

ABSTRACT

LEE, J. The effects of a six week, 11 hour ropes course unit on the attitudes towards physical activity of high school students with behavior disorders. MS in Exercise and Sport Science-Special Physical Education, August 1999, 42pp. (P. DiRocco)

Students with behavior disorders were recruited from an alternative education center in La Crosse, WI, to participate in a 6 week, 11 hour ropes course unit to study its effect on their attitudes toward physical activity. The instructional program contained adventure activities, indoor rock climbing, and high and low ropes course elements. Ten students were recruited, and of these, 3 dropped out, and 1 did not participate in any of the climbing portions of the unit and was not included in the final statistical analysis. Data were gathered using a modified survey originally designed to measure the attitudes of adults towards physical activity. Results showed a general trend of improvement in attitude towards physical activity, but a paired t-test did not show significance at the 0.05 confidence level. Attendance and attitude improvement was not highly correlated with an r value 0.34.

THE EFFECTS OF A SIX WEEK, 11 HOUR ROPES COURSE UNIT ON THE
ATTITUDES TOWARDS PHYSICAL ACTIVITY OF HIGH SCHOOL
STUDENTS WITH BEHAVIOR DISORDERS

A THESIS PRESENTED
TO
THE GRADUATE FACULTY
UNIVERSITY OF WISCONSIN-LA CROSSE

IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
MASTERS OF SCIENCE DEGREE

BY
JEFF LEE
AUGUST 1999

COLLEGE OF HEALTH, PHYSICAL EDUCATION, AND RECREATION

UNIVERSITY OF WISCONSIN-LA CROSSE

THESIS FINAL ORAL DEFENSE FORM

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We recommend acceptance of this thesis in partial fulfillment of this candidate's requirements for the degree:

Master of Science in Exercise and Sport Science-Special Physical Education

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ACKNOWLEDGEMENTS

I would like to thank my committee members, Dr. Patrick DiRocco, Dr. Jeff Steffen, and Dr. Betsy Morgan, for their patience and guidance. Without them this project could not have been done. I would like to thank Dr. Garth Tymeson for his motivation and guidance. I would also like to thank Jeff Haley and Lisa Shanno for taking time from their busy graduate student schedules to help on this project. Finally, I would like to thank Tim Fader and the staff from the UW-La Crosse Adventure Program for their help with implementing the program.

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CHAPTER I

INTRODUCTION

Adventure education is an alternate form of physical education involving traditional and outdoor pursuits which apply novelty and challenge to participants. Participants are presented with unusual problems requiring them to use teamwork and ingenuity to come up with creative solutions to seemingly impossible problems created by other people. Such programs can be used for many motivational purposes, one of which is attitude improvement (Priest, 1995).

Central to adventure education is the idea of adventure theory. Adventure theory is an original pedagogical approach to teaching students how to solve problems using movement, and to take responsibility for their actions and decisions (Gass, 1985, Priest, 1996a). Adventure education is accomplished through the use of alternative games and so called adventure activities. Emphasis is placed on activities that require trust and are perceived as being risky. The key to these activities is the relationship between real and perceived danger. As long as the activities are perceived as being risky, they will require trust. In this sense, the activities need not be truly dangerous. A study done by Project Adventure showed that adventure and ropes course type activities in physical education class resulted in 3.6 accidents per million hours. When compared to 9.6 for regular physical education class, 42 for operating small machinery, and 60 for driving a car,

adventure activities appear to be quite safe (Furlong, Jillings, LaRhette, & Ryan, 1995).

When employing adventure theory, a teacher has to take on a new role that is often unfamiliar. The central theory of adventure education problems is often challenge by choice (Priest 1996a). Put simply, challenge by choice states that the participants have the ability to choose the level at which they wish to engage in a given activity. If at any point in time a given individual feels uncomfortable or uncertain about an activity, that person may choose to not participate, and simply sit out during that activity. In order for challenge by choice to work, teachers have to take on the role of facilitator instead of teacher. A teacher distributes information to the students. In that sense, a teacher is simply another tool for presenting information to the student. The teacher is a very dynamic and multifaceted tool, but a tool nonetheless. As a facilitator, the teacher becomes more interactive with the students. Terms associated with this teaching method include indirect teaching, active learning, and guided teaching (Priest, 1996a). In this capacity, the teacher acts as a catalyst in helping students assimilate information. The teacher may provide suggestions and guide activities, but ultimately the students come up with their own solutions.

Needs Statement

It is widely known that physical activity and an active lifestyle is positively correlated with good health. Physical activity reduces the risk of coronary heart disease (Powel, Thompson, Caspersen, & Kendrick, 1987). Aerobic type activities improve the heart's contractility, work capacity, coronary circulation, and colateral circulation.

Exercise also improves the ratio between the high and the low density lipoproteins (Powel et al, 1987). The levels of high density lipoproteins and low density lipoproteins are important in the prevention of atherosclerosis, and the buildup of plaque in the arterial walls. In addition, exercise plays an important role in weight reduction, and may reduce insulin resistance, which would help in the control of diabetes (Vitug, Schneider, & Ruderman, 1988). Finally, exercise may also be effective in the control of stress, and in the reduction of anxiety.

In spite of the wealth of knowledge showing that exercise is healthy, participation in physical activities has actually decreased in recent years. A survey done by the National Center for Health Statistics showed that participation in exercise declined 10% between 1985 and 1990 (Robinson & Godbey, 1993). It would seem that today's generation would prefer to play video games than sandlot baseball (Fruin, Pratt, & Owen, 1991).

