing a task, not in the potential outcome.

In order to address self-efficacy related patient goals and objectives, self-efficacy needs to be understood beyond theoretical concepts and applied to adventure-based programming, and HRCs specifically. For example, a client with a drug or alcohol addiction may have goals related to increasing general and abstinence specific self-efficacy. Understanding the impact of a HRC on general self-efficacy will help determine whether it would be an appropriate and effective treatment intervention for that goal.

Self-Efficacy and Adventure Programming

Bandura (1977, 1986, 1994) identified four factors that impact self-efficacy perceptions; these are mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological arousal (See Figure 1.1). HRCs impact participants in these aspects through individual and group experiences. Mastery experiences, attained through accomplishing a physical task, are the most influential on developing high self-efficacy (McGowan, 1986). Essentially, repeated success or failure in an activity impacts efficacy judgments and perspectives on one's capabilities. One objective on a HRC is to understand an individual's potential capabilities and create challenges specific to that ability level, this reinforces the belief that he or she is capable of overcoming challenges.

Figure 1.1 Bandura's Perspective of Self-Efficacy Development



Self-efficacy is also impacted by vicarious experiences, which are attained through observing other individuals perform tasks successfully without adverse consequences, are seen on a HRC through modeling behaviors and performances. Group experiences of HRCs positively or negatively impact an individual's anticipation of success or failure. Each individual has the opportunity to view other participants performing on the course; in vicarious experiences the observer utilized these observed experiences to determine his or her expected performance on individual elements. Weinberg, Grove, and Jackson (1992) supported this aspect of self-efficacy attainment through modeling behavior in their research. They evaluated thirteen different self-efficacy building strategies developed by coaches using Bandura's model of self-efficacy. They found that the most often used and most effective strategies included positive self-

talk, modeling of other successful players, instruction and skills practice, as well as verbal persuasion. Further, coaches frequently utilized modeling techniques with players, and found them to be a successful self-efficacy technique. This study illustrates how Bandura's model of self-efficacy can be implemented in everyday examples and intentional programming.

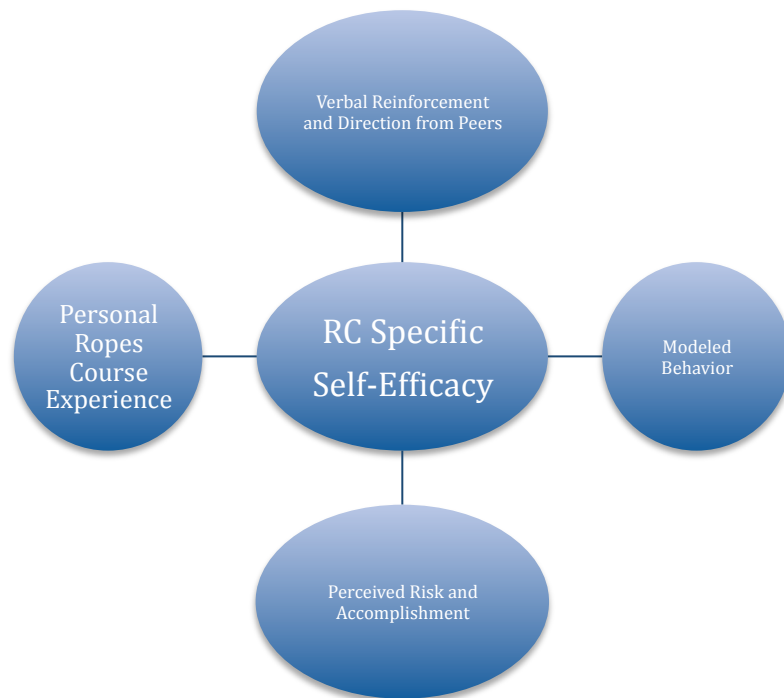
Verbal persuasion occurs when other individuals communicate that a participant can be successful in a stressful situation based on recognition of previous accomplishments (Bandura, 1977). Verbal persuasion can be used initially to motivate individuals towards individual experiences and the accomplishment of a task, but also to reinforce or strengthen self-efficacy concepts after the experience is achieved. Examples of positive verbal persuasion included self-talk and coaching or encouragement from others. Verbal persuasion can also have a negative impact on self-efficacy and trust through self-doubt, when a participant does not believe that the individual giving feedback has adequate knowledge to judge the participant's actual capabilities. Verbal persuasion is most beneficial towards self-efficacy when it is immediate, specific, and accurate, following the performance and accomplishment of a desired task (Propst & Koesler, 1998). Verbal persuasion is seen on a HRC through group interaction, when group members encourage one another, or when they give direction or feedback specific to the element. Verbal persuasion also has the potential to negatively impact self-efficacy on a HRC, when a participant receives negative feedback from group members.

Emotional and physiological arousal is the body's response to a stressful situation (Bandura, 1977,1986). Fear, anxiety, and confidence are emotional responses, while shaking legs, sweating, and increased heart rate are physiological responses to perceived

stress. Until a certain point, anxiety positively motivates and enhances task performance and self-efficacy. If the challenge is perceived as greater than an individual's physical or mental capabilities, the emotional and physiological response to distress decreases self-efficacy and performance (Feltz & Mugno 1983; Ulrich, Dimberg, & Driver, 1991). Perceived risk is beneficial in challenging participants and creating moderate levels of anxiety and stress, which heighten self-efficacy and improve overall performance. The role of the HRC instructor is in limiting actual risk, decreasing debilitating anxiety, and determining physically and emotionally appropriate challenges for the individual and group.

Intentional programming is developed through structured debriefing questions and activities, elements and additional challenges that are specific to individual capabilities, and reinforcing peer encouragement and motivation. Through intentional programming, all four of the factors that Bandura named for self-efficacy development can be addressed in HRC programming: mastery experiences (personal HRC experiences), vicarious experiences (modeled behavior), verbal persuasion (verbal reinforcement and direction from peers), and emotional and physiological arousal (perceived risk and accomplishment) (See Figure 1.2). As seen earlier, previous ropes course related research reflects aspects of this concept, and the structuring of HRC programs reinforces application of these four factors.

Figure 1.2 Self-Efficacy Development Via High Ropes Courses



For self-efficacy development, OAP likely develops task specific self-efficacy through developing skills and knowledge, which may lead to generalized self-efficacy development.

Task Specific and Generalized Self-Efficacy

Task specific self-efficacy is the belief one has that they can manage a certain situation. In high ropes or tasks specific self-efficacy, perspectives of success are influenced by an individual's belief that he or she can manage the equipment properly, control anxiety, and finish the course. Increased knowledge related to the HRC, including equipment, physical awareness, and familiarity with the course, is a factor in the mastery experience that Bandura (1977) describes as a part of self-efficacy development. Task specific self-efficacy improves as an individual's belief that he or she is capable of

accomplishing a HRC increases, this occurs when the participant faces fear and completes tasks successfully. Generalized self-efficacy may be influenced via the HRC experience as a result of increased task specific self-efficacy. The individual participant takes the HRC experience and applies it to a larger scope overcoming fears and working through difficult situations which becomes a mastery experience that is applicable to his or her generalized self-efficacy. Thus, the purpose of this study was to determine the both short and long term impact of HRCs on task specific and generalized self-efficacy as well as determining the different aspects of the HRC experience that influence changes in self-efficacy.

CHAPTER 3: METHOD

This quasi-experimental research study used a mixed method approach to study task specific and generalized self-efficacy following involvement in a HRC. In order to study this, the following research questions were developed.

Research Questions

Mixed Method Question: What are the factors that influence changes in generalized self-efficacy following a HRC experience?

Quantitative Question: What is the impact of a HRC on task self-efficacy and generalized self-efficacy?

Qualitative Question: What are the different aspects of the HRC experience that influence changes in self-efficacy scores and what is the continued impact of the experience on everyday life?

Framework

A fully mixed concurrent equal status design (Leech & Onwuegbuzie, 2009) was used to compare quantitative and qualitative data with stratified purposeful sampling used to determine which participants were chosen for the follow-up interview. The fully mixed concurrent equal status design is structured so that the quantitative and qualitative data occur throughout the study during the same intervals throughout the intervention, have equal weight as a research paradigm, and that the data from both the quantitative and qualitative parts inform the other (Leech & Onwuegbuzie, 2009).

The quantitative data was gathered and used to determine the overall change in self-efficacy; this information was then used to guide the focus group questions and to act as an extra confirmation of the qualitative results. The pre- and posttest scores for the

New General Self-Efficacy Scale (NGSE) and Ropes Course Specific Self- Efficacy Scale (RCSSSES) were calculated before the focus group to determine the overall trend in scores for the group, as well as to identify any substantial changes in any participant; this information then directed the focus group discussions. The qualitative data collected through the use of focus groups was utilized for further explanation of the quantitative results and to identify what parts of the experience influenced the change in self-efficacy scores. The demographic, quantitative, and qualitative data were utilized to identify a sample for the follow-up interview and assessment that was representative of both high and low changes in self-efficacy. The quantitative and qualitative follow-up were used to identify long-term change in both task specific and generalized self-efficacy as well as identifying what factors led to these changes.

The mixing of the quantitative and qualitative data allowed for a greater understanding of change in self-efficacy as well as the factors that were influential on the change. The overlapping and comparing of data strengthens the validity and reliability of the resulting data, reduces bias in both the quantitative and qualitative data, yields more generalizable data, and provides insight from an individual perspective (Johnson & Onwuegbuzie, 2004).

Participants and Site

The site that was used for this research project was the Clemson University Outdoor Lab (CUOL), through the Team Ventures (TV) program. While this location was chosen due to proximity and access, it meets the specific requirements for a HRC as defined by the Association for Challenge Course Technology (ACCT) and in the Complete Ropes Course Manual (Rohnke & Tait, 2012). Permission for use was granted

by the CUOL Director and through the TV Program Coordinator. This HRC utilizes a static belay system. The study utilized existing TV program facilitators who have experience working in the program and who meet the ACCT standards.

Instructor Training

TV instructors are initially trained to ACCT standards through a weekend long orientation on course policies including rescue procedures. Instructors then are required to complete an apprenticeship, where they gain experience with higher-level facilitators. All TV staff are CPR/AED and First Aid certified. There was a minimum of two facilitators per group, with some groups working with an additional in-training facilitator or apprentice. Facilitators who worked with groups that were participating in the research study were briefed on self-efficacy theory, focusing on the benefit of perceived risk and appropriate challenge for cultivating self-efficacy growth.

TV is based on the challenge-by-choice (CBC) principle, based on encouraging individuals to accept new challenges, while recognizing limitations and potential negative impact of distress. The CBC principle is a Project Adventure concept, and is based on encouraging independence, dignity of risk, and meaningful involvement (Association for Experiential Education, 2004). Facilitators encourage group members to determine their individual level of involvement in adventure-based activities. Part of this process was discussing and identifying personal goals for each group member to achieve, this was included in the instruction and debriefing processes.

Treatment

Participation in the TV program was organized into half-day or full-day events. For each group that participated in the TV program, individuals chose whether or not to participate in the study. After an introduction of the CUOL, the TV program and philosophy, participants were instructed in the proper use of the static belay system and equipment through “ground school.” In ground school, participants were instructed in the proper use of a participant harness, helmet, and static belay system, which utilized double locking snap hooks. After a demonstration of the proper transferring skills, the participants were checked by a TV facilitator for appropriate use of equipment, and then instructed in the dynamic belay system for the first course element.

The first course element was an inclined log that rises from ground level to approximately six feet off of the ground; the participants used their self-belay system in addition to a dynamic belay system, where the facilitator belayed the individual from the ground. The participants then progressed through the course, which had two different options of length, utilizing their self-belay system and asking facilitators to transfer between elements. Using Rohnke’s (2012) definition of course elements, the “long way” included the Burma Bridge, Heebie Jeebie, Island Hopping (Indiana Jones Bridge), Multi-Vine (Tarzan’s Vine Walk), Cat Walk, and the “Thran” (not defined by Rohnke). The Thran was one three-inch diameter braided rope that crosses halfway between two trees twenty feet apart, with a belay cable above. The “short way” removes Heebie Jeebie, and Multi Vine, with the Postman’s Walk acting as a shortcut between elements, it included the Burma Bridge, Postman’s Walk, Cat Walk, and the Thran. After the Thran, a

facilitator transferred the participants to a zip line pulley, still utilizing the self-belay system as a secondary system, and the participants rode the zipline to a ladder where they finished the course and removed the self-belay system. The course progressed from ground level at the beginning of the incline log to approximately forty feet off of the ground.

While this was an individual challenge, participants were encouraged to interact with other group members on and off the course. After finishing the course the participant returned to the top of the hill, returned equipment, and was encouraged to continue interacting with other group members. Approximately five members of each group were on the course at one time; this left the remaining group members on the ground to interact with each other, encourage and give direction to those who were on the course, and observe how to complete different elements. After all group members complete the course the facilitators debriefed and processed the course experience; for groups agreeing to participate in the study, the focus group discussion was focused on self-efficacy. The participants then hiked out from the course, while facilitators took down the course equipment. This process was the standard procedure for all TV HRC events.

Procedures

After the participants were welcomed to the CUOL and the TV program was introduced, the Principal Investigator (PI) described the study and the process for participation in the research project, prior to the administration of the initial scale. This included discussing the right to cease participation in the research portion of the program

at any point. Participation in the research portion of the program was voluntary, and did not limit participation on the course.

All TV groups were met either at Kresge Hall or at the TV parking area; at this point they were introduced to the TV and CUOL programs, including rules and expectations. The PI administered the assessment tools to study participants before participation. The PI was available for any questions related to the assessments throughout the program. The pretest and posttest assessments took approximately ten minutes to complete and were self-administered. After completion of the scales, the group hiked out to the HRC where they were given specific information regarding equipment, proper use, and safety expectations. Individual group members were then sent through the course as described earlier, and interacted with others on and off of the course.

Following individual completion of the course, the study participants completed the assessments a second time. After all group members completed the course and assessments, the facilitators debriefed the experience. While the TV facilitators oversaw the initial debrief, the PI compared the scores of the pre- and posttest assessments, comparing overall differences in totals. Next, participants who had agreed to the study were separated to complete the post-treatment focus group. The 42 participants for the focus groups, which occurred immediately following the HRC event, were primarily chosen based on their quantitative assessments, focusing on individuals that had a substantial increase or decrease in assessment scores. Other participants were chosen based on significant experiences on the course, such as taking a substantial fall, or those

who had chosen to participate in the course multiple times. Participants then hiked out while TV facilitators removed all equipment from the course.

Following the HRC experience and initial focus groups, individual participants were chosen to respond to the follow-up assessments and interview questions. These participants were chosen based on significant increases or decreases from the pretest and posttest assessments and significant experiences on the course. Participants were also chosen for the follow-up based on focus group responses, for example, if a participant stated that he or she originally had low expectations about completing the course. They were contacted via email two weeks to one month following the HRC experience and asked to respond to the quantitative assessment and the follow-up interview questions. Responses were received between five and eight weeks following the HRC experience.

Data Collection

The Team Ventures Participant Assessment (TVPA) was administered to collect demographic data (see Appendix A). The demographic data collected included gender, date of birth, highest level of education, ethnicity, employment, and job level or title. There were also three questions that gathered information on previous ropes course experience included as part of this assessment. The New General Self-Efficacy Scale (NGSE) and the Ropes Course Specific Self-Efficacy Scale (RCSSSES) were administered before the course introduction and instruction and immediately following completion of the course (see Appendix B).

