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Programs That Work

A Review of the Impact of Adventure Programs on At-Risk Youth

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ABSTRACT: Outdoor adventure programs are a form of experiential learning that advocates believe positively impact at-risk youth. These programs are a part of the renaissance of interest occurring over the past decade in the use of recreation programs for the instrumental purpose of alleviating negative youth behavior. After describing the characteristics of these programs and their perceived outcomes, the paper reviews empirical findings reported in the literature that have evaluated whether the instrumental goals are attained. The research falls into two categories: studies that measure the recidivism rates of juvenile delinquents, and those that assess the psychological benefits of participation on self-concept.

The results from studies evaluating recidivism rates tended to be positive, with eight out of 14 studies reporting reduced rates of recidivism in their treatment groups. Fourteen out of 16 studies investigating changes in the self-concept of participants also reported significant positive changes. The cumulative consistency of the findings adds credence to the notion that outdoor adventure programs can contribute to alleviating negative behaviors among youth.

This support, however, can only be tentative, because an analysis of the individual studies' designs indicated that the internal validity of many of them was suspect. Other factors contributing to the tentativeness of the support included the different operationalizations used for recidivism and self-concept; a tendency to develop hypotheses ex post facto instead of a priori; and the myopic focus on the notion of self-concept rather than on measuring the impact on multiple protective factors.

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Introduction

In the late 1980s and throughout the 1990s in the United States, many park and recreation agencies initiated recreation programs designed to alleviate negative behaviors among at-risk youth. Four major factors have been identified as being particularly prominent in stimulating the re-emergence of programs for this purpose: changing demographics; the emergence of negative youth behaviors outside the confines of "big cities"

and into the suburbs and smaller communities; growth in the number of latchkey children; and increased numbers of high-visibility violent incidents (Witt & Crompton, 1996). The contemporary emergence of recreation for this instrumental purpose, however, is only the most recent manifestation of a strategy whose historical roots date back to the beginning of the public recreation movement over a century ago. Indeed, in many communities, alleviating youth crime was the field's *raison d'être* in the early years (Weir, 1928).

One dimension of this strategy to alleviate negative behavior has been the development of outdoor recreation programs, sometimes called outdoor adventure programs, wilderness experience programs, or wilderness adventure therapy, designed to prevent juvenile delinquency. These rubrics embrace a wide range of experiential programs relying on challenging physical and mental activities (Cason & Gillis, 1994). These programs have received considerable attention (Wilson & Howell, 1993), perhaps because their characteristics are a good fit with the youthful energy and propensity towards risk-taking of adolescents (Cason & Gillis, 1994).

Most of the literature reviewed here pertains to outdoor adventure programs that typically include an element of perceived physical danger or risk, but there are some examples of outdoor camping programs without this associated risk element.

It has been observed that: "Today, there are hundreds of wilderness/adventure therapy programs serving a variety of populations with special needs. . .most of these programs are designed to serve at-risk youth" (Weston & Tinsley, 1999, p. 30). Many descriptions of such programs have appeared in the literature, but there have been relatively few reports of scientific evaluations of their effectiveness. The goal of this paper was to review the evaluations that have been undertaken and to draw conclusions about the effectiveness of such programs based on this body of evidence.

The paper commences with a brief history of the evolution of adventure programs and a discussion of their extant instrumental value. The authors searched comprehensively for studies that provided an empirical evaluation of the impact of adventure programs on at-risk youth and included all that were located in this review. The characteristics of these programs varied widely. Their commonalities and differences are described to provide context before reviewing the programs' reported outcomes. The outcomes constitute the core of this review and they addressed either the behavioral outcome of recidivism rates, or the psychological outcome of changes in self-concept. These two outcomes are perceived to be related, in that positive changes in self-concept are conceptualized as being likely to result in reduced recidivism. After reviewing the outcomes, the strength of the studies that generated them is evaluated by using the taxonomy of experimental designs originally developed by Campbell and Stanley (1963). The paper concludes with a summary of the results and recommendations for future research.