Adventure programs are based on the belief that change will occur when people are placed in a situation in which they are not entirely comfortable (Gass, 1993). Given this fact, adventure programs have been used to improve behaviors of young people with behavior disorders (Durgin & McEwen, 1991). Students with behavior disorders who are placed in alternate education environments don't respond to normal programming and are placed in alternate settings because they have difficulty succeeding in a regular physical education environment. Adventure programming offers an alternate means to disseminate information to these students, in a manner that meets their needs. Limited

information exists on the length and content of a ropes course that is effective in changing the attitudes of high school students with behavior disorders towards physical activity and organized sports.

Problem Statement

The purpose of this study was to determine whether an 11 hour, 6 week unit on ropes courses including adventure type activities, indoor wall climbing, and high and low elements, could produce a more positive attitude in high school students with behavioral disorders towards participating in physical activity.

Terminology

The following terms were used in this study:

Adventure Theory-Teaching philosophy that involves exposing students to environments that they perceive to be risky for the purpose of causing them to reach beyond their comfort zones and expand their self-perceptions of what they are capable of doing.

Challenge by Choice-Teaching method where students are allowed to choose their own level of involvement.

Behavioral Disordered-For the purposes of this study, a student with a behavior disorder was defined as having one or more behaviors that is inappropriate for the regular school environment, and interferes with that student's, or classmates', ability to succeed in the school environment.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

Adventure education is an alternate approach to teaching physical education to students stressing creative thinking, teamwork, and responsibility. There is often a tendency to stress team sports when teaching physical education, especially in areas of the country where professional and college sports are popular. One result of the popularity of professional and collegiate sports is that talented junior athletes and coaches at all levels enjoy elevated esteem and image in the eyes of the general public. While this is a good thing for athletes and their coaches, it does nothing to encourage the less talented and less athletically gifted children to participate in athletics, or to engage in exercise and physical activity for health reasons.

A good example of a team sports approach was the program at Nimitz High School in Houston, Texas (Manzo, 1997). Prior to a change in philosophy and curriculum, the main emphasis of physical education at Nimitz High was traditional curriculum of team sports. This was great for the talented athletes, but less interested kids gradually became disinterested and started drifting towards the sidelines and bleachers. Another less than desirable effect was the development of a morale problem among physical education teachers. Gym class organization was degrading into pick up games, and was quickly becoming what some teachers referred to as a glorified recess.

Other teachers began taking a dim view of physical education teachers and opinions of physical education in general were dropping. Students began using their physical education time as a time for socializing, cramming for exams or for catching up on homework. Teachers and administrators at Nimitz High decided that something needed to be done to address the issues of health and fitness more seriously. What they did was hire a new physical education director, and institute a new program that emphasized overall wellness, lifelong activity, and commitment to exercise, personal safety, and healthy living (Manzo, 1997). While their program didn't conform to the official definition of adventure education, it did illustrate several problems that occur in regular physical education that could easily be remedied with an adventure education type program.

There were problems in the areas of self-esteem, self-image, teamwork and problem solving skills. There was an emphasis on team sports at Nimitz high school, but this emphasis didn't necessarily reflect the concept of teamwork. Teamwork implies that the parties involved work towards a common goal, taking advantage of each person's individual strengths and talents. When people are sitting out on the sidelines, and not participating, the true potential of the team is not being achieved. Self-esteem problems and self-image problems existed for both the teachers and the students. Students with poor athletic ability were being excluded from activities, and were being looked down upon by their peers. Adventure education addresses all of these concerns by stimulating

problem solving skills. A unique curriculum of cooperative games would have included everyone and improved both teacher and student morale (Manzo, 1997).

Behavior Disorder

Students with behaviors that are excessively and chronically disruptive to the regular school environment can be classified as behavior disordered (Bar-Eli, Hartman & Levy-Kolker, 1994). These students often have low self-esteem, have difficulty following instructions, and will often have difficulty getting along with their instructors and peers (Clarizo & Klein, 1995). In order to succeed, these students require a special program that takes into account their unique needs. A program needs to be nonthreatening to the students while remaining challenging enough to have an effect (Gass, 1993).

Adventure Programing

There are a number of elements that make adventure programs suitable for use with high school students with behavior disorders. First, the construct of adventure programs creates an unfamiliar environment for students. In this unfamiliar environment, students will have fewer expectations or preconceived notions about their success. In this manner students do not feel pressured to do well, and are free to explore problems without feeling overwhelmed by them (Gass, 1993). Second, the adventure program environment creates a climate of change by introducing stress into a student's environment in a manner that is manageable, but still challenging (Seyle, 1978). This

environment forces students to use positive problem solving abilities such as trust, cooperation, and good communication. Finally, adventure programming focuses on positive, successful behaviors and attitudes rather than dysfunctional ones. In the unfamiliar environment of adventure programs, students can focus on their abilities, and not their dysfunctions. As students successfully achieve goals, their initial defenses gradually diminish, and positive change can occur (Gass, 1993).

In spite of the potential for positive change, adventure programming by itself is not adequate to produce lasting attitude changes (Durgin & McEwen, 1991). Gains achieved during participation in an adventure program can be lost quickly if students return to an unhealthy home environment. To combat this effect, a number of factors must be considered. First, the age of the student must be taken into account. Younger student (10-14 year olds) are more impressionable, and are less likely to have a criminal record. Second, the adventure program itself must be long enough to produce change. Many of the single weekend programs are just beginning to elicit change when the students go home. Finally, follow up support programs are absolutely necessary for effects to be permanent and long lasting (Durgin & McEwen, 1991).