The RCSSSES has eight questions and utilizes a five point Likert scale, ranging from 1= *strongly disagree* to 5= *strongly agree*. The possible scores for the RCSSSES range from 8-40 with higher scores representing higher self-efficacy. This scale was used

to determine the impact of the HRC on ropes course or task specific self-efficacy through the comparison of the overall means from the pre- and posttest results and through comparison of each individual's pre- and posttest answers. There is not currently any validation information available for this assessment, as it was developed for the purpose of this study using Bandura's Guide for Constructing Self-Efficacy Scales (Bandura, 2006).

The NGSE has eight questions and utilizes a five point Likert scale, ranging from 1= *strongly disagree* to 5= *strongly agree*. The possible scores for the NGSE range from 8-40 with higher scores representing higher self-efficacy. It is currently the most frequently utilized general self-efficacy scale (Scherbaum, Cohen-Charash, & Kern 2006). It has been validated for use with adult participants, with the validity study including 316 undergraduate students, mean age=24, 78% female participants, comparing the reliability of different self-efficacy scale questions (Chen, Gully, & Eden, 2001). This testing reflected high predictive validity and high internal consistency. The reliability of the questions were tested on three separate occasions with alphas of .87, .88, and .85 (Chen et al., 2001). Dimensionality of the NGSE was also tested utilizing 323 undergraduate students, mean age of 23, and 77% female respondents (Chen et al., 2001; Sherer et al., 1982). In the current study, this scale was used to determine the impact of the HRC on self-efficacy through the comparison of the overall means from the pre- and posttest results and through comparison of each individual's pre- and posttest answers.

The focus groups, led by the PI and other TV facilitators, were semi-structured using an interview guide and were recorded and transcribed verbatim for coding and analysis. Some of the questions asked during the focus groups (Appendix C) include,

“what were your anticipations about your participation on the high ropes course before you come today,” “where you ever nervous or afraid,” and “at what point did you feel nervous or anxious, and did it go away or change in intensity.” Some of the questions asked in the follow-up interview (Appendix D) include, “have you noticed any changes in your everyday life that have resulted from your high-ropes course experience”, and “how have you noticed any changes in how you approach difficult situations”.

Data Analysis

Initial data analysis were completed on site by hand by calculating and comparing initial means. Demographic data were compared using descriptive statistics and *t*-tests calculated using SPSS v. 22 off-site. A paired *t*-test was used to compare the pre- and posttest self-efficacy scores of the participants. The null hypothesis was that there was no significant increase in self-efficacy scores after the HRC experience. A second paired *t*-test was used to compare the pre- and follow-up self-efficacy scores of the participants. The Pearson correlation coefficient was used to determine the relationship between the task specific and generalized self-efficacy scores.

During the initial debriefing process led by the TV facilitators, the PI totaled the pre- and posttests, compared the results from each participant, and then calculated the means of the pre- and posttest scores for the group to determine the overall changes and to identify any significant outliers. After the initial quantitative analysis of the RCSSES and NGSE on site, the qualitative data were collected via focus group on site.

After the event, the focus groups were transcribed and coded to identify consistent themes. There were five focus groups that lasted approximately 15 minutes each.

Although these focus groups were short, they occurred immediately following the HRC

experience and built on the information rich experience. The information rich zone occurred because participants had just completed an experience that increased emotional response and awareness. Participants are typically more open to communicating with individuals who participated in the experience together and the focus groups developed based on the participants communication with each other. Two types of coding were used to identify themes from the focus group discussion, inductive open coding and deductive categorical coding. The two types of coding were used for added reliability in the qualitative themes. The inductive coding starts with the transcribed focus groups and identifies reoccurring themes without any prior expectations of what might be seen in the conversations. The deductive coding was done second with the purpose of identifying if Bandura's four factors of self-efficacy development emerged from the data about the HRC experience. All of the focus groups were read through and coded based on themes that related to mastery experiences, vicarious experiences, emotional and physiological arousal, and verbal persuasion.

The focus groups and individual conversations with participants were utilized to determine underlying reasons for changes in scores. See figure 2.1 for a description of how the fully mixed concurrent equal status design was applied to this study. See table 2.2 for a model representing the mixed method data collection procedure and comparison.

Figure 2.1

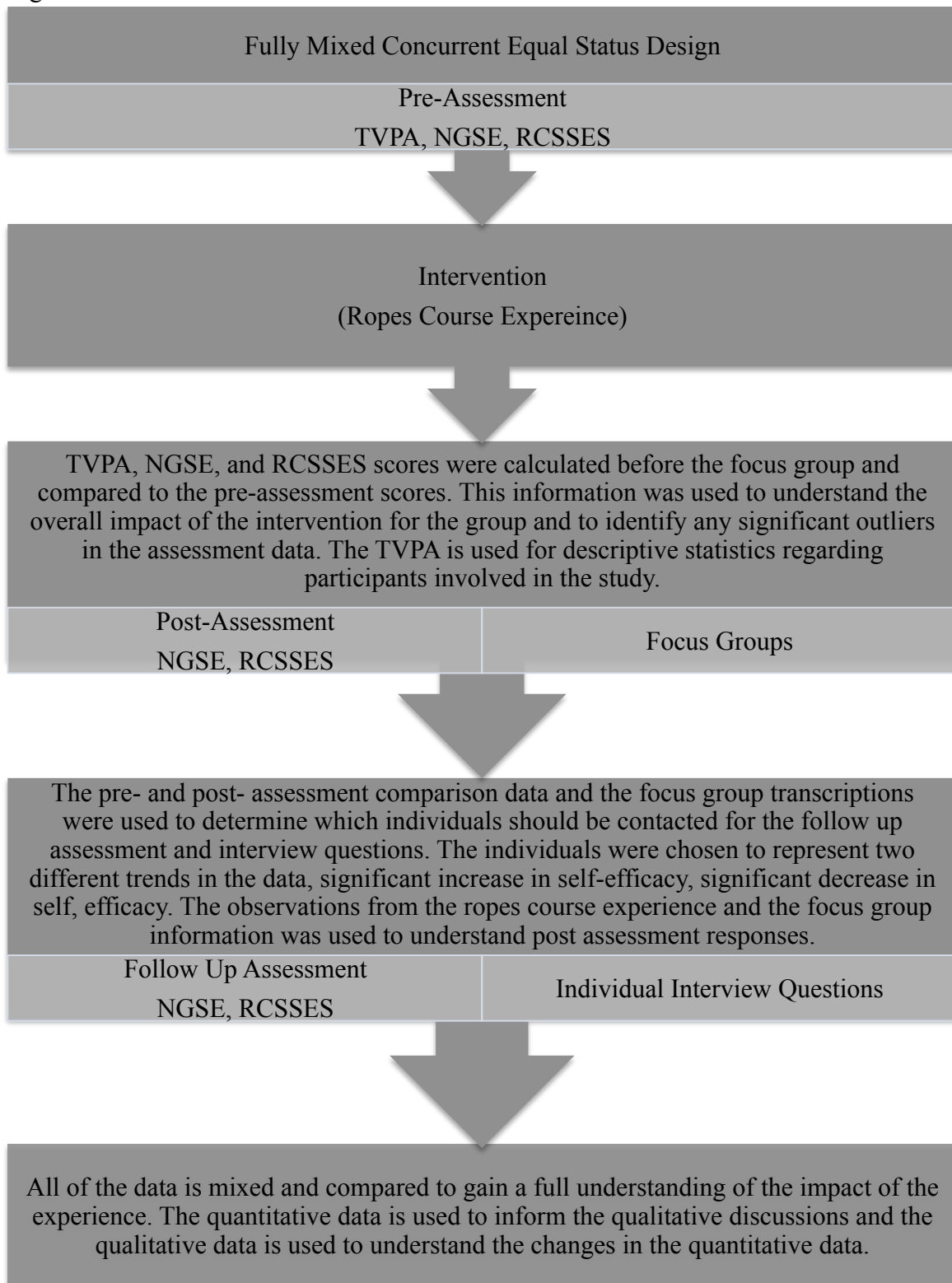


Table 2.2

Sequence	Methods	Products
Quantitative Data Collection	<ul style="list-style-type: none"> • TVPA • NGSE • RCSSES 	<ul style="list-style-type: none"> • Numeric Data • Text Data
Treatment		
Quantitative Data Collection	<ul style="list-style-type: none"> • NGSE • RCSSES 	<ul style="list-style-type: none"> • Numeric Data
Quantitative Data Analysis	<ul style="list-style-type: none"> • Data Screening • Descriptive Statistics 	<ul style="list-style-type: none"> • Determine overall change in self-efficacy development
Qualitative Data Collection	<ul style="list-style-type: none"> • Structured Focus Groups 	<ul style="list-style-type: none"> • Recorded and written transcripts
Quantitative and Qualitative Data Analysis	<ul style="list-style-type: none"> • Development of Themes • Data Screening • Descriptive Statistics, Paired Sample <i>t</i>-test 	<ul style="list-style-type: none"> • Determine overall change in self-efficacy development • Identify outliers and statistically significant differences between groups
Determination of Sample for the Follow-Up	<ul style="list-style-type: none"> • Stratified purposive sampling 	<ul style="list-style-type: none"> • Individual study participants are selected for follow-up based demographic representation and representation of levels of self-efficacy change.
Quantitative and Qualitative Data Collection	<ul style="list-style-type: none"> • NGSE • RCSSES • Interview Questions 	<ul style="list-style-type: none"> • Numeric Data • Text Data
Quantitative and Qualitative Data Analysis	<ul style="list-style-type: none"> • Development of Themes • Data Screening • Descriptive Statistics, Paired Sample <i>t</i>-test, Correlation 	<ul style="list-style-type: none"> • Thematic Coding and Analysis • Member Checking • Determine sustained change in self-efficacy development and correlation between task specific and generalized self-efficacy
Data Mixing	<ul style="list-style-type: none"> • Summarize and compare quantitative and qualitative findings 	<ul style="list-style-type: none"> • Description of results

CHAPTER 4: RESULTS

Demographics

Five groups participated in the HRC program, with approximately 13 individuals in each group. Sixty-two of the 67 individuals participating in the HRC were eligible to participate in the study (over the age of 18, attempted the HRC). Of these, 57 agreed to participate in the study (91.9% response rate), and 52 completed the pre- and posttest assessments (83.8% completion rate). The five groups that participated in the HRC program for this study consisted of two sorority groups, two international undergraduate student groups, and one freshman honors program.

All of the following data represents the final 52 participants. The average age of the participants was 20 years, with 92% of participants identifying predominately as students. There were 37 female participants and 15 male participants. For the highest level of education, approximately 35% of the participants had completed high school and 54% had completed some college (see table 3.1). Information was also collected regarding the previous experience with high and low ropes courses. Over 50% of the participants had no experience, 39% of the participants had some experience (1-2 events), and 10% had significant experience (3 or more events) with HRCs.

Table 3.1

	Mean	SD
Age	20.02	3.257
Gender	N	Frequency
Male	15	28.8
Female	37	71.2
Ethnicity		

White	41	78.8
Asian/Pacific Islander	7	13.5
Other	4	7.6
Employment		
Student	48	86.5
Employed Full Time	4	7.6
Level of Education		
High School/GED	19	36.5
Some College	28	53.8
Bachelor's Degree	3	5.8
Master's Degree	2	3.8
Previous High-Ropes Experience		
No Experience	27	51.9
Some Experience (1-2)	20	38.5
Significant Experience (3+)	5	9.6

The follow-up quantitative assessments were sent out two to four weeks after each HRC event and completed by 9 female participants. The qualitative follow-up interview questions were completed by 7 of the 9 participants that completed the follow-up quantitative assessments.

Quantitative Pre- and Posttest Results

The quantitative component of this study addresses the research question: what is the impact of a HRC on task specific self-efficacy and generalized self-efficacy? The first part of analysis for this question is to determine whether there was a significant difference between the pretest and posttest scores on the two assessments.

Task specific self-efficacy. The possible scores for the RCSSES range from 8-40 with the higher score representing higher self-efficacy. The range for pretest scores was 18-40 and the posttest scores ranged from 17-40. See figures 4.1-4.5 in Appendix E for a graphical comparison of the pre- and posttest assessments separated by groups.

A paired-samples *t*-test was calculated to compare the mean pretest RCSSES score with the mean posttest RCSSES score. The mean on the pretest was 30.48 (*sd* = 4.56) and the mean on the posttest was 35.38 (*sd* = 4.64). A significant increase between the pretest and posttest scores was found ($t(51) = 7.199, p < .001$). This indicates that there is a positive change in task specific self-efficacy following the HRC experience.

Generalized self-efficacy. The possible scores for the NGSE also range from 8-40 with higher scores representing higher self-efficacy. In this study, the range for pretest scores was 26-39 and the posttest scores ranged from 16-40. See figures 5.1-5.5 in Appendix F for a graphical comparison of the pre- and posttest assessments separated by groups.

A paired-samples *t*-test was calculated to compare the mean pretest NGSE score with the mean posttest NGSE score. The mean on the pretest was 32.33 (*sd* = 2.99) and the mean on the posttest was 34.5 (*sd* = 4.33). A significant increase between the pretest and posttest scores was found ($t(51) = 4.706, p < .001$). Since the assessment was given immediately before participation and the posttest given immediately after, this indicates that there was a positive change in generalized self-efficacy following the HRC experience.

Correlation. A Pearson correlation coefficient was calculated for the relationship between task specific and generalized self-efficacy pretest scores. A strong positive

correlation was found ($r(52) = .580, p < .000$), indicating a significant relationship between the two variables. A Person correlation coefficient was also calculated for the relationship between task specific and generalized self-efficacy posttest scores, and also reflected a strong positive correlation ($r(52) = .782, p < .000$), indicating a significant relationship between the two variables, task specific self-efficacy is related to generalized self-efficacy. While there was a relationship between task specific and generalized self-efficacy scores in the pretest scores, the correlation was stronger between the posttest scores. This indicated that there was a stronger relationship between task specific and generalized self-efficacy following the ropes course experience.

Qualitative Focus Group Results

The qualitative component of this part of the study addresses the qualitative research question: what are the different aspects of the HRC experience that influence changes in self-efficacy? The 42 participants for the focus groups, which occurred immediately following the HRC event, were primarily chosen based on their quantitative assessments, focusing on individuals that had a substantial increase or decrease in assessment scores. They were asked specifically to participate in the focus group after the TV facilitator debrief. Other participants were chosen based on significant experiences on the course, such as an individual taking a substantial fall, or those who have chosen to participate in the course multiple times. All ten of the participants in the first group chose to participate in the focus group, and represented the three main clusters in the quantitative data, which are seen in a significant increase, a significant decrease, or moderate to no change. The first group was the only group to have all of the individuals participate in the focus group, the participants in the other groups were selected based on

the results of their assessments. The focus groups lasted 10-15 minutes each and all five groups had a corresponding focus group.

The transcripts were coded using two different techniques, inductive open coding and deductive categorical coding.

Focus Group Open Coding Thematic Analysis and Findings

The inductive open coding was used to gain a broader and more descriptive perspective of the participant's beliefs and experiences related to the HRC. The topics that emerged from the open coding were level of challenge, sense of accomplishment, and everyday life application. The themes that emerged were:

- The individualized level of challenge influenced self-efficacy.
- Encouragement, social interactions, and perspectives of success influenced self-efficacy.
- Personal expectations and other group member's recognition influenced sense of accomplishment and self-efficacy.
- The HRC event was applicable to everyday life experiences.