A Brief History

Belief in the therapeutic potential of outdoor adventure programs can be traced to the early 1900s when hospitals began using camping programs to assist psychiatric patients (Gibson, 1979). Later, in the 1930s, the first outdoor adventure programs specifically designed for disturbed youth were established by Karl Holton in Los Angeles County (Roberts, 1988). Another major landmark was the establishment of the Dallas Salesmanship Club Boys' Camp in 1948 (Weston & Tinsley, 1999). The major impetus for these types of programs came in 1962 when Outward Bound launched programs in the U.S. targeted at juvenile delinquents (Nold & Wilpers, 1974), and many other programs subsequently adopted Outward Bound's principles. Outward Bound, which is probably the most widely known and successful supplier of outdoor adventure programs, was founded in 1941 by Kurt Hahn in the United Kingdom (Kaplan, 1979).

Hahn's approach to education was both experience-centered and value-centered. He believed in the importance of learning by doing and the development of character and maturity. During his work, he found that wilderness training and rescue training were particularly conducive to value formation. He developed Outward Bound programs to create environments where prosocial values would develop naturally and spontaneously as a result of the experience: "Students were not to adopt a code of ethics 'on faith' or through compulsion; rather, they would independently discover the validity and utility of such a code through experience" (Gass, 1993, p. 12).

The British observed that when forced to abandon ship, older, more experienced, merchant seamen were able to outlive younger men who were in better physical shape. As a result, Hahn was hired to train young merchant seamen in survival skills (Kimball, 1983). British seamen used the term "outward bound" when their ships left the safety of the harbor for the dangerous open sea. In 1942, the first Outward Bound school was opened in Aberdovey, Wales, to physically and mentally challenge young men in an effort to establish confidence and build a more positive self-image. In 1961, Colorado became the home for the first full-scale Outward Bound school in the United States, and from the beginning it included programs for delinquent youth (Rillo, 1983).

Although the Outward Bound programs now target a variety of groups, ranging from victims of sexual assault to corporate businessmen, at-risk youth still remain a high priority. The ultimate purpose of each Outward Bound program for all of these groups remains the same: to push participants to master seemingly impossible tasks so they experience a feeling of personal accomplishment and success. Although several other organizations now offer outdoor adventure programs for at-risk youth, (e.g., Homeward Bound, Teen Adventure and the Spectrum Wilderness Program), Outward Bound with its schools in over 31 countries remains the largest provider of instructional wilderness programs.

The Potential Instrumental Value of Outdoor Adventure Programs

Outdoor adventure programs are experiential learning programs that are based on a belief that learning or behavior change can be effected by including direct experience in the growth process (Gass, 1993). Weston and Tinsley (1999) offer the following definition of outdoor adventure programs, "experiential group intervention that occurs in a natural setting and employs therapeutic techniques and processes within the context of activities and experiences that contain elements of real or perceived risk (i.e., physical, social and emotional) to facilitate improvements in the psychological and behavioral functioning of the participant" (p. 31). Proponents of experiential learning believe that placing the learner as close as possible to the experience facilitates learning, and that change occurs "when people are placed outside of positions of comfort...and into states of dissonance" (Gass, 1993, p. 4). Kraft & Sakofs (1985) identified five characteristics that define experiential learning:

1. The learner is a participant rather than a spectator.
2. The learning activities require personal motivation in the form of energy, involvement and responsibility.
3. The learning activities are real and meaningful in terms of their consequences for the learner.
4. Reflection is a critical element of the learning process.
5. Learning must have present as well as future relevance for the learner and the society of which he/she is a member.

The instrumental potential of outdoor adventure programs derives from several characteristics: (i) a wilderness environment and the skills necessary to master it are often completely unfamiliar to inner-city youth; (ii) removal of bars and walls provides a feeling of freedom that cannot be replicated in a clinical setting; (iii) the risk associated with the activities makes them inherently exciting; (iv) the challenge inherent in the activities demands initiative; (v) individual success depends on group success, and group success depends on teamwork; (vi) results and feedback are immediate, and success and failure are readily apparent; (vii) multiple solutions exist for any particular problem; and (viii) group problems can be worked out independently while still reinforcing the need to adhere to rules and regulations for survival reasons (Durgin & McEwen, 1991; Kelly & Baer, 1971; Kimball, 1980; Mixdorf & Paugh, 1989; Nold & Wilpers, 1974). Roberts (1988) believed the essence of an outdoor adventure program lies in its focus on how to meet basic physical needs, such as food and shelter, while simultaneously developing self-confidence and "socially acceptable coping mechanisms" (p. 2). According to Collingwood (1972), outdoor adventure programs are "built to function:

- as a systematic program that demands increasing increments of performance and produces by design, increased levels of successful accomplishments;

- as a functional program in which the experiences, demands, and reinforcements placed upon the clients are relevant to their day-to-day survival;
- as an inexpensive program that uses existing community resources and functional, non-professionals as staff; and
- as an integrated program within a client's total rehabilitation program (p. 22)."