Adventure program curricula are organized in such a way as to maximize participation and trust building. Activities are started with ice breakers and energizers to build energy and enthusiasm in the students. Next in sequence are cooperative games and trust building activities designed to encourage students to work together and trust each other and the facilitators. Following the cooperative games and trust activities, students

are introduced to the low elements. Finally after the students are comfortable with the low elements they were introduced to the high elements of the ropes course. This sequence of activities seems to be the most effective way to encourage participation and build trust and is often used by many adventure programs (Gass, 1993).

There are several organizations currently in existence that promote the use of adventure activities in efforts to teach acceptance of new ideas and encouragement of effort in various settings. Examples of these groups include Project Adventure, and the Association for Challenge Course Technology. These groups are often criticized for applying the same techniques regardless of the problem they are trying to solve (Priest, 1996b). Each organization has its own strengths and weaknesses. Some are strong in group initiative activities, while others are strong in ropes courses. Group initiative activities are adventure activities where groups are asked to work together to solve a given problem. A good example would be the river crossing game. The group is given a hanging rope and number of hula hoops for use as temporary islands. The group is told that they are on the edge of a raging river and must get the entire group to the other side. Each hula hoop can only be used once, but the rope can be used as often as necessary. The purpose of the activity is to encourage teamwork and problem solving thought processes. The role of the teacher in this activity is a facilitator of critical thought, and not to teach a solution, per say. A ropes course consists of a number of challenging activities organized into two groups: a high element, and a low element. The high element consists of elements that are high in the air and require some sort of belaying for

safety. An example of a high element would be the dynamic duo activity. The dynamic duo is an oversize ladder with gaps approximately 5 feet apart between the rungs. Two students at a time are tied into safety harnesses and allowed to climb to the top. The goal of the activity is for the students to work as a two man team to get to the top. An example of a low element would be the totem pole. The totem pole is a horizontal log mounted on supports about 1 foot off the ground. Two groups of students are placed on either end of the log, and are told to switch ends with the other group without having any member of either group touching the ground. The purpose of this activity is to build trust between students, and to have them learn cooperation. The primary purpose of the ropes course, overall, is to promote trust and encourage effort.

As stated before, adventure programs are often criticized for using the same program regardless of what problem they are trying to solve. In point of fact, both techniques are effective in achieving the goals of increasing effort and encouraging critical thought and accepting new ideas (Priest, 1996a). A study done by Priest (1996a) compared the effects of ropes courses and group initiatives in developing organizational trust. Five composite subscales were identified in the study. They were acceptance, believability, confidentiality, dependability, and encouragement. The five subscales were studied using a Likert scale, with 5 being strongly agree, and 1 being strongly disagree. Results showed no significant correlations between any of the subscales of the two groups. Although not statistically significant, closer examination of the results showed some interesting trends between each of the subscales (Priest, 1996a). Similar patterns

were found for the believability, confidentiality, and dependability subscales, while acceptance and encouragement subscales showed differences between groups. Ropes courses seemed to be more effective in improving encouragement subscales, while group initiatives seemed to be more effective in improving the acceptance subscales (Priest, 1996a).

Possible explanations for these results offered by Priest were that ropes courses typically leave problem solving up to the individual, while group initiatives require group efforts. For encouragement, the explanation offered was that the nature of ropes activities typically have a single person up on the course while the others in the group shout encouragement from the ground (Priest, 1996a). It was the overall conclusion of the study that both group initiatives and ropes courses were effective in improving trustworthiness towards and within organizations as well as improving believability, confidentiality, and dependability. Although not statistically different, ropes courses scored higher for improving encouragement, while group initiatives scored higher for improving acceptance subscales. When building trust, ropes courses, group initiatives, or a combination of the two would all be effective (Priest, 1996a).

There are a number of factors that influence an individuals' motivation towards exercise. In spite of the proven positive effects of exercise on the human body, a relatively small portion of the population participates in regular exercise programs. A study known as CORDIS conducted in Israel showed that only 25% of men and 20% of women participated in leisure time exercise (Rabinowitz, & Melamed, 1992). In

addition, a survey done by the National Center for Health Statistics has shown that overall participation in strenuous activity has declined 10% in this country between 1985 and 1990 (Robinson & Godbey, 1993). There may be a variety of reasons for this decline in participation. One possible reason is changing lifestyles. People are working longer hours and find that they have less free time to devote to exercise than people from previous generations (Robinson & Godbey, 1993). A more likely explanation seems to be motivation to exercise during available leisure time.

A person's willingness to participate in a given activity will depend upon motivation and attitude towards that activity (Godin, 1987). Their motivation, in turn, will depend on their expectations of outcome and cognitions about self-efficacy (Rabinowitz & Melamed, 1992). Expectations of outcome refer to the belief that a certain behavior will lead to a given outcome. Self-efficacy is based on a person's self-image. It is what a person believes they are able to do. It is the purpose of an adventure based unit to expand a given person's self-efficacy. It is the aim of the program to have a person believe that they are capable of accomplishing more, from a physical activity standpoint, than they believed that they could accomplish before participating in the program.