The first topic, level of challenge, encompasses the impact that previous HRC experience, personal expectations of success, and observations of other participants' success on the participant's perspective of the difficulty of course. The second topic is encouragement and the impact that encouragement and social interaction from other group members had on motivation and success. The next topic, sense of accomplishment, includes how the participant's final sense of accomplishment was influenced by their beliefs about their success on the course, expectations for personal success, and overcoming individual or extra challenges. The final topic that emerged was the overall

everyday life application, while this was a part of the focus group questions, it was a recurring topic throughout the focus group conversations.

Level of challenge. The first common topic that emerged from the focus groups was the variety of expectations regarding the level of challenge. This was typically reflective of previous experience with similar challenge courses. Participants who had substantial involvement with challenge courses previously reported some difficulty with transferring their equipment between the elements, but had low expectations for the level of challenge of the TV course. The majority of individuals, approximately 90%, had little to no experience with high and low ropes course elements. Individuals with some experience described how their previous experiences influenced their expectations before participating in the TV course. One participant, whose only experience with high ropes was a single high rope element, described how she struggled much more than she expected on the course because of the different expectation she had from previous experience. Even individuals who waited until the end of the group to observe others explained that the experience itself was more challenging than expected even after watching others on the course. One female student discussed her experience with the group saying,

Because the different obstacles, they don't look that different on the ground, because I was one of the last people to go, so, I kind of thought that I knew what I was doing, but not really, it's very different once you're up there.

Success and experiences on the first few elements of the course influenced the overall perspectives of challenge and difficulty. For individuals who were anxious, falling on one of the first few elements positively influenced their level of trust in the equipment and they reported reduced anxiety after that first fall. They also explained that

the perceived difficulty was influenced by other group members. Participants who went up on the HRC later in the day had the opportunity to watch other complete the course, and also watched them take falls on the course. One participant fell numerous times during the course, and another had one substantial fall while transferring. Since these participants went earlier in the group, most of the group watched her struggle with the course and had negative assumptions about the difficulty of the course. One participant from that group said, “When I saw people coming off the high ropes course with their legs bruised and scratched, that made me a little nervous”. This statement also reflects how vicarious experiences can have on self-efficacy development, both as a positive motivation to overcome difficult situations, but also how watching other individuals can have a negative impact on an individual’s belief in their personal success.

Encouragement. One of the most common topics throughout all five groups was the impact that social interaction had on their experience on the HRC. Participants discussed the importance of having other individuals from their groups on the ground to joke with as well as to give support, direction, and encouragement. As one female student stated, “Um yeah, it was tough, I guess I fell a couple of times, but I got through, and I think that encouragement helped.”

This was especially important for her as she later commented on the impact of encouragement from students in her program in her everyday life when she responded to the follow-up interview question. Similarly, one student from the first group described the benefit of encouragement through the course saying, “You don’t realize how much everybody’s encouragement actually means until you are up there, so that is nice.”

This group had just come together for the first time that day, and the HRC was specifically structured for them to get to know each other and push through difficult situations as a team, even though their everyday environment is typically competitive between members of the group. For this group, encouragement helped them support each other as a team while also trying to achieve personal success on the HRC.

Sense of accomplishment. The overall sense of accomplishment was also influenced by the participant's beliefs about their capabilities on the HRC. Individuals who had completed HRCs numerous times before discussed not feeling as much of a sense of accomplishment because they knew that they could accomplish the task. Other participants had a reduced sense of accomplishment based on their success on individual elements. So while they finished the course, they did not experience as significant of a sense of accomplishment because they fell on an element, or had to ask direction on an element.

The majority of participants though agreed that they felt a sense of accomplishment following the completion of the course and when completing individual elements. One individual described the sense of accomplishment he experienced following the completion of a difficult element saying, "It was kinda frustrating, but once you finally cross it, it's like, 'thank god', kind of like a sense of relief, but like accomplishment."

Another factor was the feeling of accomplishment experienced after the completion of each element or after completing an extra challenge that was given by a facilitator. One group that had a large number of members who had completed HRCs before were given extra challenges throughout the course. One of these challenges was to

do push-ups on the catwalk, which is a horizontal beam approximately 35 feet off of the ground. One participant reported that he did not experience an overall sense of accomplishment because he had completed HRCs before and knew that he could complete the TV course, but explained later that his favorite part of the course was the push-ups because it was an unexpected challenge. He explained that he did not think that it was possible, but he still tried it, and he succeeded in the challenge.

Sense of accomplishment in extra challenges. Depending on the event, participants have the opportunity to go through the course a second time; individuals who were able to complete the course a second time discussed the difference in perspectives of accomplishment. While the objective for the first time through the course was primarily to successfully make it through the course, regardless of skill on a specific element, the objective of the second time was to see improvement in skill and to figure out how to accomplish and master each element or to complete an extra challenge that is not normally part of the course. One participant discussed the difference between the first and second time saying,

I guess, kind of what we were talking about earlier, with the, with the different ways of approaching it, the first time versus the second time, like the first time it's just to do it, and then the second time it was more to do it in a better way.

This student also referenced the impact of being able to complete the course a second time and master an element over time and described how that factored into the everyday life application.

Everyday life application. One of the most important components of the debriefing of an outdoor adventure program, including the debriefing of the HRC at TV, is the application of the experience to everyday life. While application of the experience

to everyday life is addressed in the debrief and the focus group, the significance is the response saturation regarding the application outside of the Outdoor Lab from group to group. There were numerous responses regarding recovering after “taking a fall” which was related to making mistakes or successfully progressing through a difficult situation. When asked how the HRC is applicable to everyday life, one participant compared falling on the HRC to making mistakes stating,

Well, with goal setting, I suppose it's like similar [to falling] cause you, you're like, 'okay, this is what I want to get out of this' and it tells you that it's okay to fall down sometimes and it's okay to make mistakes.

The majority of participants were college students, and related the concepts to overcoming difficulties in school or work settings, with one group of primarily international students focused on the difficulty of overcoming language barriers. Some of the key concepts discussed within that group were, “asking for help,” “pushing your boundaries,” and “overcoming difficulties.”

A couple of participants who were able to complete the HRC a second time commented on how they were able to overcome specific elements or challenges with greater success, and one related it back to everyday life experiences stating,

Um, you can kind of think of approaching challenges in that same way, or like a class, or a project that you have to do, or something like that. You can do it just to do it, but there's also a way to do it and actually get something out of it for yourself, or to really like put effort into, like perfecting the little things.

Participants reflected that there were different ways to approach an element on the HRC and a variety of perspectives of success, and applied that concept to overcoming challenges and general tasks in everyday life.

In addition to those concepts, four of the five groups discussed relying on support from others when experiencing difficult situations, including family, friends, teachers, and employers. This is where the application of the HRC changes from being task specific to more generalized self-efficacy. Although the HRC was an individual challenge, one of the key components of the HRC experience was the interaction with the rest of the group or team throughout the event. One participant related trusting the equipment and facilitators with the importance of trusting their support system stating,

You might like, freak out about the little things, but then like, your boss, or your teacher, or something will tell you it's not a big deal and you like, don't want to trust them because it feels like a big deal at the time.

Another participant also compared the difficulty of the element "Heebie Jeebies" with trusting a support system in everyday life. She explained that,

It's kind of like scary because it's kind of like what you said, you're looking down, sometimes you have to trust the rope is going to be there, your harness is going to be there, like sometimes you just have to trust other people to be there for you.

This was a common topic discussed throughout the focus group and the HRC experience, whether interacting with others was used for advice and direction or used as a stress relief when on the course. Vicarious experiences and verbal persuasion are two of the four components of self-efficacy that Bandura discusses, and overlaps with the results discussed in the deductive categorical coding.

Focus Group Deductive Categorical Coding

The deductive categorical coding was used to address the concepts discussed earlier regarding self-efficacy development via HRCs which was established using the four factors that Bandura named that impact self-efficacy perceptions. These four factors

are verbal persuasion, vicarious experience, personal experience, and emotional and physiological arousal. This method was chosen to understand the potential for HRC experiences to address these factors in generalized self-efficacy and focuses on the first part of the qualitative research question.

Mastery experiences. Mastery experiences are considered the most influential in developing self-efficacy (McGowan, 1986). Success or failure in an activity impacts one's efficacy perspectives. One student described how the success on the course impacted their belief that they can accomplish similar challenges stating, "I felt accomplished because I proved to myself that like, even though I used to be afraid of heights, now it doesn't matter as much anymore as long as I tell myself that I can do it."

The impact of mastery experiences can also be seen when participants, who are nervous or afraid, fall on one of the elements. While initially a stressful situation, they often become more comfortable with the course and trust the equipment based on that situation. One participant explained this saying,

I wasn't ever nervous or afraid, because like, the harnesses are so secure, and everything, ... but I don't think I was ever afraid, because like you had the rope and you knew that if you fell, I fell several times early on, so kind of knew that it was going to hold you up.

For the majority of individuals, the successful accomplishment of the course was a positive influence on their self-efficacy. This was seen at the end of each obstacle when the participants discussed the feeling of accomplishment and the belief that they could complete the next challenge, as well as when they discussed the application of the HRC experience to their everyday lives. One participant described the application of the overall experience to everyday life saying,

It is (applicable), because if there's like, just little things like you don't want to do, like you're afraid to do, then you're lazy, whatever, you can think back to this and, 'yeah, I did that, so I know how to do this'.

This quote demonstrates how the task specific self-efficacy can impact generalized self-efficacy, how mastery experiences impact both aspects of self-efficacy development and be applied to everyday life. For participants who completed the course a second time, the knowledge that they had already completed the course successfully changed their approach of the course and their willingness to accept new challenges on each element. One participant described this experience stating that, "it was cool going through a second time, because I had like already encountered what was going to happen, so I think I was more willing to take a risk."

Another student in this group reinforced this concept when she described the difference between the goals that she set from the first to the second time on the course, which reflected the impact of the mastery experience on her task specific self efficacy.

I feel like the first time I just sort of did it, and then the second time I really, like, tried to be better at it. The first time my goal was to actually get through it without like smacking my face against a tree, the second time it was more like, 'let me do this in the best way that I can', like she said, 'solving a puzzle'.

Successfully working through each of the elements also gave participants more confidence in advising other group members on the course, participants were more likely to give advice to participants on elements that they were successful on previously.

Vicarious experiences. On a HRC, vicarious experiences are seen in the modeling of behaviors and approaches to the different elements. The overall success of a group impacts the individual participant's anticipation of success or failure; one participant remarked on the course that no one else in the group had been successful on a

certain element, and that he chose not to attempt the element as a result. Also, individuals who were the first of their group to go did not have anyone to watch before them on the course, which typically makes the course more difficult without having someone to replicate or ask for direction. One participant described this as being more difficult stating, “It was hard going first because I didn’t have any like one to look at, to do, I had no idea what I was doing.” Another participant also indicated the difference between vicarious and mastery experience stating, “It’s like I knew how to do the second one, cause I watched everyone else do it, but when you are up there, it’s really hard to actually do.” The joint experience on the HRC overlaps with the components of vicarious experiences and verbal persuasion. Watching individuals on different elements, from the ground or from the course is a form of vicarious experience, interacting with participants throughout the course is a form of verbal persuasion.

Verbal persuasion. Verbal persuasion emerged and was reflected in the focus group discussions in several ways. Participants discussed how they were motivated on the HRC by interaction with others, whether it was encouragement after the accomplishment of a difficult element or just interacting and joking with other group members on the ground. One of the students who went at the end of her group discussed the difficulty of completing the elements without direction from the group, and the difference that instruction from someone who had completed the course had on the accomplishment of an element. She said,

...I was very unbalanced on that one the whole way, and, I think at that point no one was really around me, so I didn’t think to ask anyone how they did it, so that’s why when I was over by you, I was like, ‘oh, tell me how to do this’, it’s no problem now...

Verbal persuasion is also particularly effective as a reinforcement of self-efficacy following the experience, which was seen when the participants discussed the impact of other individuals' recognition of their success as an influence on their sense of accomplishment. One participant described the impact of recognition in between elements as motivation to continue when he said, "...and then I would get to the end of a section and people would clap and I was like, 'alright cool, next time' and keep going..."

Another participant also described how the other participants' recognition of her success was a positive affirmation of her accomplishment. She said,

...when you're coming down the zipline, everybody like cheers for you as you come down the zipline, it's like, like not only do you recognize that you achieved something but like everybody else does too.

Verbal persuasion and encouragement also influence emotional and physiological arousal, through direction on elements, reinforcement of safety, or as a distraction from stress. All of the groups discussed the benefit of having other individuals on the ground or on the course interacting with them during the experience.

Emotional and physiological arousal. An individual's emotional and physiological arousal was reflected primarily through reflections on fear of heights and frustrations regarding taking falls or having difficulty progressing through elements. One participant discussed that the most difficult part for him was getting back up after a fall; while taking a fall early on is often beneficial in reducing stress due to increased confidence in the equipment, repeated falls are discouraging to the participant and negatively impact his or her belief that they can complete the course. One participant explained that he addressed his fear on the HRC by testing out the equipment and then felt comfortable trusting the equipment on the course. He said,

... for me it was taking a risk because I didn't trust, I just wanted to test the material and I was not afraid that I would be [safe] and when I saw that it, like uh, strong, there was no fear.

Participants discussed the impact of fear and anxiety as both a deterrent to attempting the course or an element and a motivator to overcome the HRC. While one student explained that she decided not to even attempt one of the elements after falling on a similar element earlier in the course, another participant described the motivation he had to complete the course after he had been successful throughout the first half and was able to better control his fears. Another student discussed the impact of his fear of heights had on his belief in his ability to finish. He said, "I was definitely afraid of heights, so I was thinking that it would be really hard for me to finish it, so I was excited that it went as well as it did." This example demonstrates how emotional and physiological arousal impacted his belief that he could finish the course. Individuals that stated that they were not nervous or afraid had more confidence in their ability to complete the course before they started.

Initial Mixed Methods Results

The significant increase indicated between the pretest and posttest scores for both the NGSE and the RCSSES indicated that this HRC experience had a positive impact on both task specific and generalized self-efficacy. The initial comparison between the pretest and posttest assessment scores was used to direct focus group conversation and to address overall participant changes in self-efficacy.

Influential HRC factors on self-efficacy. This process addresses the mixed methods research question: what are the factors that influence changes in generalized self-efficacy following a HRC experience. Comparing the pretest and posttest scores

before the focus group showed substantial increases or decreases in self-efficacy among individual participants. Focus group conversations were directed to address these changes to identify factors that may have influenced scores. This was primarily evident with individuals who had a substantial decrease in self-efficacy during the activity. For example, one participant's scores reflected a decrease of ten points on the NGSE, this individual already had the lowest pretest self-efficacy score of the study participants (26). When the participant took a substantial fall on the course, she had difficulty getting back on the element and completing the course. In the focus group she discussed how the fall on the Indiana Jones Bridge discounted the experience for her and she did not feel as much of an accomplishment. This is one of the influential factors that potentially influenced changes in scores, all participants who had to be rescued (receive physical assistance from a facilitator) during the HRC scored lower on the posttest assessment.

Another example of this is a participant who had a positive increase in both NGSE and RCSSES scores between the pre- and posttest, and the pre- and follow-up assessment. She said, "I felt accomplished because I proved to myself that like, even though I used to be afraid of heights, now it doesn't matter as much anymore as long as I tell myself that I can do it." Often the fear of heights negatively influences the participant's belief that he or she can accomplish the HRC, but the positive experience associated with overcoming fears increases one's self-efficacy.

The observations from the HRC as well as the focus group and follow-up interview responses provide a fuller understanding of why there were changes in individual participant's scores, as well as providing an explanation for significant losses or gains in self-efficacy.