Wilderness programs have received professional recognition as important noninstitutional programs for at-risk youth, because they are intended "to provide an experiential basis for remodeling the behavior of delinquent youth" (Kimball, 1983, p. 6). As a result, the focus of the programs is on preventing the delinquent behavior by modifying those factors thought to cause it. Typically, research has focused on the ability of these wilderness programs to enhance self-concept and to develop interpersonal and problem-solving skills. However, several studies also have focused on changes in the recidivism rates of adjudicated youth and measured variables that might have produced the changes.

Program Characteristics of the Studies Reviewed

Although the goals among the "hundreds of wilderness/adventure therapy programs" (Weston & Tinsley, 1999, p. 30) currently being operated by private non-profit organizations, for-profit businesses, and public agencies may be similar, considerable diversity exists among them. Kimball and Bacon observe "there is such a wide variety of organizations and programs employing some form of wilderness therapy, that it is difficult to define the process precisely" (p. 14, 1993). Some activities and processes, however, are common to all. First, outdoor adventure programs are almost always conducted in the wilderness, although the need for wilderness is not as great as the need for an unfamiliar environment (Gass, 1993). Outdoor adventure programs also tend to employ traditional therapy techniques, such as self-reflection, journal writing, and group processing to help students understand the relevance of their experiences. Without the transference of learning from the wilderness environment to the home environment, the potential exists for the adolescents involved to experience nothing more than a temporary high, with few lasting benefits (Kimball & Bacon, 1993). Consequently, most programs make some attempt to help participants process their experiences.

Pommier (1994) identified several other characteristics commonly found in outdoor adventure programs for at-risk youth: group processing, consequence recognition, and behavior reinforcement. All of the programs reviewed incorporated group processing into their programs. This required group members to reflect, analyze and discuss their feelings after sharing an adventure experience. According to Bacon (1988), such group processing enhances the impact of the experience by incorporating therapeutic processes. Gass (1993) suggested that because personality is formed through contact and involvement with others, it can be reshaped through similar intimate contact.

The second characteristic identified by Pommier, consequence recognition, involved the ability of delinquent youth to recognize the consequences of their actions. For example, the importance of working as a team becomes apparent when two people try to navigate a canoe against a strong current. The consequences of not working together effectively can include running into tree branches or capsizing the canoe.

Behavior reinforcement, the third characteristic identified by Pommier, is a natural progression from consequence recognition. At-risk youth recognize the consequences of their actions through the constant reinforcement that occurs in an outdoor adventure setting. If little effort is made to properly repair a hole in a tent, then those individuals will sleep in a wet tent the next time it rains. Positive reinforcement also is provided by instructors, peers and the youth themselves when they are able to accomplish goals, such as rappelling a mountain or navigating a whitewater river, that require the entire group to work together as a team. Negative reinforcement, on the other hand, occurs when the accomplishment of a desired goal is hindered by a particular behavior. Together, positive and negative reinforcement guide youth to make proper choices.

Many of the outdoor adventure programs reviewed here followed a similar format. Most of them required interested participants to visit the site and agree to conditions of the program prior to their being accepted into it. Thus, participants were not randomly selected from a population, which rules out generalization of the results to the wider population. Upon arrival at camp, most programs began with an introductory or training phase in which participants learned program expectations and requirements while preparing physically for the upcoming challenges. This initial phase typically was followed by progressively more difficult tasks that emphasized problem solving, teamwork and group decision-making. The final phase often consisted of a solo survival trip into the wilderness followed by a culminating group experience (Barcus & Bergeson, 1972).