People are continuously making decisions on what courses of action to take and how long to pursue those courses of action based on their self-efficacy. People will consistently avoid actions that they feel exceed their capabilities, but will partake in and generally succeed in those tasks they consider themselves capable of handling (Bandura,

1977). A person's self-efficacy will determine how much effort they will put towards a given task, and how long they will persist in the face of adversity (Bandura, 1982). A person with a strong self-efficacy will persevere and even exert greater effort in the face of adversity, whereas a person with a low self-efficacy will lessen their effort, or give up entirely (Bandura & Schunk, 1981). A person's self-efficacy will also influence their thought patterns and emotional reactions during the anticipatory and the actual interaction with the environment (Bandura, 1982). People who see themselves as less capable will focus on their shortcoming and perceive obstacles and problems as being more difficult than they really are.

Increases in self-efficacy occur in increments. As people explore their ability to perform a new task, their self-perceptions will improve in small increments each time the task is successfully completed. As more success is experienced, self-efficacy improves. If, however, a person encounters difficulty when attempting to complete a new task the first few times, their self-efficacy can actually decrease (Bandura, 1982).

Attitude is a multidimensional entity. Most psychologists now agree that there are three basic dimensions of attitude, the cognitive, emotional and behavioral dimensions (Cacioppo, Petty, & Geen, 1989). The cognitive dimension involves personal beliefs, such as the belief that exercise is good for the heart. The emotional dimension involves likes and dislikes. A person can believe that exercise leads to weight loss, but dislike exercise because of the physical effort it requires. The behavioral dimension is the result of the combination of the cognitive and emotional aspects. The behavioral

aspect is what a person actually does, after considering his or her beliefs, likes, and dislikes.

Attitudes can often be used to determine behavior. The degree to which they determine behavior will be influenced by a number of variables. First, a strongly held attitude not contested by outside influences will be a better predictor of behavior than a weakly held attitude. For example, if a person believes that stealing is bad, and there is no influence to make him think the contrary is true, he probably won't steal. In addition, if a person considers a particular belief to be personally important, it is unlikely that an outside influence will be able to change that attitude (Krosnick & Alwin, 1988).

Attitudes are more likely to be positively correlated with behavior when the decision the individual is confronted with more closely matches the attitude they have in that situation. For example, a person who just believes that exercise is good for them is less likely to participate in a soccer league than a person who believes that soccer is a worthwhile pastime and an enjoyable sport (Ajzen & Fishbein, 1977). This study will examine the effects of a ropes course unit containing adventure, indoor rock climbing, and high and low elements and their effects on high school students with behavior disorders towards physical activity.

CHAPTER III

METHODS

Introduction

Limited information exists on the effects of ropes courses and adventure activities on the attitudes of students with behavior disorders. The purpose of this study was to gather information on whether an intervention using an adventure type unit including indoor climbing and ropes course elements had a positive effect on the transient emotional aspect of attitudes of students with behavior disorders regarding participation in a physically active lifestyle. Information was gathered by means of a questionnaire, and conclusions were made from that data.

Subject Recruitment

Data were gathered from a sample of 10 students enrolled in the leadership school in La Crosse, Wisconsin. The leadership school is an alternative education center for students who are placed out of the regular education environment due to behavioral problems. The leadership school was approached and asked if they would be willing to allow their students to participate in this study in lieu of their regular physical education class. The regular physical education class consisted of 20-25 high school aged students. Permission slips were sent home to all of the students and collected a week later. Copies of the informed consent and assent forms are included as Appendix A and B, respectively.

All of the students participated in the 6 week program, but only those who agreed to be included in the study were included in the statistics.

Data Collection

Students' attitudes towards physical activity were assessed with a questionnaire for older adults modified to assess the attitudes of high school students towards physical activity (Devereaux, Williamson, Futrell, & Chamberlain, 1997). A copy of the survey used is included as Appendix C in this document. The original assessment tool was tested for test-retest reliability using a sample size of 61, with a test-retest interval of 3 to 4 weeks. The Spearman rank order correlation coefficient was reported to be 0.566 ($n = 61$), $P < 0.0001$ and the Cronbach's alpha was reported as 0.765 (Devereaux et al, 1997). To preserve the validity of the survey, only the questions not relevant to a high school aged population were eliminated, and no new questions were added. The minimum score on the modified survey was 20 and the maximum was 100. The survey was administered on the first day of a 6 week unit on ropes courses and adventure activities, and was designed to be completed in approximately 15 minutes of class. After the survey was administered, the unit was started immediately.

The survey consists of two sections, the first section consisting of a single question designed to assess student physical activities, and the second section consisting of 21 questions designed to assess self-perceptions about physical activity. Questions 1, 2, 7, 8, 9, and 10 are designed to measure self-perception of physical fitness. Questions 3, 4, 5, 12, 18, 19 and 20 are designed to measure self-perception about barriers to

exercise. Questions 6, 11, 13, 14, 15, 16 and 17 are designed to measure self-perception about motivation for exercise. The surveys were numbered and collected when completed. The students received the survey, and were given approximately 15 minutes to complete it. The survey was administered a second time during the final 15 minutes of class on the final day of the unit and differences between the first and second responses were noted. Students were given instructions to fill out the survey and ask questions on any items that they did not understand. In addition to the questions on the survey, students were also asked what activities they participated in on the second administration of the survey. To be included in the statistical analysis, they had to participate in all activities up to the climbing wall and climb on any of the elements. Any climbing on the wall was considered participation.