Follow-Up Quantitative Data Analysis

This component of the study was used to determine if there was a continued impact from the HRC experience on everyday life. Only nine of the individuals who were contacted to complete the follow-up completed the quantitative assessments, which limited statistical comparison with the pretest scores. A paired-samples *t*-test was calculated to compare the mean pretest RCSSES score with the mean follow-up RCSSES score, and again to compare the mean pretest NGSE score with the mean follow-up NGSE score.

The mean on the pretest for the RCSSES was 28.88 (*sd* = 2.59) and the mean follow-up RCSSES score was 33.00 (*sd* = 4.78). No significant difference was found ($t(7) = 2.246, p > .05$). The mean on the pretest for the NGSE was 31.00 (*sd* = 2.67) and the mean follow-up NGSE score was 32.88 (*sd* = 2.95). No significant difference was found ($t(7) = 3.416, p > .05$).

While there was not a significant difference between either pair due to limited response, the means for both the follow-up RCSSES and NGSE assessments still remained higher than the mean pretest scores. This indicates a potential continued change in both task specific self-efficacy and generalized self-efficacy, which was reflected in the qualitative interview responses.

Follow-Up Qualitative Data Analysis

This component of the study addressed the second part of the qualitative research question: what is the impact of the experience in everyday life? The majority of the participants that responded to follow-up interview questions described that they had seen a difference in how they approached stressful situations in their everyday life after the

HRC. The responses were consistent between groups, and consistent between the lengths of time following their event. While one participant responded that he had not experienced any impact on his everyday life or in how he approached difficult situations, all other participants discussed a continued impact on their life. One participant discussed the impact of the HRC on her interaction with peers during stressful situations saying,

I find myself more confident in my ability to tackle obstacles. I am able to keep a more level head in stressful situations and know I can rely on my peers to lead me through my obstacles when they can. I also feel more confident in my ability to remain levelheaded when leading my peers through tough situations in which they might not feel so confident.

Another participant discusses the continued impact of the HRC event on her ability to control her emotional state when she said,

Instead of increasing stress on myself as I did in the past, I attempt to remain logical. I try to not let my emotions cloud my judgment and logically plan out how to approach the situation. I have learned the stressing out or panicking disables my ability to swiftly and confidently manage situations.

One of the participants in the final group discussed how her expectations for success in difficult situations was impacted by her experience, she said,

I try to approach difficult situations with determination and the belief that they can be overcome. On the ropes course, if you go into an obstacle convinced you can't do it, you lose your balance. I think other difficult situations are similar.

One of the main topics discussed among the interview responses was regarding interaction with others, both in increased confidence supporting or advising others and confidence in relying on others for direction and emotional support. Second, participants discussed the difference in responding to difficult situations in how they approached situations. Numerous participants discussed the importance of facing challenges with a

level head and confidence, to think through the situation and to receive feedback from others.

Follow up-mixed methods results. Although not statistically significantly different, the nine participants that that responded sustained a higher score in both task specific and generalized self-efficacy scores from the pretest and follow-up. This indicated that there was a sustained impact on self-efficacy from the HRC experience once participants return to everyday life, even after only one HRC event.

This was also reflected in the participants' interview responses, which reaffirms an overall sustained increase in self-efficacy, even when the statistics did not reflect a significant difference. The quantitative data was also used to understand how differences between pretest and follow-up scores were reflected in everyday life.

Summary of Results

The initial pre- and posttest comparison showed a statistically significant increase in self-efficacy, which was further supported with the focus group discussions. The topics that emerged from the open coding were level of challenge, sense of accomplishment, and everyday life application; the deductive coding was used to understand Bandura's four factors of self-efficacy development, verbal persuasion, vicarious experience, personal experience, and emotional and physiological arousal, and how they were utilized in the HRC environment. Mixing the initial data helped to provide an understanding behind many of the outliers from the quantitative assessments and influenced the focus group discussions, it was also used to determine which participants would be contacted for the follow-up. While the quantitative data from the follow-up comparison did not show a statistically significant difference between means, all of the scores from the

follow-up assessments remained higher than the pretest scores. The continued change in self-efficacy was also shown in the follow-up interview responses, with all but one participant describing how the HRC had continued to impact their everyday lives.

CHAPTER 5: DISCUSSION

The purpose of this study was to determine the both short and long term impact of HRCs on task specific and generalized self-efficacy as well as determining the different aspects of the HRC experience that influence changes in self-efficacy. Data were collected through the use of a fully mixed concurrent equal status design mixed methods framework. The quantitative data were collected using the TVPA, NGSE, and RCSSES assessments and completed pre- and post-intervention, with a follow-up component that was emailed to participants. The qualitative data were collected using post-intervention focus groups and follow-up interview questions. This chapter discusses the findings, implications, recommendations for future research, and limitations.

Discussion of Findings

This study supported the concept that both task specific and generalized self-efficacy can be positively impacted through participation in HRC participation. This was seen in the comparison between both each individual's pre- and posttest scores and between the comparisons of the group's pre- and posttest score means. The scores from the self-efficacy assessments also reflect that the generalized self-efficacy scores were related to the task-specific self-efficacy scores. While the follow-up results were limited due to decreased participation in the follow-up component, the means for both the task specific and generalized self-efficacy assessment scores remained higher than the pretest scores both overall as a group and through individual comparison. Every individual who completed the follow-up assessment showed a higher score in the follow-up assessment as compared to his or her pretest scores. The results of the pretest and follow-up paired

samples *t*-test could result from the limited response or reflect that there was no continued change in self efficacy or that the follow-up.

The deductive coding indicated that all four components of self-efficacy development (Bandura, 1977, 1986,1994) were represented in the HRC experience, which reinforces the use of HRCs in developing self-efficacy. Those four factors of self-efficacy development were seen on the course through the personal ropes course experiences (mastery experiences), verbal reinforcement and direction from peers (verbal persuasion), modeled behavior (vicarious experience), and perceived risk and accomplishment (emotional and physiological arousal). While this form of coding was used specifically to identify Bandura's factors of self-efficacy development, the inductive coding reflected parts of those factors in the themes that developed from the data.

The four topics that emerged were level of challenge, encouragement, sense of accomplishment, and everyday life application. The participants discussed how their level of challenge was influence by previous experiences (mastery experiences) and by observing other group members on the course (vicarious experience). Participants also discussed that their sense of accomplishment reflected on the impact of their emotional state. They described how their personal comfort or fear impacted their expectations about their accomplishment of the course and described physiological responses that were a reflection of their emotional state. The qualitative data that indicated a significant difference between pre- and posttest self-efficacy scores combined with the observation of participants on the HRC and the focus group conversations reinforce the application of Bandura's factors of self-efficacy development for HRC programming.

Goldenberg et al. (2000) included overcoming preconceived limitations as an outcome in HRC experiences, which was supported in conversations with participants in this study throughout the HRC experience. Participants discussed their fears about the course and their expectations for success, and described how overcoming those expectations impacted their sense of accomplishment on the course.

This study also utilized a strengths based approach (Heyne & Anderson, 2012), where participants identify personal goals for their participation and the course facilitators create a supportive environment for the accomplishment of those goals and to increase the participant's sense of accomplishment. TV facilitators focus on identifying personal accomplishments throughout the course as reinforcement throughout difficult challenges instead of focusing on weaknesses and negatively responding to participant failures.

Implications for Recreational Therapy Practice

The majority of research on the use of ropes courses has been focused on a wide variety of courses and adventure based programs, and has been primarily focused in the field of experiential education and adventure-based education with some crossover into the field of psychology. While adventure based programming, including high and low ropes courses, wilderness therapy, and outdoor education, has been used as a therapeutic tool in a variety of fields, there is limited research on its use by recreational therapists. Research on the use of ropes courses also represents a wide variety of programs and courses, which makes replication of outcomes difficult in the recreational therapy setting. Recreational therapists looking to implement adventure based programming need evidence based practice with replicable outcomes.

HRC programs provide an environment that can be utilized for self-efficacy development. The participants encounter mastery experiences through participation on the HRC, and identify personal success due to the independent/individual challenge. Verbal persuasion and vicarious experiences are both influenced by interacting with the group as a whole. Vicarious experiences are provided through observing other group members progress throughout the course on specific elements; the individual experiences verbal persuasion and reinforcement through the interactions with the group, which is seen in advice, direction, and encouragement. Emotional and physiological arousal of a participant can be addressed through CBC and perceived risk, with facilitator or recreational therapist maintaining a level of challenge that is appropriate for each individual. Facilitating a HRC experience requires monitoring the level of stress throughout the course. If the elements are too difficult, there may be a negative impact on the participant, conversely, if the experience does not provide a sufficient challenge, the participant will have a diminished sense of accomplishment and the course will have a limited impact on self-efficacy.

Following the HRC, the debrief questions focused on transferring the ropes course experience and task specific self-efficacy into everyday life application and general self-efficacy. The specific outcomes related to self-efficacy can be reinforced through the discussion and by intentionally identifying areas of the participant's everyday life where he or she often encounters challenges. Recreational therapists can replicate the aspects of the HRC program that reinforce self-efficacy development to address self-efficacy related patient goals and objectives. The follow-up responses reflected a sustained increase in self-efficacy and a difference in how individuals approached their everyday lives, which

is the primary goal of HRC participation (Haras, Bunting, & Witt, 2005). The participant responses reinforced the use of experiential education and the impact of OAP on leadership, confidence, and self-esteem (Goldenberg et al., 2000).

With an increase in availability of adventure based programs and HRCs, there is an opportunity for the recreational therapy profession to also play a role in the development of adventure based therapy and to introduce more evidence based practice related to individual types of programs and specific populations into the field.

Future Research

Future research should focus on applying the four components of self-efficacy development to the HRC as an intervention in recreational therapy. This study examined the impact of task specific and generalized self-efficacy on a population primarily comprised of college students. Future research on the use of HRCs as a treatment intervention on self-efficacy should include a wider representation demographically, including age, ethnicity, ability status or health condition, and socio-economic status. Future research should also include information regarding baseline self-efficacy to determine outliers related to self-efficacy among the individuals participating in the study.

Due to the nature of the recreational therapy clinical process (Assessment, Planning, Implementing, and Evaluating), recreational therapists are able to identify deficits in self-efficacy during the assessment stage. Working with individuals with low self-efficacy in a future study would provide more specific information for use with different recreational therapy populations. HRCs could potentially be used as an intervention for individuals with drug and alcohol addictions and future research could focus on the impact of increasing generalized self-efficacy on abstinence self-efficacy. HRCs could also be

beneficial for individuals with an acquired physical disability and future research could look at the impact of increased generalized self-efficacy on overcoming attitudinal barriers.

While this research discusses the impact of emotional and physiological arousal on the development of self-efficacy, the majority of the participants primarily discussed emotional responses. While on the course, some participants reflected on physiological responses such as shaking legs, sweating, and increased heart rate, but during the focus group discussion, participants primarily discussed psychological states such as fear, anxiety, and confidence. Future research potentially can include discussion questions that are more tailored to understanding physiological response separate from emotional response.

This study included pre-, post-, and follow-up assessments along with focus groups immediately following the event and a follow-up interview, but was limited in the final component with fewer respondents completing the follow-up. Future research should include a long-term component to determine the sustained impact of the experience on self-efficacy since this study had limited participation in the follow-up component. For example, offering incentives for study completion could increase participation in the follow-up component of a study, it could also be beneficial to study the impact of repeated HRC experiences on sustaining increased self-efficacy.

Limitations

Findings may provide an insight into the generalized benefit of HRCs for self-efficacy, but due to the small scope of study, the results may not be generalizable. The study may not be fully representative of the population due to the types of individuals,

companies, teams, or groups that participated in the TV program. This study was also limited to an adult population, which restricts application to children and adolescents who participate in HRC experiences. These participants were selected based on access and availability to participants already committed to involvement in the TV program.

This quantitative aspect of this study was conducted utilizing a 1-5 Likert scale, which limits the amount of information in the responses. Participation in the qualitative aspect of the study provides depth of responses; but was dependent on active participation in the focus group, which may have been limited due to response bias related to communicating in front of peers, teammates, or coworkers. The surveys were self-administered and provided anonymity of response not available in focus group settings. In addition, the also included demographic and socioeconomic questions, participants may have provided false information due to embarrassment or lack of knowledge. This may impact the comparisons between different group responses and self-efficacy changes and not be consistent with actual treatment intervention related implementation.

Another potential limitation for the study is the lack of awareness about preexisting issues related to self-efficacy. Although data were collected before and after the treatment, there was no indication to abnormalities related to self-efficacy in the individuals participating in the study. Also, there was no guarantee that the individuals participating in the course had low self-efficacy. There were also some participants that had no change in self-efficacy, primarily among individuals with a high self-efficacy. Finally, the differences in specific course elements and facilitator techniques, while being included in the study, will impact the future application to similar elements and courses.

Facilitators were held to Association of Challenge Course Technology standards for future technique replication, but facilitation styles vary between individuals.

Summary

While there are a few limitations, this study provides insight into the use of HRCs as a treatment intervention for self-efficacy, showing both short term and long term increases in task specific and generalized self-efficacy. This study also establishes more of a foundation for future research, addressing these limitations and concentrating on specific populations and indicates that HRCs can be used in recreational therapy as a treatment intervention for self-efficacy development.

CHAPTER 6: ARTICLE

The Effects of Utilizing High Element Ropes Courses as a Treatment Intervention on
Self-Efficacy

Jesy Cordle

Marieke Van Puymbroeck, PhD, CTRS, FDRT

Brent Hawkins, PhD, LRT/CTRS

Elizabeth Baldwin, PhD

Clemson University

To be submitted to the Therapeutic Recreation Journal.

Author Note

J. L. Cordle conducted this research for her Master's thesis in recreational therapy at Clemson University. M. Van Puymbroeck is the recreational therapy coordinator and an associate professor at Clemson University. B. Hawkins is an assistant professor of recreational therapy at Clemson University. E. Baldwin is an associate professor of parks, conservation, and recreation management at Clemson University.

Correspondence concerning this article should be addressed to J. L. Cordle, 423 Lindsay Road, Clemson, SC 29631. Contact: Jlcordl@g.clemson.edu

Abstract

Adventure-Based Therapy (ABT) is a treatment intervention in Recreational Therapy (RT) that has the capacity to produce a variety of physical, psychological, cognitive, and social outcomes. While there is research on the potential benefits of ABT and ropes course experiences, there is a lack of research on which course types led to specific results, ultimately resulting in inconsistent programming. The purpose of this mixed methods study was to determine the impact of a static belay high ropes course experience on self-efficacy, and to explore the different parts of the course experience that were beneficial in developing self-efficacy. Assessments reflected a significant increase in self-efficacy following the ropes course experience. Focus groups and follow-up interviews reflected the different factors of ropes course experiences that led to the differences between pre- and post-assessment scores. These results supported that high ropes course programming can impact self-efficacy development, including mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological arousal. Based on these findings, recreational therapists should consider the use of the high ropes course as a tool to improve self-efficacy. Additional implications for practice and future research are included.

Key Words: high ropes courses, adventure based therapy, outdoor programming, self-efficacy, recreational therapy

The Effects of Utilizing High Element Ropes Courses as a Treatment Intervention on Self-Efficacy

Experiential education is based on the concept of learning by doing through hands on experiences (Association for Experiential Education, 2014; Dewey, 1938). The concepts of experiential learning impact cognitive, affective, and physical domains and relate to combining knowledge, skills, and/or attitudes. Experiential learning is an important component of outdoor adventure programming (OAP). Facilitators structure programs around both group and individual participant goals and apply the adventure experience to everyday life. OAP is becoming increasingly popular as a treatment intervention for a variety of populations. As more programs offer OAP, it is important to understand the specific outcomes related to their use with different populations. Ropes courses, a type of OAP, have increased in popularity amongst camps, schools, hospitals, and community based programs throughout the United States (Outdoor Foundation, 2014). One of the potential outcomes resulting from OAP and specifically high ropes courses is increased self-efficacy.