An additional pervasive similarity among the reviewed programs was that all participants were volunteers. Although they were referred by different agencies, there was not a single reported case of participants being forced to participate. One probable explanation for this is the perceived risk factors commonly associated with outdoor adventure programs. The fact that all participants were volunteers is important when comparing the effects of participation in a wilderness program with incarceration, because incarcerated juveniles rarely volunteer to stay at a particular juvenile retention facility. This self-selection may result in a favorable bias to the adventure programs, since those volunteering for them may be more prone to behavior modification that those who do not volunteer. However, assigning participants randomly to either the control or experimental group controls for treatment bias and some studies did this. This issue is discussed in more detail later in the paper. Characteristics of the control and experimental groups reviewed in this paper are summarized in Table 1.

Although many of the outdoor adventure programs shared common characteristics, there were distinctive differences among them. Areas in

Experimental and Control Group Assignments

	Experimental			Control	
Author(s)	**Size**	**Age**	**Assigned**	**Size**	**Age**
Adams* M&F	19	15-19	No control	N/A	N/A
Boudette	44 92% M (6 Dropouts)	14-18	Random 50 were assigned to each group	25 (25 dropouts)	14-18
Burdsal & Force	132	10-13	Matched	N/A	N/A
Castellano & Soderstrom	30	13-17	Randomly assigned	30	13-17
Clifford & Clifford	50 M	16-21	No control (16 dropouts)	N/A	N/A
Collingwood	19 M & F	15-18	No control	N/A	N/A
Cytrnbaum & Ken	49 M & F	14-29	Not randomly assigned	54	14-29
Durgin & McEwen	4 M & F	14-18	Not randomly Assigned	N/A	N/A
Gaston, Plouffe & Chinsky*	135 M & F	13-20	Non-matched	unknown	13-20
Gibson	89 M & F	13-18	No control	N/A	N/A
Greenwood & Turner	90 M	Avg. 16.3	Comparison group (not a control)	257 M	17.4
Hileman*	48	Unknown	Randomly assigned	48	Unknown
Kelly & Baer	60	15-17	Randomly assigned then matched	60	15-17
Kimball*	56	Unknown	No control	N/A	N/A
Minor & Elrod	22 M & F	12-17	Randomly assigned	23	12-17
Partington	37 M & F	14-15	Randomly assigned	36 M&F	14-15
Porter	124 M & F	8-15	No control	N/A	N/A
Riley & Campbell	16 M	16-22	"Attempted" Matching	16 M	16-22
Sakofs	115-X M & F	14-17	Randomly assigned	X	14-17
Stimpson & Pederson	8 M & F	Unknown	No Control	N/A	N/A
Svobodny*	Unknown	13-17	Unknown	Unknown	Unknown
Unkovic, Brown & Mierswa	587 M	Unknown	NoControl	N/A	N/A
West	30 F	Unknown	No Control	N/A	N/A
Wichmann	36 M & F	13-18	Not randomly assigned	36 M & F	13-18
Willman & Chun	178 M	Unknown	Randomly Assigned	75 M	Unknown
Wright	35	16.5 avg.	Randomly assigned	12	16.5 avg

* indicates that the results from these studies were obtained from a secondary source.

which programs differed included: selection of participants; program cost; duration of the program; program location; counselor-to-camper ratios; size and number of camp work groups; elements of risk involved; involvement of family members or parole officers; opportunity for parole upon successful completion of the program; and availability of follow-up services. Although these factors seem likely to influence program outcomes, few studies have made such linkages.

A large majority of the programs restricted participation to juvenile delinquent males; a very small number were for juvenile delinquent females; and a few served both of these groups in a coed environment. Some programs required referral from a judge or a probation officer, while others accepted voluntary participants. Most programs were not open to juveniles who had been convicted of a major crime, such as murder. A few programs, such as the Hope Center Wilderness Camp, did cater to these individuals. Depending on whether the program was public, non-profit or commercial, there may have been a charge to families for individuals to participate. However, typically, program costs were met by payments from public agencies responsible for at- risk youth or by donations. Costs varied widely from $50 to $400 per day (Davis-Berman & Berman, 1994), but it has been consistently noted that the costs of most of these programs were lower than those associated with incarceration in a juvenile correction facility.