Program

The unit was designed to include 11 sessions in 6 weeks. Each session was designed to be 40 to 50 minutes in length. This length of time per session was most compatible with the schedule of the leadership school. The 11 session, 6 week time period was chosen because it is judged to be the optimum amount of time for the students to complete all the planned activities without becoming bored with any single activity. The intention of the unit was to get the students interested in physical activity by exposing them to a novel activity perceived to be risky. To this end, it was the goal of the unit to leave the students with a feeling wanting to do more after the unit is complete.

The unit was organized in a manner designed to promote trust and participation. Activities started with ice breakers and energizers to build energy, and enthusiasm in the students. Next in sequence were cooperative games and trust building activities designed to encourage students to work together and trust each other and the facilitators. Following the cooperative games and trust activities, students were introduced to the climbing wall. Finally after the students were comfortable with the climbing wall they were introduced to the high elements of the ropes course. This sequence of activities is often used in ropes course curricula, and is an effective way to implement the program (Gass, 1993). See Appendix D for the lesson plans for each day.

Statistical Analysis

A paired t-test was used to compare the pre- and posttest data. A Pearson coefficient was calculated to evaluate the relationship between change in score and attendance. From these data, conclusions were drawn.

CHAPTER IV

RESULTS AND DISCUSSION

Introduction

Limited information exists on the effects of participation in ropes course activities on attitudes towards physical activity among students with behavior disorders. Ten students were recruited from the Leadership School in La Crosse, WI to participate in a 6 week ropes course unit, and given surveys before and after the unit. Results of the pre-posttest scores were compared and conclusions were drawn from these data.

Results

Subjects

Of the 10 students recruited to participate in the study, only 6 were included in the final results. One chose not to participate in any climbing portions of the study, three students returned to their home schools and discontinued their participation. The six students who participated in the study were all male, between the ages of 14 and 18. Of the six, five were Caucasian and one was African-American.

Data

Five of the subjects scored higher on the second administration of the assessment tool, indicating a general improvement in attitude, but the results of the t-test ($t = 1.86$) were not significant at the 0.05 confidence level. Table 1 shows the individual scores of

each subject along with the group averages. The relationship between attitude and attendance was analyzed using a Pearson product procedure. The calculated correlation was 0.342. The attendance for each subject is seen in Table 1. The small sample size makes the validity of the Pearson product questionable. The power test indicated that a subject size of between 16 and 22 is necessary for significant results (Cohen, 1977).

Table 1. Summary of scores and attendance.

Subject	Pretest	Posttest	Δ Score	Attendance
1	82	74	-8	8
2	74	87	13	10
3	64	85	21	9
4	66	71	5	10
5	91	92	1	11
6	50	75	25	7
Mean	71.17	80.67	9.5	9.17
SD	14.46	8.45	12.52	1.47
Range	50-91	71-92	-8-25	7-11

The average score for the fitness questions increased from 24.8 points to 26.5 points. For barriers they increased from 24.1 to 26.8, and motivation increased from 22.3 to 27.3. The results of the individual sections of the test are summarized in Table 2.

Table 2. Summary of fitness, barrier, and motivation subscales.

Subject	Pre fit	Post fit	Pre bar	Post bar	Pre mot	Post mot
1	26	24	25	24	31	26
2	26	28	33	28	16	31
3	30	30	19	24	15	31
4	21	22	26	29	19	20
5	26	30	32	31	33	31
6	20	25	10	25	20	25
Average	24.8	26.5	24.1	26.8	22.3	27.3
SD	3.38	3.33	7.86	2.93	7.06	4.50
Range	20-30	22-30	10-35	24-31	15-35	20-31

Discussion

These results concur with previous studies that also show increasing trends but no statistically significant positive results as a result of participation in a ropes course program (Priest 1996a). One possible explanation for the lack of a statistically significant result in this study is the low number of subjects. Calculations using the standard deviation of the posttest and the difference between the means of the pre- and posttest show the d value (where $d = m1 - m2/\sigma$) to be 1.12 (Cohen, 1977). Consultation of a sample size table for t tests shows that a sample of between 16 and 22 would be necessary to find significance at a power of 0.95 (Cohen, 1977). In addition some of the students scored high on the pretest, limiting the potential for improvement. Otherwise, it would seem that students were beginning to respond to the unit. It is possible that students were just beginning to trust each other and the facilitators as the unit ended, and enjoyed the unit. While the purpose of the study was not to produce a permanent change in attitude, it would be an interesting follow up study to observe if periodic adventure units in a year long program would produce lasting attitude changes.

There are a number of possible explanations for the general positive trend seen in the data. It is possible that the students were beginning to experience a preliminary improvement in their self-efficacy. During this stage their self-efficacy would be improving by increments. Each success would build on the last one, and slowly, their self-efficacy would improve (Bandura, 1982). As their self-efficacy improved, they would slowly lower their defenses, become more willing to participate in activities, and

experience more success (Gass, 1993). Students with behavior disorders are used to acting out and experiencing failure (Clarizo and Klein, 1995). The unfamiliar environment of the adventure education program allowed them to focus on their abilities instead of preconceived notions about themselves (Gass, 1993). The challenge by choice format of the program allowed students to participate at their own comfort levels. It was essential that the students found the program to be challenging for a change in self-efficacy to occur, but, at the same time, elements could not be overwhelming to the students (Seyle, 1978). Students made decisions on whether or not to participate, and to what degree to participate based on how they felt about themselves (Bandura, 1977). As they experienced success, their notions of what they could do were slowly expanded, and a more positive attitude towards participating in the program was possibly created (Bandura, 1977). Perhaps if this unit was combined with other similar units and students' attitudes were recorded for multiple units, lasting change would be shown. Evidence has shown that longer programs are necessary for change in attitude effects to be permanent (Durgin & McEwen, 1991).