Literature Review

Ropes Course Fundamentals

High ropes courses (HRC), defined as a series of elevated, interconnected, individual obstacles or elements, are designed to engage participants on multiple areas of functioning, including physical, psychological, intellectual, and social domains (Association for Experiential Education, 2004). This is accomplished through the utilization of obstacles made from cables, ropes, logs, wood, and climbing holds. In the

United States, courses and equipment are maintained based on safety regulations developed by the Association of Challenge Course Technology (2004). HRC are distinguished as being greater than thirteen feet off ground level, and are separated into static and dynamic courses: a static course is a series of interconnected elevated elements in which the participant uses a self-belay system; dynamic courses typically are stand-alone elements with participants being belayed through the element (Rohnke, Wall, Tait, & Rogers, 2003). The primary goal of a HRC is for the participant to transfer skills and perspectives into everyday life (Haras, Bunting, & Witt, 2005) in areas such as leadership, confidence, self-esteem (Goldenberg, Klenosky, O'Leary, & Templin, 2000). Along these lines, it is possible that HRC may impact self-efficacy.

Self-Efficacy

Bandura (1977) defined self-efficacy as an individual's belief in his or her personal competence in a specific task. Self-efficacy is based on one's expectations of how well he/she will perform in a task. These expectations are a major influence for an individual's choice in activities, the level of participation and effort given in each activity, and how long he or she will continue to persist in a stressful situation (Bandura, 1986). Bandura (1977, 1986, 1994) identified four factors that impact self-efficacy perceptions; mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological arousal. Mastery experiences, attained through accomplishing a physical task, are the most influential on developing high self-efficacy (McGowan, 1986). Vicarious experiences are attained through observing other individuals perform tasks successfully without adverse consequences. Verbal persuasion occurs when other individuals communicate that a participant can be successful in a stressful situation based

on recognition of previous accomplishments (Bandura, 1977), and can be accomplished through coaching and encouragement. Emotional and physiological arousal is the body's response to a stressful situation (Bandura, 1977, 1986). Fear, anxiety, and confidence are emotional responses while shaking legs, sweating, increased heart rate are physiological responses to the perceived stress. These factors influence an individual's expectations for how he or she will perform in a stressful environment or in accomplishing a difficult task.

Task Specific and Generalized Self-Efficacy

In OAP, intentional programming is used to focus on developing specific participant outcomes through structured debriefing questions and activities, elements and additional challenges based on individual capabilities, and reinforcing peer encouragement and motivation. Through intentional programming, all four of the factors that Bandura named for self-efficacy development can be addressed in HRC programming: mastery experiences (personal success in ropes course experiences), vicarious experiences (modeled behavior), verbal persuasion (verbal reinforcement and direction from peers), and emotional and physiological arousal (perceived risk and accomplishment).

Task specific self-efficacy is the belief one has that he or she can manage a specific situation. In high ropes specific task self-efficacy, perspectives of success are influenced by an individual's belief that he or she can manage the equipment properly, control anxiety, problem solve through the elements, and finish the course. Task specific self-efficacy improves as an individual's belief that he or she is capable of accomplishing a HRC increases; this occurs when the participant faces fears and completes tasks successfully. The participant then takes this experience and applies it to a larger scope.

The overall experience of overcoming fears and working through a difficult situation becomes a mastery experience that is applicable to the beliefs the individual holds about what he or she is capable of accomplishing in general, resulting in generalized self-efficacy (Bandura, 1977). Generalized self-efficacy may be influenced via the HRC experience as a result of increased task specific self-efficacy. Thus, the purpose of this study was to determine the both short and long term impact of HRCs on task specific and generalized self-efficacy as well as determining the different aspects of the HRC experience that influence changes in self-efficacy.

Method

A fully mixed concurrent equal status mixed methods design was used to compare quantitative and qualitative data (Leech & Onwuegbuzie, 2009). Stratified purposeful sampling was used to determine which participants were chosen for the follow-up interview. The fully mixed concurrent equal status design is structured so that the quantitative and qualitative data occur throughout the study during the same intervals throughout the intervention, have equal weight as a research paradigm, and that the data from both the quantitative and qualitative parts inform the other (Leech & Onwuegbuzie, 2009). The study included a pre-, post-, and follow-up assessment along with focus groups and interview questions. The intervention was a HRC located in the southeastern United States. This study was approved by the local Institutional Review Board.

Intervention Site

The HRC was located at a southeastern university's outdoor center and was utilized as the intervention site for this study. The HRC met the specific requirements of a HRC as defined by the Association for Challenge Course Technology. The HRC is based

on the challenge-by-choice principle, based on encouraging individuals to accept new challenges, while recognizing limitations and potential negative impact of distress (Association for Experiential Education, 2004). Facilitators identify personal goals through discussion with each group member, which is standard for this HRC program.

Procedure and Intervention

After an introduction to the site, the HRC program and philosophy, the Principal Investigator (PI) introduced the study, received written informed consent, and administered the assessments to study participants. Participation in the research portion of the HRC was voluntary, and did not limit participation on the course for those who declined to be involved in the research study.

After completion of the pretest assessment, participants were instructed in the proper use of the static belay system and equipment through “ground school.” In ground school, participants were instructed in the proper use of a participant harness, helmet, and static belay system, which utilized double locking snap hooks. The first course element was an inclined log that rises from ground level to approximately six feet off of the ground. The participants used their self-belay system in addition to a dynamic belay system, where the facilitator belayed the individual from the ground. The participants then progressed through the course, which had two different options of length (“long way” and “short way”), utilizing their self-belay system and asking facilitators to transfer between elements. Using Rohnke’s (2012) definition of course elements, the “long way” included the Burma Bridge, Heebie Jeebie, Island Hopping (Indiana Jones Bridge), Multi-Vine (Tarzan’s Vine Walk), Cat Walk, and the “Thran” (not defined by Rohnke). The Thran was a three-inch diameter braided rope that crosses halfway between two trees

twenty feet apart, with a belay cable above. The “short way” removes Heebie Jeebie, and Multi Vine, with the Postman’s Walk acting as a shortcut between elements, it included the Burma Bridge, Postman’s Walk, Cat Walk, and the Thran. After the Thran, a facilitator transferred the participants to a zip line pulley, still utilizing the self-belay system as a secondary system, and the participants rode the zipline to a ladder where they finished the course and removed the self-belay system. The course progressed from ground level at the beginning of the incline log to approximately forty feet off of the ground.

Following individual completion of the course, the study participants completed the assessments a second time. After all group members completed the course and assessments (for those who consented), the facilitators debriefed the experience. While the HRC facilitators oversaw the initial debrief, the PI compared the scores of the pre- and posttest assessments, comparing overall differences in totals. Next, participants who had agreed to the study were separated to complete the post-treatment focus group. The 42 participants for the focus groups, which occurred immediately following the HRC event, were primarily chosen based on their quantitative assessments, focusing on individuals that had a substantial increase or decrease in assessment scores. Other participants were chosen based on significant experiences on the course, such as taking a substantial fall, or those who had chosen to participate in the course multiple times. These focus groups participants offered different perspectives about factors that influenced changes in assessment scores as well as identifying how the factors of self-efficacy were seen in the HRC experience.

Following the HRC experience and initial focus groups, individual participants were chosen to respond to the follow-up assessments and interview questions. These participants were also chosen based on assessment results and significant experiences on the course (e.g., those who had substantial falls, participated in the course multiple times). Participants were also chosen for the follow-up based on focus group responses, for example, if a participant stated that he or she originally had low expectations about completing the course. They were contacted via email two weeks to one month following the HRC experience and asked to respond to the quantitative assessment and the follow-up interview questions. Responses were received between five and eight weeks following the HRC experience. See Figure 1 for more information on the mixed methods design.

[Insert Figure 1 about here]

Data Collection

The HRC participant assessment was administered to collect demographic data, such as gender, date of birth, highest level of education, ethnicity, employment, job level or title, and previous HRC experience included as part of this assessment. The Ropes Course Specific Self-Efficacy Scale (RCSSES) and the New General Self-Efficacy Scale (NGSE) were administered to determine the impact of the HRC on task specific and generalized self-efficacy before the course introduction, immediately following completion of the course, and as part of the follow-up sent via email.

The RCSSES has eight questions and utilizes a five point Likert scale, ranging from 1= *strongly disagree* to 5= *strongly agree*. The possible scores for the RCSSES range from 8-40 with higher scores representing higher self-efficacy. There is not currently any validation information available for this assessment, as it was developed for

the purpose of this study using Bandura's Guide for Constructing Self-Efficacy Scales (Bandura, 2006). This scale is available by contacting the authors.

The NGSE also has eight questions and utilizes a five point Likert scale, ranging from 1= *strongly disagree* to 5= *strongly agree*. The possible scores for the NGSE range from 8-40 with higher scores representing higher self-efficacy. It is currently the most frequently utilized general self-efficacy scale (Scherbaum, Cohen-Charash, & Kern, 2006). It has been validated for use with adult participants, and has been shown to have high predictive validity and high internal consistency (Chen, Gully, & Eden, 2001).

The focus groups were led by the PI and other HRC facilitators. The focus groups were semi-structured using an interview guide and were recorded and transcribed verbatim for coding and analysis. Some of the questions asked during the focus groups include, "what were your anticipations about your participation on the high ropes course before you came today," "were you ever nervous or afraid," and "at what point did you feel nervous or anxious, and did it go away or change in intensity." Some of the questions asked in the follow-up interview include, "have you noticed any changes in your everyday life that have resulted from your high-ropes course experience", and "how have you noticed any changes in how you approach difficult situations."

Mixed Methods Design

The fully mixed concurrent equal status design was structured so that the quantitative and qualitative data occur throughout the study during the same intervals throughout the intervention, have equal weight as a research paradigm, and that the data from both the quantitative and qualitative parts inform the other (Leech & Onwuegbuzie, 2009). The quantitative data was gathered and used to determine the overall change in

self-efficacy. This information was then used to guide the focus group questions and to serve as a complement to the qualitative results. The pre- and post- scores for the Ropes Course Specific Self-Efficacy Scale (RCSSES) and the New General Self-Efficacy Scale (NGSE) were calculated before the focus group to determine the overall trend in scores for the group, as well as to identify any substantial changes in any participant; this information then directed the focus group discussion. The qualitative data collected through the focus groups was utilized for further explanation of the quantitative results and was mixed with the quantitative data to identify what parts of the experience influenced the change in self-efficacy scores. The demographic, quantitative, and qualitative data were utilized to identify a sample for follow-up that were representative of both high and low changes in self-efficacy. The follow-up data were used to identify long-term changes in both task specific and generalized self-efficacy as well as identifying what factors led to these changes.

Data Analysis

Demographic data were analyzed using descriptive statistics calculated using SPSS v. 22. A paired samples *t*-test was used to compare the group's overall pre- and posttest self-efficacy scores. A second paired *t*-test was used to compare the pre- and follow-up self-efficacy scores of the participants. The Pearson correlation coefficient was used to determine the relationship between the task specific and generalized self-efficacy scores.

Focus groups were transcribed verbatim and coded to identify consistent themes. There were five focus groups that lasted approximately 15 minutes each. Deductive coding was used with the purpose of determining if Bandura's four factors of self-

efficacy development emerged from the data about the HRC experience. Inductive coding was used along with the deductive coding to validate the deductive themes and to avoid researcher bias. The focus groups were utilized to explore the underlying reasons for changes in scores. See figure 1 for a description of the fully mixed concurrent equal status design applied to this study.

Results

Demographics

Five groups participated in the HRC program with approximately 13 individuals in each group. The five groups that participated in the HRC program for this study consisted of two sorority groups, two international undergraduate student groups, and one freshman honors program. Sixty-two of the 67 individuals participating in the HRC were eligible to participate in the study (over the age of 18, attempted the ropes course). Of these, 57 agreed to participate in the study (91.9% response rate), and 52 completed the pretest and posttest assessments (83.8% completion rate). See Table 1 for demographic information. Forty-two individuals participated in the focus groups immediately following the HRC program. The follow-up quantitative assessments were sent out two to four weeks after each ropes course event and completed by 9 female participants. The qualitative follow-up interview questions were completed by 7 of the 9 participants that completed the follow-up quantitative assessments.

[Insert Table 1 about here]

Quantitative Results

Task specific self-efficacy. A paired-samples *t*-test was calculated to compare the mean pretest RCSSSES score with the mean posttest RCSSSES score. The mean on the

pretest was 30.48 ($sd = 4.56$) and the mean on the posttest was 35.38 ($sd = 4.64$). A significant increase between the pretest and posttest scores was found ($t(51) = 7.199, p < .001$), indicating there was a positive change in task specific self-efficacy following the HRC experience.

Generalized self-efficacy. A paired-samples t -test was calculated to compare the mean pretest NGSE score with the mean posttest NGSE score. The mean on the pretest was 32.33 ($sd = 2.99$) and the mean on the posttest was 34.5 ($sd = 4.33$). A significant increase between the pretest and posttest scores was found ($t(51) = 4.706, p < .001$), indicating that there was a positive change in generalized self-efficacy following the HRC experience.

Relationship between task specific and generalized self-efficacy scores. A Pearson correlation coefficient was calculated for the relationship between task specific and generalized self-efficacy pretest scores. A strong positive correlation was found ($r(52) = .580, p = .000$), indicating a significant relationship between the two variables. A Person correlation coefficient was also calculated for the relationship between task specific and generalized self-efficacy posttest scores, and also reflected a strong positive correlation ($r(52) = .782, p = .000$), indicating a significant relationship between the two variables, task specific and generalized self-efficacy. The stronger relationship at post-test reinforces the impact of the HRC and task specific self-efficacy on generalized self-efficacy.

Qualitative Results

The primary focus of the qualitative results reflected that the components of self-efficacy theory (i.e., mastery experience, vicarious experience, verbal persuasion, and

emotional and physiological arousal) were evident in the HRC experience and important in continuing self-efficacy development.

Mastery experiences. Mastery experiences are considered the most influential in developing self-efficacy (McGowan, 1986). Success or failure in an activity impacts one's efficacy perspectives. The impact of mastery experiences can also be seen when participants who are nervous or afraid fall on one of the elements. While initially a stressful situation, they often become more comfortable with the course and trust the equipment based on that situation. For the majority of participants, the successful accomplishment of the course was a positive influence on their self-efficacy. This was evident at the end of each obstacle when the participants discussed the feeling of accomplishment and the belief that they could complete the next challenge, as well as when they discussed the application of the HRC experience to their everyday lives. One participant described the application of the overall experience to everyday life by stating,

It is (applicable), because if there's like, just little things like you don't want to do, like you're afraid to do, then you're lazy, whatever, you can think back to this and, 'yeah, I did that, so I know how to do this'.

This quote demonstrates how task specific self-efficacy can impact generalized self-efficacy, how mastery experiences impact both aspects of self-efficacy development and be applied to everyday life.

For participants who completed the course a second time, the successful completion of the course changed their approach of the course and their willingness to accept new challenges on each element. One student reinforced this concept when she described the difference between the goals that she set from the first to the second time on the course.

I feel like the first time I just sort of did it, and then the second time I really, like, tried to be better at it. The first time my goal was to actually get through it without like smacking my face against a tree, the second time it was more like, ‘let me do this in the best way that I can’, like she said, ‘solving a puzzle’.