Attendance would have been expected to be correlated with change in test score, but the results did not support this hypothesis. There was a low positive correlation between attendance and improvement in attitude. Logically a positive correlation would be expected, but was not observed. One plausible explanation is that there were no big differences in attendance, and no extremely truant students. Another possibility is that the students truly enjoyed the activity, and missing a few sessions did not have an effect

on their attitude. One interesting fact to note is that the student with the lowest attendance showed the greatest amount of improvement in attitude. One possibility is that this student had the most potential to improve, but more likely this student probably enjoyed the activity more than the other students did. This student participated in all of the portions of the unit and was willing to meet any challenges put to him. Due to the small subject pool it is not possible to make any concrete generalizations concerning the relationship between attendance to the ropes course climbing unit and improvement in attitude towards physical activity.

One subject showed a decrease in test score showed a decrease of 8 points in test score. Decreases of 8 points are not expected with this assessment tool. It is not known why this subject decreased in test score as all subjects were expected to improve or remain the same in regards to test score. The most likely explanation for this decrease in score is some outside factor influencing the subject's attitude. The subjects were not in an entirely controlled environment over the course of the study, and they were subject to outside influences such as peer pressure and personal influences. What specific factor influenced this subject's attitude toward physical activity cannot be determined by this study.

The remaining five subjects improved their test scores to varying degrees, ranging from 1 to 25 points. Some of the smaller improvements may be explained by the original score. The maximum score on the assessment tool used was 100 points. If the subject scored in the 90's on the pretest, statistically significant improvement may not be seen.

The motivation subscale improved the most out of the three subscales. It is not clear why this subscale improved more than the other two. Since motivation is related to self-efficacy (Bandura, 1977), it is possible that the incremental increases in self-efficacy were due to an increase in motivation to exercise. In addition, the students were taught to encourage and motivate each other throughout the unit. The large volume of encouragement could be responsible in some way for their increase in motivation. Both the fitness and the barrier subscales improved as well. The improvement in the barrier and fitness subscales probably indicates a change in the students' self-perceptions. They began to see that they were capable of doing more, and their scores reflected it. They realized that they could do something that they did not previously think possible, and, as a result, saw fewer barriers to exercise, and judged themselves as being more physically fit.

Summary

A statistically significant improvement in attitudes towards physical activity was not seen in the high school students with behavior disorders in this study following participation in the 6 week ropes course adventure program. Attendance was expected to be positively correlated with an improvement in attitude following the program, but the statistics did not support this hypothesis. A positive trend was observed in the attitudes of the subjects following the program, and this change is probably due to an increase in the self-efficacy of the subjects following the program.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine whether a 11 hour, 6 week unit on ropes courses including adventure type activities, indoor wall climbing, and high and low elements could produce a positive effect on the attitudes of high school students with behavior disorders towards physical activity. Due to unforeseen scheduling problems, students were only able to attend 11 of the 12 sessions originally planned. Students were not required to participate in any portion of the unit in which they did not feel comfortable. Six of the original 10 students participated in climbing portions of the unit in addition to the adventure type activities, one participated only in the adventure type activities and was not included in the statistical analysis, and three dropped out of the Leadership program before the unit was complete. Five of the 6 students who participated in the climbing portions of the unit showed increases in test scores between the first and second administration of the survey, while the student who did not participate in the climbing portion did not show a change in his test score. Despite the general increase in test scores, however, no statistically significant change was observed.

Conclusions

The conclusion of this study was that the 6 week, 11 session adventure ropes course unit did not produce a statistically significant effect on the attitudes of high school

students with behavior disorders towards physical activity.

Recommendations

The following recommendations are made for further study in this area:

1. A larger subject pool should be recruited. Subject attrition is a troubling problem when working with this subject pool. Students are often absent, and large turnover rate is observed in this group. A larger subject pool is more resistant to subject attrition, and is probably the most appropriate way to combat this problem.
2. The adventure ropes course program was sufficient to produce a positive trend in attitude in students with behavior disorders. This created a window of opportunity that should be followed up with other programs. A series of follow up programs may be effective in creating a positive attitude change in high school students with behavior disorders.
3. A longer program could be implemented. Instead of lasting 6 weeks, the program could last the entire semester.
4. A control group could be included to determine if the changes observed were truly due to the adventure program.
5. Finally, different age groups and genders could be studied to determine if differences exist across those lines.

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Appendix A
Informed Consent

INFORMED CONSENT FOR ADVENTURE CLIMBING ROPES COURSE UNIT: PARENT OR GUARDIAN

I give my informed consent for participation in this study of what the effects of a six week ropes course adventure unit are on the attitudes of students at the leadership school. I consent to presentation and publication or other dissemination of study results so long as the information is confidential and disguised so that no identification can be made. I further understand that although a record will be kept of my child's participation in the study, all experimental data collected from this participation will be identified by number only.

1. I have been informed that participation in this experiment will involve participation in an adventure climbing ropes course unit. An adventure ropes course unit will contain cooperative games and other activities designed to build trust between the students and staff, and will contain activities where participants will be climbing, in safety harnesses, off the ground on various high elements.
2. I have been informed that the general purpose of this experiment is to study the effects of a three week ropes course and adventure program on high school students at the Leadership School towards physical activity.
3. I have been informed that there is a minimal risk involved in participation in this experiment of minor bumps, scrapes, and other minor injuries associated with ropes course activities. This judgment is based on a relatively large body of research on studies of a similar nature.
4. I have been informed that there are no "disguised" procedures in this experiment. All procedures can be taken at face value.
5. I have been informed that the investigator will answer questions regarding the procedures of this study when the experimental session is completed.
6. I have been informed that my child is free to withdraw from the experiment at any time without penalty. Participation in this activity is purely voluntary.
7. I have been informed that my child will be filling out a survey at the beginning and at the end of the project.
8. I certify that my child is in good health, and has no physical limitations that would prevent his or her participation in an adventure ropes course program.
9. I have been informed that there is no cost to my child to participate in this study.
10. I have been informed that the anticipated benefits of this study are the opportunity for my child to participate in a fun activity, and the expansion of knowledge about the effects of adventure ropes course programs on attitudes of behavioral disordered high school students.

Concerns about any aspects of this study or project may be referred to the principal researcher, Jeff Lee (608) 796-1946 and thesis advisor Dr. Patrick DiRocco (608) 785-8695. Questions regarding the protection of human subjects may be addressed to Dr. Garth Tymeson, Chair, UW-La Crosse IRB, (608) 785-8155.

Investigator or Researcher Date

Parent or Guardian Date

Appendix B
Informed Assent

INFORMED ASSENT FOR ADVENTURE CLIMBING ROPES COURSE UNIT: PARTICIPANT

I give my informed assent for participation in this study of what the effects of a six week ropes course adventure unit are on the attitudes of students at the leadership school. I consent to presentation and publication or other dissemination of study results so long as the information is confidential and disguised so that no identification can be made. I further understand that although a record will be kept of my participation in the study, all experimental data collected from this participation will be identified by number only.

1. I have been informed that participation in this experiment will involve participation in an adventure climbing ropes course unit. An adventure ropes course unit will contain cooperative games and other activities designed to build trust between the students and staff, and will contain activities where participants will be climbing, in safety harnesses, off the ground on various high elements.
2. I have been informed that the general purpose of this experiment is to study the effects of a six week ropes course and adventure program on high school students at the Leadership School towards physical activity.
3. I have been informed that there is a minimal risk involved in participation in this experiment of minor bumps, scrapes, and other minor injuries associated with ropes course activities. This judgment is based on a relatively large body of research on studies of a similar nature.
4. I have been informed that there are no "disguised" procedures in this experiment. All procedures can be taken at face value.
5. I have been informed that the investigator will answer questions regarding the procedures of this study when the experimental session is completed.
6. I have been informed that I am free to withdraw from the experiment at any time without penalty. Participation in this activity is purely voluntary.
7. I have been informed that I will be filling out a survey at the beginning, and at the end of the project.
8. I certify that I am in good health, and have no physical limitations that would prevent my participation in an adventure ropes course program.

Concerns about any aspects of this study or project may be referred to the principal researcher, Jeff Lee (608) 796-1946 and thesis advisor Dr. Patrick DiRocco (608) 785-8695. Questions regarding the protection of human subjects may be addressed to Dr. Garth Tymeson, Chair, UW-La Crosse IRB, (608) 785-8155.

Investigator or Researcher Date

Participant Date

Appendix C

The Survey

Transient Adolescent Attitudes Towards Physical Activity*

Thank you for participating in this study. All information given will be kept confidential. Please do not put your name anywhere on this sheet. Please answer all questions as completely and as truthfully as possible. Thank you for your time and attention.

Part one: Physical Activities

1. Please list any physical activities you participate in for fitness or leisure, such as sports, biking, running or swimming:

Part two: Self Perceptions

Please read each statement carefully and circle the most appropriate response using the following scale:
5=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree, 1=strongly disagree.

Statement	strongly agree	agree	neither	disagree	strongly disagree
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1. I am physically fit.	5	4	3	2	1
2. I can do more than most people my age	5	4	3	2	1
3. I feel the same whether I am active or not.	5	4	3	2	1
4. I am concerned that I will injure myself if I am too active.	5	4	3	2	1
5. I have too little time for exercise.	5	4	3	2	1
6. I prefer to be in a scheduled exercise program.	5	4	3	2	1
7. I have a lot of energy.	5	4	3	2	1
8. I feel able to face the day when I get up.	5	4	3	2	1

Statement	strongly agree	agree	neither	disagree	strongly disagree
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9. I am physically able to do what I want.	5	4	3	2	1
10. I feel that my mind and body work together.	5	4	3	2	1
11. I feel better when I am active.	5	4	3	2	1

* Modified from Devereaux, K., Williamson, E., Futrell, M., & Chamberlain, C. (1997). A self assessment tool to measure older adults' perceptions regarding physical fitness and exercise activity. *Journal of Advanced Nursing*, 25, 1220-1226.