This quote reflects the impact of mastery experiences and the increased confidence that successfully working through each of the elements has on task specific self-efficacy.

Vicarious experiences. On a HRC, vicarious experiences are seen in the modeling of behaviors and approaches to the different elements. The overall success of a group impacts the individual participant’s anticipation of success or failure. One participant remarked on the course that no one else in the group had been successful on a certain element, and that he chose not to attempt the element as a result. Another participant described the difficulty of going first stating, “It was hard going first because I didn’t have any like one to look at, to do, I had no idea what I was doing.” One of the participants from the final group also referenced the difference between vicarious and mastery experience stating, “It’s like I knew how to do the second one, cause I watched everyone else do it, but when you are up there, it’s really hard to actually do.” The group experience on the HRC overlaps with the components of vicarious experiences and verbal persuasion. Watching individuals on different elements, from the ground or from the course is a form of a vicarious experience, interacting with participants throughout the course is a form of verbal persuasion.

Verbal persuasion. Verbal persuasion emerged from the data and was reflected in the focus group discussions in several ways. Participants discussed how they were motivated on the HRC by interaction with others, whether it was encouragement after the

accomplishment of a difficult element or just interacting and joking with other group members on the ground. One of the students who went at the end of her group discussed the difficulty of completing the elements without direction from the group, and the difference that instruction from someone who had completed the course had on the accomplishment of an element. She said,

...I was very unbalanced on that one the whole way, and, I think at that point no one was really around me, so I didn't think to ask anyone how they did it, so that's why when I was over by you, I was like, 'oh, tell me how to do this', it's no problem now...

Verbal persuasion is also particularly effective as a reinforcement of self-efficacy following the experience, which was seen when the participants discussed the impact of other individuals' recognition of their success as an influence on their sense of accomplishment. One participant described how other participants' recognition of her success was a positive affirmation of her accomplishment. She said, "...when you're coming down the zipline, everybody like cheers for you as you come down the zipline, it's like, like not only do you recognize that you achieved something but like everybody else does too." Verbal persuasion and encouragement also influence emotional and physiological arousal, through direction on elements, reinforcement of safety, or as a distraction from stress.

Emotional and physiological arousal. An individual's emotional and physiological arousal was reflected primarily through reflections on fear of heights and frustrations regarding taking falls or having difficulty progressing through elements. One participant discussed that the most difficult part for him was getting back up after a fall; while taking a fall early on is often beneficial in reducing stress due to increased

confidence in the equipment, repeated falls are discouraging to the participant and negatively impact his or her confidence in completing the course. One participant explained that he addressed his fear on the HRC by testing out the equipment. He said, "...it was taking a risk because I didn't trust, I just wanted to test the material and I was not afraid that I would be [safe] and when I saw that it [was] strong, there was no fear."

Participants discussed the impact of fear and anxiety as both a deterrent to attempting the course or an element and a motivator to overcome the HRC. While one participant explained that she decided not to attempt one of the elements after falling on a similar element earlier in the course, another participant described the motivation he had to complete the course after he had been successful throughout the first half and was able to better control his fears. Another student discussed the impact of his fear of heights had on his belief in his ability to finish. He said, "I was definitely afraid of heights, so I was thinking that it would be really hard for me to finish it, so I was excited that it went as well as it did." This example demonstrates how emotional and physiological arousal impacted his belief that he could finish the course. Individuals who stated that they were not nervous or afraid also had more confidence in their ability to complete the course before they started.

Mixed-Methods Results

Comparing the pretest and posttest scores before the focus group showed substantial increases or decreases in self-efficacy among individual participants. Focus group conversations were directed to address these changes to identify factors that may have influenced scores. This was primarily evident with individuals who had a substantial decrease in self-efficacy during the activity. For example, one participant's scores

reflected a decrease of 10 points on the NGSE, taking her initial score of 26 down to 16 out of 40. When she took a substantial fall on the course, she had difficulty getting back on the element and completing the course. In the focus group she discussed how the fall on the Indiana Jones Bridge discounted the experience for her, and she did not feel as much of an accomplishment. This is one of the influential factors that potentially influenced changes in scores, all participants who had to be rescued (i.e., receive physical assistance from a facilitator) during the HRC scored lower on the posttest than their pretest assessment.

Another example of this is a participant who had a positive increase in both NGSE and RCSSES scores between the pre- and post-assessment, and the pre- and follow-up assessment. She said, “I felt accomplished because I proved to myself that like, even though I used to be afraid of heights, now it doesn’t matter as much anymore as long as I tell myself that I can do it.” Often the fear of heights negatively influenced the participant’s belief that he or she can accomplish the HRC, but the positive experience associated with overcoming fears increased self-efficacy.

Follow-Up Quantitative Data Analysis

This component of the study was used to determine if there was a continued impact from the HRC experience on everyday life. Nine of the 25 individuals who were contacted to complete the follow-up completed the quantitative assessments. A paired-samples *t*-test was calculated to compare the mean pretest RCSSES score with the mean follow-up RCSSES score, and again to compare the mean pretest NGSE score with the mean follow-up NGSE score. The mean on the pretest for the RCSSES was 28.88 (*sd* = 2.59) and the mean follow-up RCSSES score was 33.00 (*sd* = 4.78). No significant

difference was found ($t(7) = 2.246, p > .05$). The mean on the pretest for the NGSE was 31.00 ($sd = 2.67$) and the mean follow-up NGSE score was 32.88 ($sd = 2.95$). No significant difference was found ($t(7) = 3.416, p > .05$).

While there was not a significant difference between either pair, the means for both the follow-up RCSSES and NGSE assessments still remained higher than the mean pretest scores. This indicates a potential continued change in both task specific self-efficacy and generalized self-efficacy, which was reflected in the qualitative interview responses.

Follow-Up Qualitative Data Analysis

The majority of the participants that responded to follow-up interview questions described that they had seen a difference in how they approached stressful situations in their everyday life after the HRC. While one participant responded that he had not experienced any impact on his everyday life or in how he approached difficult situations, the other eight participants discussed a continued impact on their life. One participant discussed the impact of the HRC on her interaction with peers during stressful situations saying,

I find myself more confident in my ability to tackle obstacles. I am able to keep a more level head in stressful situations and know I can rely on my peers to lead me through my obstacles when they can. I also feel more confident in my ability to remain levelheaded when leading my peers through tough situations in which they might not feel so confident.

Another participant discussed the continued impact of the HRC event on her ability to control her emotional state when she said,

Instead of increasing stress on myself as I did in the past, I attempt to remain logical. I try to not let my emotions cloud my judgment and logically plan out

how to approach the situation. I have learned the stressing out or panicking disables my ability to swiftly and confidently manage situations.

One of the participants in the final group discussed how her expectations for success in difficult situations was impacted by her experience, she said,

I try to approach difficult situations with determination and the belief that they can be overcome. On the ropes course, if you go into an obstacle convinced you can't do it, you lose your balance. I think other difficult situations are similar.

One of the main topics discussed in the interview responses was regarding interaction with others, both in increased confidence supporting or advising others and in relying on others for direction and emotional support. Second, participants discussed the difference in responding to difficult situations in how they approached situations. Numerous participants discussed the importance of facing challenges with a level head and confidence to think through the situation and to receive feedback from others.

Follow-up mixed methods results. Although not significantly different statistically, the nine participants who responded sustained a higher score in both task specific and generalized self-efficacy scores from the pretest and follow-up. The qualitative interview responses though indicated that there was a sustained impact on self-efficacy from the HRC experience once participants return to everyday life, even after only one HRC event.

Discussion

This study supported the concept that both task specific and generalized self-efficacy can be positively impacted through participation in HRC participation. This was seen in the comparison between both each individual's pre-and post- scores and between the comparisons of the group's pre- and post- score means. The scores from the self-

efficacy assessments also reflect that the task specific self-efficacy scores were related to the generalized self-efficacy scores, consistent with previous findings on the benefit of OAP on self-efficacy (Propst & Koesler, 1998, Sheard & Golby, 2006).

The qualitative coding indicated that all four components of self-efficacy development (Bandura, 1977, 1986, 1994) were represented in the HRC experience, which reinforces the use of HRCs in developing self-efficacy. Both the quantitative and qualitative data reinforce the application of Bandura's factors of self-efficacy for HRC programming.

Goldenberg et al. (2000) included overcoming preconceived limitations as an outcome in HRC experiences, which was supported in conversations with participants in this study throughout the HRC experience. Participants discussed their fears about the course and their expectations for success, and described how overcoming those expectations impacted their sense of accomplishment on the course.

The follow-up responses reflected a sustained increase in self-efficacy and a difference in how individuals approached their everyday lives, which is the primary goal of HRC participation (Haras, Bunting, & Witt, 2005). The participant responses reinforced the use of experiential education and the impact of OAP on leadership, confidence, and self-esteem (Goldenberg et al., 2000).

Implications for Recreational Therapy Practice

Recreational therapists looking to implement adventure based programming need evidence based practice with replicable outcomes. HRC programs provide an environment that can be utilized for self-efficacy development. The participants encounter mastery experiences through participation on the HRC, and described personal

success due to the independent/individual challenge. Vicarious experiences and verbal persuasion are both influenced by interacting with the group as a whole. Vicarious experiences are provided through observing other group members progress throughout the course on specific elements. The individual experiences verbal persuasion and reinforcement through the interactions with the group, which is seen in advice, direction, and encouragement. Emotional and physiological arousal can be addressed through challenge by choice and perceived risk, with facilitator or recreational therapist maintaining a level of challenge that is appropriate for each participant. Facilitating a HRC experience requires monitoring the level of stress throughout the course. If the elements are too difficult, there may be a negative impact on the participant. Conversely, if the experience does not provide a sufficient challenge, the participant will have a diminished sense of accomplishment and the course will have a limited impact on self-efficacy.

Following the HRC, the debrief questions focused on transferring the ropes course experience and task specific self-efficacy into everyday life application and general self-efficacy. The specific outcomes related to self-efficacy can be reinforced through the discussion and by intentionally identifying areas of the participant's everyday life where he or she often encounters challenges. Recreational therapists can replicate the aspects of the HRC program that reinforce self-efficacy development to address self-efficacy related patient goals and objectives. With an increase in availability of adventure based programs and HRCs, there is an opportunity for the recreational therapy profession to also play a role in the development of adventure based therapy and to introduce more evidence based practice related to individual types of programs and specific populations into the field.

Future Research

Future research should focus on applying the four components of self-efficacy development to the HRC as an intervention in recreational therapy. The population of this study was primarily comprised of college students. Future research on the use of HRCs as a treatment intervention on self-efficacy should include a wider representation demographically, including age, ethnicity, ability status or health condition, and socio-economic status.

Future research should also include information regarding baseline self-efficacy to determine outliers related to self-efficacy among the individuals participating in the study. Due to the nature of the recreational therapy clinical process (e.g., Assessment, Planning, Implementation and Evaluation), recreational therapists are able to identify deficits in self-efficacy during the assessment stage. Working with individuals with low self-efficacy in a future study would provide more specific information for use with different recreational therapy populations. HRC could potentially be used as an intervention for individuals with drug and alcohol addictions and future research could focus on the impact of increasing generalized self-efficacy on abstinence self-efficacy. HRC could also be beneficial for individuals with an acquired physical disability and future research could look at the impact of increased generalized self-efficacy on overcoming attitudinal barriers.

While this research discusses the impact of emotional and physiological arousal on the development of self-efficacy, the majority of the participants primarily discussed emotional responses. While on the course, some participants reflected on physiological responses such as shaking legs, sweating, and increased heart rate, but during the focus

group discussion, participants primarily discussed emotional states such as fear, anxiety, and confidence. Future research potentially can include discussion questions that are more tailored to understanding physiological specific responses.

This study included pre-, post-, and follow-up assessments along with focus groups immediately following the event and a follow-up interview, but was limited in the final component with fewer respondents completing the follow-up. Future research should include a long-term component to determine the sustained impact of the experience on self-efficacy since this study had limited participation in the follow-up component. For example, offering incentives for study completion could increase participation in the follow-up component of a study, it could also be beneficial to study the impact of repeated HRC experiences on sustaining increased self-efficacy.

Limitations

Findings may provide an insight into the generalized benefit of HRC for self-efficacy, but due to the small scope of study, the results may not be generalizable. This study may not be fully representative of the population due to the types of individuals, companies, teams, or groups that participated in the HRC program. This study was also limited to an adult population, which restricts application to children and adolescents who participate in HRC experiences. Another potential limitation for the study is the lack of awareness about preexisting issues related to self-efficacy. Although data were collected before and after the treatment, there was no indication of abnormalities related to self-efficacy in the individuals participating in the study. There were some participants who experienced no change in self-efficacy, primarily among individuals with a high pretest score. Finally, the differences in specific course elements and facilitator techniques will

impact the future application to similar elements and courses. Facilitators were held to the Association of Challenge Course Technology standards for future technique replication, but facilitation styles vary between individuals.

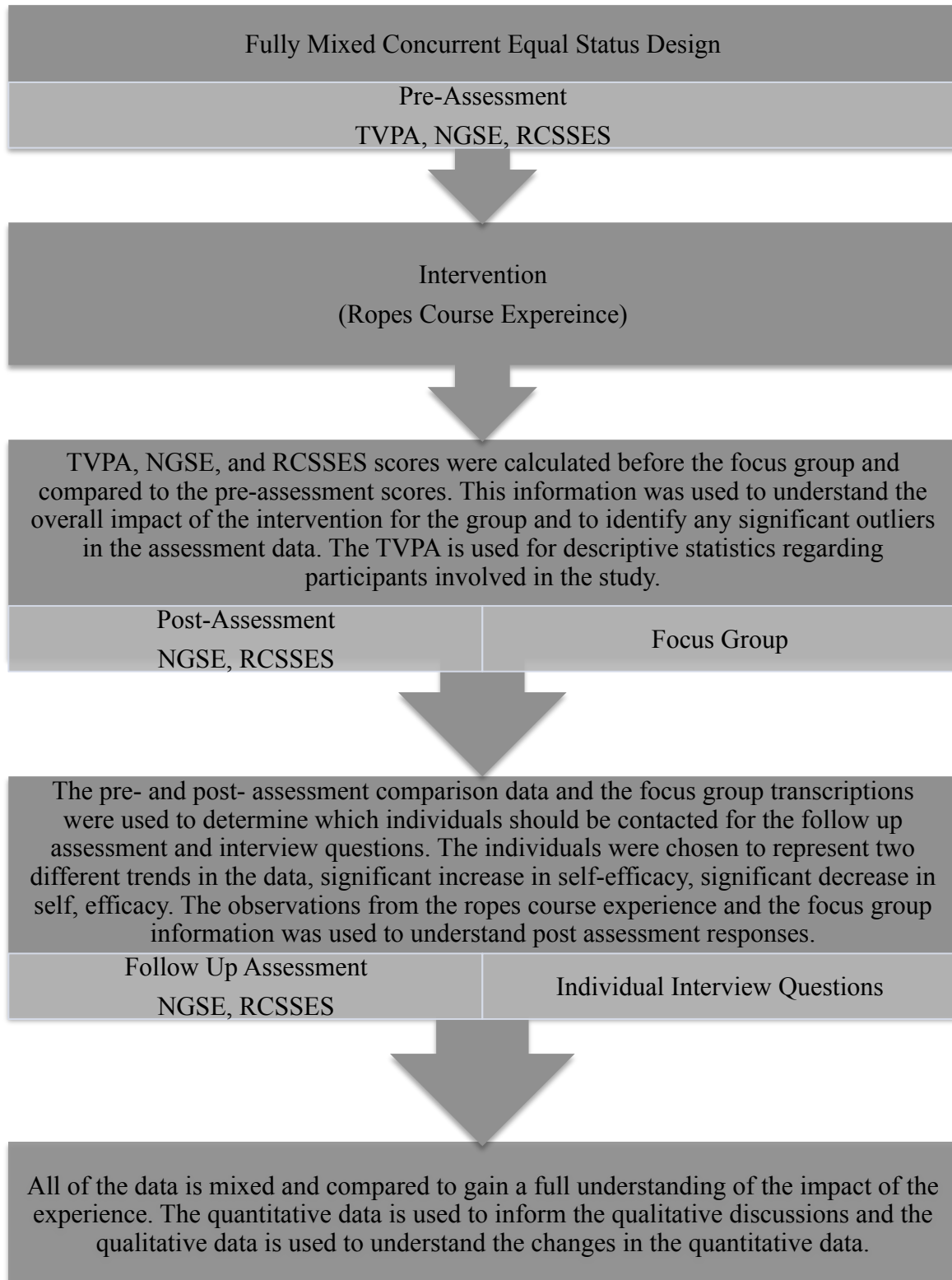
Summary

This study provides insight into the use of HRCs as a treatment intervention for recreational therapists to increase task specific and generalized self-efficacy. Through both the self-efficacy assessments and the focus group discussion, this study indicates that HRCs can be used in recreational therapy for self-efficacy development. This study also establishes a foundation for future research by addressing these limitations and concentrating on specific populations.

Table 1 Demographics

	Mean	SD
Age	20.02	3.257
Gender	N	Frequency
Male	15	28.8%
Female	37	71.2%
Ethnicity		
White	41	78.8%
Asian/Pacific Islander	7	13.5%
Other	4	7.6%
Employment		
Student	48	86.5%
Employed Full Time	4	7.6%
Level of Education		
High School/GED	19	36.5%
Some College	28	53.8%
Bachelor's Degree	3	5.8%
Master's Degree	2	3.8%
Previous High-Ropes Experience		
No Experience	27	51.9%
Some Experience (1-2)	20	38.5%
Significant Experience (3+)	5	9.6%

Figure 1 Mixed Methods Design



REFERENCES

- Anderson, L. S., & Heyne, L. A. (2013). A strengths approach to assessment in therapeutic recreation: tools for positive change. *Therapeutic Recreation Journal*, 47(2), 89-108.
- Association for Challenge Course Technology. (2004). *Challenge course standards*. (6th ed.). Deerfield, IL: Association for Challenge Course Technology.
- Association for Experiential Education. (2014). What is experiential education? Retrieved December 18, 2014 from <http://www.aee.org/about/whatisEE>
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. *Prentice Hall series in social learning theory*, 1, 617.
- Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran, *Encyclopedia of human behavior* (Vol. 4, pp. 71-78). New York: Academic Press.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In *Self-efficacy beliefs of adolescents* (pp. 307-337). Information Age Publishing
- Baron, A., Kaufman, A., & Stauber, K. A. (1969). Effects of instructions and reinforcement-feedback on human operant behavior maintained by fixed-interval reinforcement. *Journal of the Experimental Analysis of Behavior*, 12, 701-712.
- Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a New General Self-Efficacy Scale. *Organizational Research Methods*. 4(1), 62-83.
- Davis-Berman, J., & Berman, D. (2001). Risk and anxiety in adventure programming. *Journal of Experiential Education*, 25(2), 305-10.
- Dewey, J. (1938). *Experience and education*. New York, NY: Kappa Delta Pi.
- Feltz, D., & Mugno, D. (1983). A replication of the path analysis of the casual elements in Bandura's theory of self-efficacy and the influence of autonomic perception. *Journal of Sport Psychology*, 5, 263-277.
- Ferguson, D. D., & Jones, K. (2001). Cross-country skiing as a self-efficacy intervention with an adolescent female: An innovative application of Bandura's theory to therapeutic recreation. *Therapeutic Recreation Journal*, 35, 357-364.
- Finkenberg, M.E., Shows, D., & DiNucci, J.M. (1994). Participation in adventure-based activities and self-concepts of college men and women. *Perceptual and Motor Skills*, 78(3), 1119-1122.
- Fletcher, T. B., & Hinkle, J. S. (2002). Adventure based counseling: An innovation in counseling. *Journal of Counseling & Development*, 80(3), 277-285.
- Gillis, L. H., & Speelman, E. (2010). Are challenge (ropes) courses an effective tool? A meta-analysis. *Journal of Experiential Education*. 31(2), 111-135.
- Goldenberg, M. A., Klenosky, D. B., O'Leary, J. T., & Templin, T. J. (2000). A means-end investigation of ropes course experiences. *Journal of Leisure Research*, 32, 208-225.
- Hagedorn, W. B., & Hirshhorn, M. A. (2009). When talking won't work: Implementing experiential group activities with addicted clients. *The Journal for Specialists in Group Work*, 34, 43-67.

- Hans, T. A. (2000). A meta-analysis of the effects of adventure programming on locus of control. *Journal of Contemporary Psychotherapy, 30*, 33–60.
- Haras, K., & Bunting, C. J. (2005). The differences in meaningful involvement opportunities provided by ropes course programs. *The Journal of Experiential Education, 27*, 297–299.
- Haras, K., Bunting, C. J., & Witt, P. A. (2005). Linking outcomes with ropes course program design and delivery. *Journal of Park & Recreation Administration, 23*, 36–63.
- Hawkins, Brent. (2013). The influence of contextual factors on community reintegration among service members injured in the global war on terrorism. *All Dissertations*, Paper 1174.
- Heyne, L. A., & Anderson, L. S. (2012). Theories that support strengths-based practice in therapeutic recreation. *Therapeutic Recreation Journal, 46*(2), 106-128.
- Johnson, J.A. (1992). Adventure therapy: The ropes-wilderness connection. *Therapeutic Recreation Journal, 26*(3), 17-26.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 7*, 14-26.
- Kavanagh, D. J. & Bower, G. H. (1985). Mood and self-efficacy: Impact of joy and sadness on perceived capabilities. *Cognitive Therapy and Research, 9*, 507-525.
- Kolb, D. A. (1984). The process of experiential learning. *Experiential learning: Experience as the source of learning and development*, 20–38. Englewood Cliffs, New Jersey: Prentice Hall.
- Leech, N. L., & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality and Quantity, 43*, 265–275.
- McGowan, M. (1986). Self-efficacy: Operationalizing challenge education. *Bradford Papers Annual, 1*, 65-69.
- Outdoor Foundation. (2014). Outdoor Participation Report. Retrieved December 19, 2014 from <http://www.outdoorfoundation.org/pdf/ResearchParticipation2014.pdf>
- Propst, D. B., & Koesler, R. A. (1998). Bandura goes outdoors: Role of self-efficacy in the outdoor leadership development process. *Leisure Sciences, 20*, 319-344.
- Rohnke, K. E., & Tait, C. M. (2012). *The Complete Ropes Course Manual*. Kendall Hunt Publishing.
- Scherbaum, C. A., Cohen-Charash, Y., & Kern, M. J. (2006). Measuring general self-efficacy: A comparison of three measures using item response theory. *Educational and Psychological Measurement, 66*, 1047-1063.
- Sheard, M., & Golby, J. (2006). The efficacy of an outdoor adventure education curriculum on selected aspects of positive psychological development. *Journal of Experiential Education, 29*, 187–209.
- Shellman, A. (2014). Empowerment and experiential education: A state of knowledge paper. *Journal of Experiential Education, 37*(1), 18-30.
- Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The self-efficacy scale: Construction and validation. *Psychological Reports, 51*, 663–671. .

APPENDICES

Appendix B

New General Self-Efficacy Scale

Please use the scale below to rate your agreement (or disagreement) with each of the following statements about yourself.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

1. ___ I will be able to achieve most of the goals that I have set for myself.
2. ___ When facing difficult tasks, I am certain that I will accomplish them.
3. ___ In general, I think that I can obtain outcomes that are important to me.
4. ___ I believe I can succeed at most any endeavor to which I set my mind.
5. ___ I will be able to successfully overcome many challenges.
6. ___ I am confident that I can perform effectively on many different tasks.
7. ___ Compared to other people, I can do most tasks very well.
8. ___ Even when things are tough, I can perform quite well.

Ropes Course Specific Self-Efficacy Scale

1. ___ I believe that I can accomplish the goals that I set for myself on the course.
2. ___ When facing challenges on the course, I remain concentrated and focused.
3. ___ In general, I think that I can manage my fears and anxieties on the course.
4. ___ I am comfortable giving advice to other group members on the course.
5. ___ I can successfully use the ropes course equipment (claws, harness, helmet).
6. ___ I am confident that I can successfully transfer and utilize commands.
7. ___ I could successfully accomplish this course again with an extra challenge.
8. ___ I could successfully accomplish a new/different high ropes course.

Appendix C

Focus Group Questions

1. Have you ever participated in any ropes course or similar activity? How did it go?
2. What were your anticipations about your participation on the high ropes course before you came today?
3. How would you describe your experience today?
4. What did you like the most and why?
5. What about the most difficult part of the course for yourself, and why?
6. Were you ever nervous or afraid? At what point did you feel that, and did it go away or change in intensity?
7. Do you feel a sense of accomplishment after completing the course, why or why not?
8. How is this experience at Team Ventures applicable to your everyday life?

Appendix D

Follow-Up Interview Question

1. Have you noticed any changes in your everyday life that have resulted from your high-ropes course experience? Please explain.
2. How have you noticed any changes in how you approach difficult situations?

Appendix E

Figure 4.1 Group One Pre- and Post- Assessments

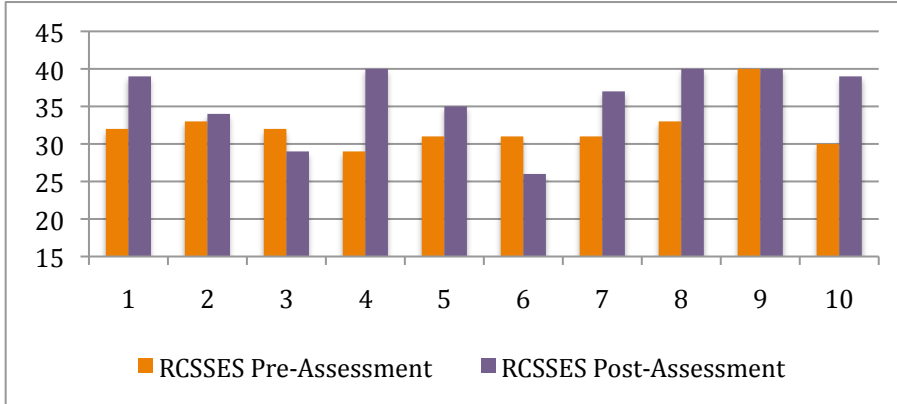


Figure 4.2 Group Two Pre- and Post- Assessments

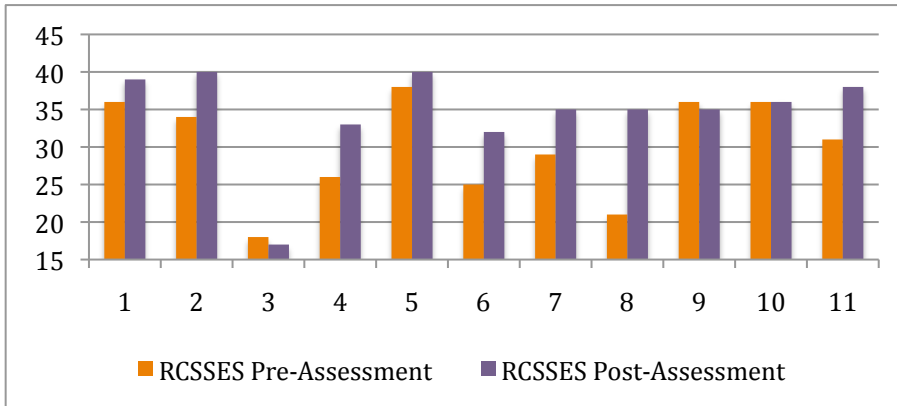


Figure 4.3 Group Three Pre- and Post- Assessments

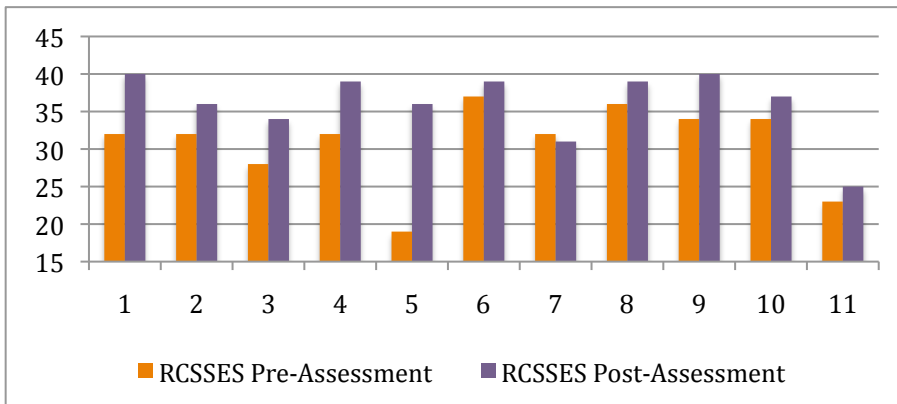


Figure 4.4 Group Four Pre- and Post- Assessments

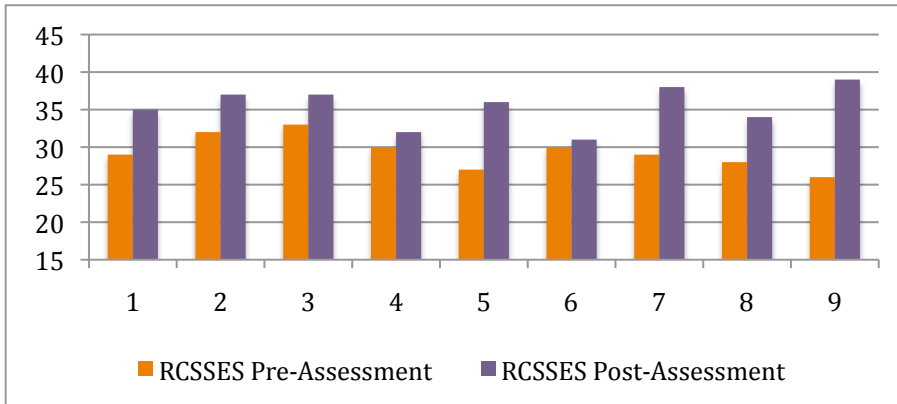
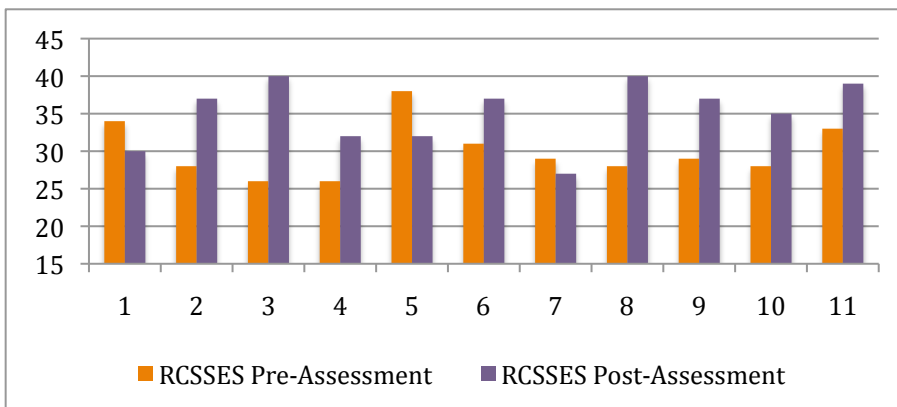