12. I am not interested in exercise.	5	4	3	2	1
13. Exercising gives me more energy.	5	4	3	2	1
14. Exercise gives me a sense of accomplishment.	5	4	3	2	1
15. Exercise keeps my mind active.	5	4	3	2	1
16. Exercise is good for my heart.	5	4	3	2	1
17. I exercise to keep healthy.	5	4	3	2	1
18. It is hard to exercise when I ache.	5	4	3	2	1
19. It is hard to exercise when I am depressed.	5	4	3	2	1
20. Bad weather prevents me from exercising.	5	4	3	2	1

Part Three: Participation

1. Did you participate in any of the climbing portions (wall or ropes course elements) of this unit?

YES NO

2. If yes, please indicate what elements you participated in:

Appendix D

Lesson Plans

DAY ONE

The first set of activities consisted entirely of ice breaker and energizer type activities. These activities were designed to get the students comfortable with working in the unit and with each other, as well as to instill a certain amount of enthusiasm in them.

LX1: Find a person activity. Each student is given a list of activities, and told to find a person for each of the activities.

LX2: Look tag. The students are organized into two circles of eight to ten each. The instructor gives the instructions: "one, two, three, look!".

On "look!" students look up at a random individual in the circle. If they made eye contact with that person, they run to the other circle and continue.

LX3: Australian relay. Students are divided into pairs. Each pair is given a hoop, and told to line up horizontally. One partner runs forward and the other partner tells them when to stop. When the first partner stops the stationary partner attempts to throw the hoop over their head. If successful, the pair advances to the spot of partner one. If not, they start over. The game ends when all partners cross the finish line.

DAY TWO

On day two, the students participate in more energizer and some cooperative activities. These activities included the weenie walk, earth winds, the magic carpet, the nuclear fence and the worm hole.

LX1: Weenie walk. The students are spread out throughout the gym area. One person is "it" and that person tries to tag other people in the class. All students are required to walk directly heel to toe. In addition, students are permitted to link arms for up to 5 seconds to be immune to becoming "it".

LX2: Earthwinds. All the students gather in a large circle and link hands. A red hula hoop is introduced to the circle and students are encouraged to move the red circle around the circle. This red hoop is designated fire. After several minutes of getting used to moving the red hoop around, a blue hoop is introduced into the circle. The blue hoop is designated water. The students are now encouraged to put the fire out with the water. Each time fire is extinguished, the students are encouraged to restart the fire, and start again.

LX3: The magic carpet is done with two carpets, placed about five feet apart. The class is divided in two, and each group is placed on one carpet. The object is to flip the carpet over without losing anyone to the wild blue yonder. Students cannot fall off the carpet in this activity. If they do, they must start over.

LX4: Nuclear fence. A rope is tied off at approximately waist height. The group is told to form a large circle, holding hands. The object is to get the entire group over the fence without breaking the continuity of the circle.

LX5: The wormhole is performed with a bungee cord circle. The group is divided into pairs, and each pair has to pass through the worm hole in a different manner. It is up to the group to provide novel solutions for each pair.

DAY THREE

Day three was a continuation of cooperative games and an introduction to trust activities. The students engaged in the activities of yurt circle, the two person rise, the three person rise, the multi-person rise, and were introduced to spotting.

LX1: Yurt circle. The class was lined up along a rope. They were told to sit down, and grasp the rope with one or both hands. They were then told to all rise at the same time without touching the floor with their hands. After they accomplish this, they are then told to do the same from a supine position. The object was to get the students to learn to problem solve, and find a cooperative solution to the problem presented to them.

LX2: The rising activities. Students are divided into groups, first of two, then of three. The object of the activity is to rise from a sitting position without hands touching the ground. The easiest way to accomplish this is through the use of partners, either holding hands or back to back. On further stipulation was that partners all have to rise simultaneously. This is done first with groups of two, then three, and finally, as many as the students could manage.

LX3: Spotting. The concepts and mechanics of spotting are demonstrated to the students. The students are then allowed to practice these concepts on the balance beam. Three lines are formed. One line was on each side of the beam, while the third line is actually on the beam. When students reach the end of the line, they go to the back of the next line.

DAY FOUR

Day four is spent entirely on the wall.

LX1: Proper use of the ropes and harnesses and the belay contract are taught on the first day on the wall.

LX2: Students are allowed to free climb under the supervision of certified belayers.

Students are not, at any point, required to climb. All students are allowed to climb to their own abilities, or to wherever they felt comfortable. They are encouraged to support each other to achieve more.

LX3: Convey the purpose of the climbing and ropes course elements of the unit, and introduce the ideas of positive feedback and challenge by choice. All these activities were done under the direct supervision of one of the graduate students, acting as a facilitator.

DAY FIVE

Day five is spent on the wall as well.

LX: The students will be asked to attempt to climb the wall barefoot, to learn how to use the holds better with their feet. Students are not required to climb to the top of the wall barefoot, and are allowed to come down if they became uncomfortable with the activity. In addition, students were allowed to open climb on the wall as well.

DAY SIX

Day six was also spent on the wall.

LX: Students will be asked to attempt to climb blindfolded. This mode of climbing taught students better techniques using the handholds, and was also a trust building activity.

DAYS SEVEN THROUGH NINE

On days seven through nine, students were allowed to climb on the wall, or the dynamic duo on the ropes course.

LX1: Open climb on the wall.

LX2: The dynamic duo. Students work in partners to reach the top of the oversize ladder.

DAYS TEN AND ELEVEN

On the final two days of the unit, the students were allowed up on any of the high elements of the ropes course.

LX1: Open climb on the wall, dynamic duo, cargo net, and catwalk.