Figure 4.5 Group Five Pre- and Post- Assessments



Appendix F

Figure 5.1 Group One Pre- and Post- Assessments

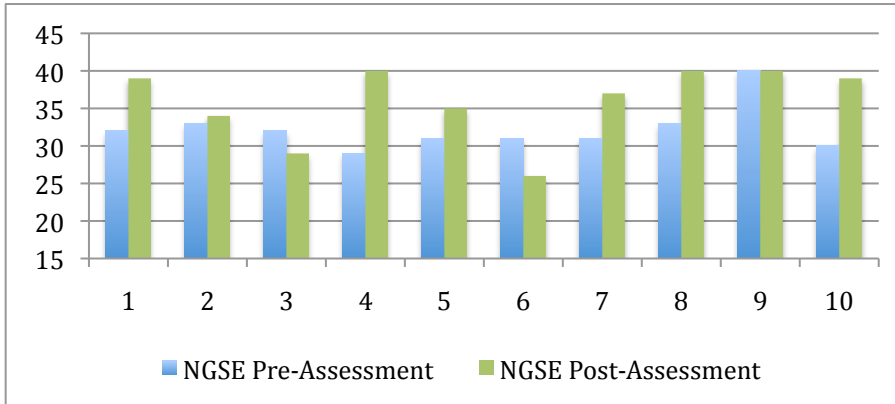


Figure 5.2 Group Two Pre- and Post- Assessments

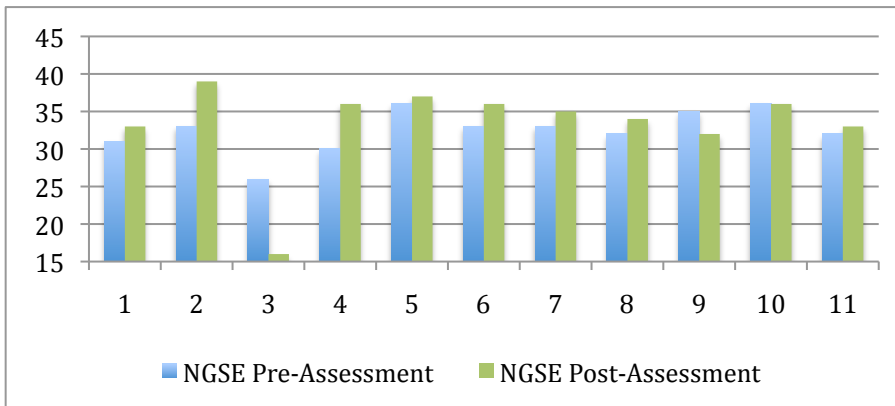


Figure 5.3 Group Three Pre- and Post- Assessments

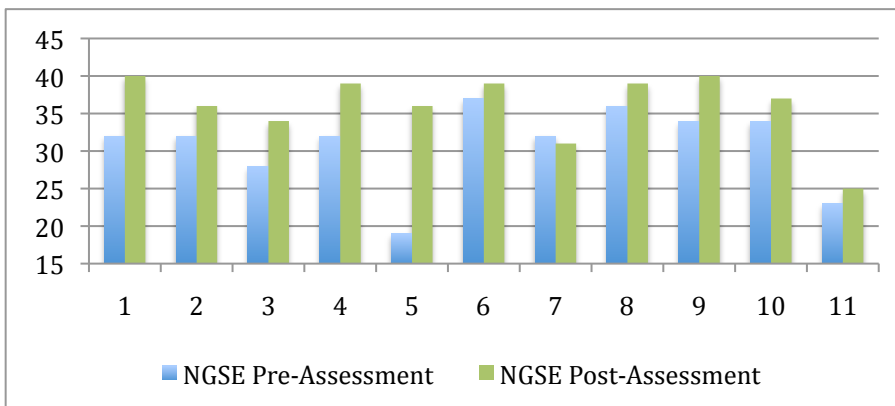


Figure 5.4 Group Four Pre- and Post- Assessments

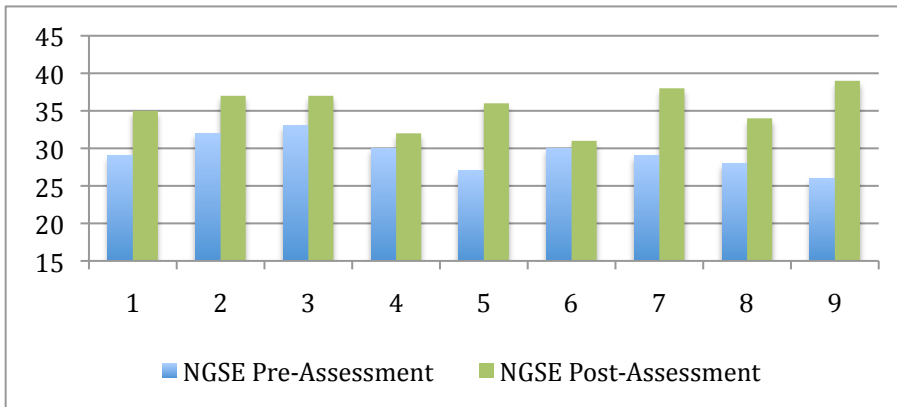
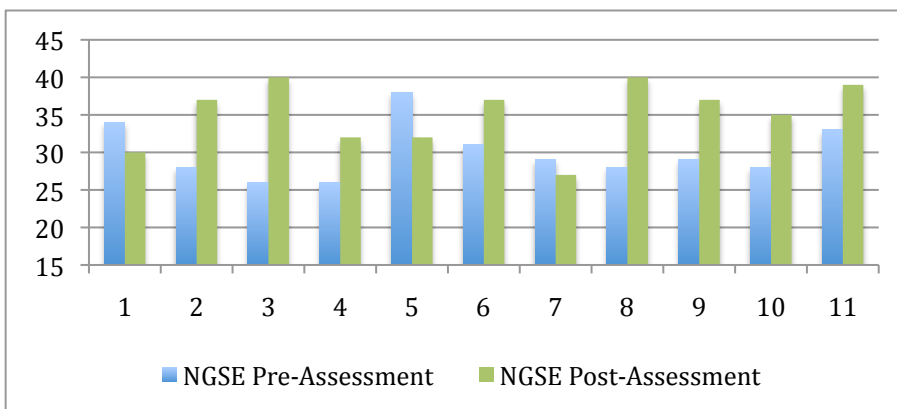


Figure 5.5 Group Five Pre- and Post- Assessments



Appendix G

Pretest and Posttest Paired Samples Tests

Table 3.13

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 NGSE Pretest Total Score - NGSE Posttest Total Score	-2.17308	3.32973	.46175	-3.10008	-1.24607	-4.706	51	.000

Table 3.14

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 RCSSSES Pretest Total Score - RCSSSES Posttest Total Score	-4.90385	4.91201	.68117	-6.27136	-3.53633	-7.199	51	.000

Pretest and Follow-Up Paired Samples Tests

Table 6.1

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 NGSE Pretest Total Score – Follow-Up NGSE Total Score	-1.87500	1.55265	.54894	-3.17305	-.57695	-3.416	7	.011

Table 6.2

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 RCSSSES Pretest Total Score – Follow-Up Ropes Course Specific Total Score	-4.12500	5.19443	1.83651	-8.46766	.21766	-2.246	7	.060

REFERENCES

- Anderson, L. S., & Heyne, L. A. (2013). A strengths approach to assessment in therapeutic recreation: tools for positive change. *Therapeutic Recreation Journal*, 47(2), 89-108.
- Association for Challenge Course Technology. (2004). *Challenge course standards*. (6th ed.). Deerfield, IL: Association for Challenge Course Technology.
- Association for Experiential Education. (2014). What is experiential education? Retrieved December 18, 2014 from <http://www.aee.org/about/whatisEE>
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. *Prentice Hall series in social learning theory*, 1, 617.
- Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran, *Encyclopedia of human behavior* (Vol. 4, pp. 71-78). New York: Academic Press.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In *Self-efficacy beliefs of adolescents* (pp. 307–337). Information Age Publishing
- Baron, A., Kaufman, A., & Stauber, K. A. (1969). Effects of instructions and reinforcement-feedback on human operant behavior maintained by fixed-interval reinforcement. *Journal of the Experimental Analysis of Behavior*, 12, 701–712.
- Chakravorty, D., Trunnell, E. P., & Ellis, G. D. (1995). Ropes course participation and post-activity processing on transient depressed mood hospitalized adult psychiatric patients. *Therapeutic Recreation Journal*, 29(2), 104–113.
- Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a New General Self-Efficacy Scale. *Organizational Research Methods*. 4(1), 62-83.
- Clem, J. M., Smith, T. E., & Richards, K. V. (2012). Effects of a low-element challenge course on abstinence self-efficacy and group cohesion. *Research on Social Work Practice*. 22(2), 151-158.
- Davis-Berman, J., & Berman, D. (2001). Risk and anxiety in adventure programming. *Journal of Experiential Education*, 25(2), 305–10.
- Dewey, J. (1938). *Experience and education*. New York, NY: Kappa Delta Pi.
- Faulkner, S. S. (2002). Low-elements ropes course as an intervention tool with alcohol/other drug dependent adults. *Alcoholism Treatment Quarterly*, 20(2), 83–90.
- Feltz, D., & Mugno, D. (1983). A replication of the path analysis of the casual elements in Bandura's theory of self-efficacy and the influence of autonomic perception. *Journal of Sport Psychology*, 5, 263-277.
- Ferguson, D. D., & Jones, K. (2001). Cross-country skiing as a self-efficacy intervention with an adolescent female: An innovative application of Bandura's theory to therapeutic recreation. *Therapeutic Recreation Journal*, 35, 357-364.
- Finkenbergl, M.E., Shows, D., & DiNucci, J.M. (1994). Participation in adventure-based activities and self-concepts of college men and women. *Perceptual and Motor Skills*, 78(3), 1119–1122.
- Fletcher, T. B., & Hinkle, J. S. (2002). Adventure based counseling: An innovation in counseling. *Journal of Counseling & Development*, 80(3), 277–285.

- Gillis, L. H., & Speelman, E. (2010). Are challenge (ropes) courses an effective tool? A meta-analysis. *Journal of Experiential Education*, 31(2), 111-135.
- Goldenberg, M. A., Klenosky, D. B., O'Leary, J. T., & Templin, T. J. (2000). A means-end investigation of ropes course experiences. *Journal of Leisure Research*, 32, 208-225.
- Hagedorn, W. B., & Hirshhorn, M. A. (2009). When talking won't work: Implementing experiential group activities with addicted clients. *The Journal for Specialists in Group Work*, 34, 43-67.
- Hans, T. A. (2000). A meta-analysis of the effects of adventure programming on locus of control. *Journal of Contemporary Psychotherapy*, 30, 33-60.
- Haras, K., & Bunting, C. J. (2005). The differences in meaningful involvement opportunities provided by ropes course programs. *The Journal of Experiential Education*, 27, 297-299.
- Haras, K., Bunting, C. J., & Witt, P. A. (2005). Linking outcomes with ropes course program design and delivery. *Journal of Park & Recreation Administration*, 23, 36-63.
- Hartford, G. (2011). Practical implications for the development of applied metaphor in adventure therapy. *Journal of Adventure Education & Outdoor Learning*, 11(2) 145-160.
- Hawkins, Brent. (2013). The influence of contextual factors on community reintegration among service members injured in the global war on terrorism. *All Dissertations*, Paper 1174.
- Heyne, L. A., & Anderson, L. S. (2012). Theories that support strengths-based practice in therapeutic recreation. *Therapeutic Recreation Journal*, 46(2), 106-128.
- Johnson, J.A. (1992). Adventure therapy: The ropes-wilderness connection. *Therapeutic Recreation Journal*, 26(3), 17-26.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 7, 14-26.
- Kavanagh, D. J. & Bower, G. H. (1985). Mood and self-efficacy: Impact of joy and sadness on perceived capabilities. *Cognitive Therapy and Research*, 9, 507-525.
- Kolb, D. A. (1984). The process of experiential learning. *Experiential learning: Experience as the source of learning and development*, 20-38. Englewood Cliffs, New Jersey: Prentice Hall.
- Leech, N. L., & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality and Quantity*, 43, 265-275.
- Luckner, J. L., & Nadler, R. S. (1995). Processing adventure experiences: it's the story that counts. *Therapeutic Recreation Journal*, 29, 175-183.
- McGowan, M. (1986). Self-efficacy: Operationalizing challenge education. *Bradford Papers Annual*, 1, 65-69.
- Mobily, K. E. (2009). Role of exercise and physical activity in therapeutic recreation services. *Therapeutic Recreation Journal*, 43, 9-26.
- Neill, J. T. (2003). Reviewing and benchmarking adventure therapy outcomes: Application of meta-analysis. *Journal of Experiential Education*, 25, 316-32.
- Outdoor Foundation. (2014). Outdoor Participation Report. Retrieved December 19, 2014 from <http://www.outdoorfoundation.org/pdf/ResearchParticipation2014.pdf>

- Paxton, T., & McAvoy, L. (2000). Social psychological benefits of a wilderness adventure program. *USDA Forest Service Proceedings*, 3, 202–206.
- Propst, D. B., & Koesler, R. A. (1998). Bandura goes outdoors: Role of self-efficacy in the outdoor leadership development process. *Leisure Sciences*, 20, 319-344.
- Richeson, N. E., Croteau, K. A., Jones, D. B., & Farmer, B. C. (2006). Effects of a pedometer-based intervention on the physical performance and mobility-related self-efficacy of community-dwelling older adults: An interdisciplinary preventative health care intervention. *Therapeutic Recreation Journal*, 40, 18-32.
- Rohnke, K. E., & Tait, C. M. (2012). *The Complete Ropes Course Manual*. Kendall Hunt Publishing.
- Scherbaum, C. A., Cohen-Charash, Y., & Kern, M. J. (2006). Measuring general self-efficacy: A comparison of three measures using item response theory. *Educational and Psychological Measurement*, 66,1047-1063.
- Sheard, M., & Golby, J. (2006). The efficacy of an outdoor adventure education curriculum on selected aspects of positive psychological development. *Journal of Experiential Education*, 29, 187–209.
- Shellman, A. (2014). Empowerment and experiential education: A state of knowledge paper. *Journal of Experiential Education*, 37(1), 18-30.
- Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The self-efficacy scale: Construction and validation. *Psychological Reports*, 51, 663–671.
- Sothorn, M.S., Loftin, M., Suskind, R. M., Udall, J. N., & Blecker, U. (1999). The health benefits of physical activity in children and adolescents: Implications for chronic disease prevention. *European Journal of Pediatrics*, 158, 271-274.
- Ulrich, R. S., Dimberg, U., & Driver, B. L. (1991). Psychophysiological indicators of leisure benefits. (B. Driver, P. Brown, & G. Peterson, Eds.), *Benefits of leisure* (pp. 73-89). Venture Publishing, State College, PA.
- Weinburg, R., Grove, R., & Jackson, A. (1992), Strategies for building self-efficacy in tennis players: A comparative analysis of Australian and American coaches. *The Sport Psychologist*, 6, 3-13.
- Zuckerman, M. (1990). The psychophysiology of sensation seeking. *Journal of Personality*, 58, 313–345.