Outdoor adventure programs differed widely not only in their participant selection procedures, but also in the activities offered by each program. Among the studies included in this review, in most cases the selection of activities offered was determined by the natural elements available to the program at their location. Most programs operated near rivers or mountains, where opportunities existed for controlled risk activities like rappelling and white water rafting. Other programs operated without these high-adventure activities and focused more on wilderness survival training. Many programs were located deep in the wilderness away from contact with civilization, because this remoteness reduced the number of available distractions, keeping participants focused on the activities at hand. They also provided a sense of freedom through the absence of visible bars and walls and minimized the number of runaways. Some camps, however, were located near highways, requiring them to have additional resources in place for preventing runaways and for quickly recovering anyone who did attempt to leave without permission.

Once at camp (or in the program), participants typically were separated into small groups supervised by adult counselors that ranged in size from five to 18 members. The small group size ensured a high level of individual participation within the group. Most programs assigned one or two counselors to each group, but some also invited the juvenile delinquents' parole officers to assist with the groups. The counselor-to-camper ratios ranged from a low of one-to-one (Greenwood & Turner, 1987) to a high of one-to-eight (Riley & Campbell, 1985). These low ratios appear to ensure close counselor interaction and to facilitate mentorship, safety and

effective control. However, the results of a national survey of counselors at these types of programs concluded: "The results of this study were somewhat alarming. Many of the programs surveyed were using minimally qualified staff to work with one of the most challenging and vulnerable populations on very difficult issues, with little theoretical guidance" (Davis-Berman & Berman, 1994, p. 52). At some programs, participants were encouraged to interact with family members during the course of their program; at others, family members were invited to visit the camp on a particular day or weekend. A third approach was to send campers home for regularly scheduled visits with their families.

In addition to differences in the number of people assigned to each work group, programs differed in the total number of work groups at each camp that were accommodated during a given time period. Programs also were offered for different lengths of time. The shortest program length among the studies reviewed was three days (Sachs & Miller, 1992). The longest was at the Hope Center Wilderness Camp, where the length of stay varied from eight to 18 months, with an average stay of 14 months (Clagett, 1989).

After completing the program, campers were either paroled and sent home, or returned to a juvenile correction facility. This decision depended on the rules of the particular program that individuals had attended and was rarely a consequence of the behavior of the participant during the experience. In those programs that paroled participants upon successful completion of it, participants were aware that positive participation in the program would enable them to return home. Finally, some programs considered their work finished when their participants left the site and were either paroled or re-incarcerated, while others continued to work with participants through follow-up services such as reunions or follow-up therapy sessions.

Perceived Outcomes of Outdoor Adventure Programs

Research measuring the outcomes of outdoor adventure programs for juvenile delinquents could be classified into two categories: studies that measured the recidivism rates of juvenile delinquents, and those that assessed the psychological benefits of participation. Studies measuring recidivism rates tested outcome-oriented hypotheses, while those assessing psychological benefits measured changes in social-psychological processes. All were concerned with determining if participation in an outdoor adventure program contributed towards rehabilitating delinquent youth. A synopsis of the research studies reviewed is given in Table 2.

The conceptual interrelationship between psychological and recidivism outcomes has been discussed by Wilson and Lipsey (2000). They note the proponents of adventure programs "assume that an external locus of control, low self-esteem, and poor interpersonal skills are key risk factors for delinquency. Amelioration of these factors, in turn, is presumed to lead to reductions in delinquency" (p. 2). There is longitudinal research that documents a correlation between changes in these psychological constructs

and delinquent behavior, but these researchers have cautioned that correlation does not establish causality (Hawkins & Catalano, 1992; Huizinga, Loeber & Thornberry, 1992; Lipsey & Derzon, 1998). Others have extended this

Table 2
Summary of Outdoor Adventure Program Research Contexts and Populations

Author(s)	Year	Program	Length	Population Studied
Kelly & Baer	1966	Outward Bound	26 days	Juvenile Delinquents
Clifford & Clifford	1967	Outward Bound	One month	Adolescent Boys (Not delinquents
Adams*	1970	Wyoming Survival Training	30 days	Emotionally Disturbed
Stimpson & Pederson	1970	Unknown	21 days	Under-achieving High School Students
Collingwood	1972	Arkansas Survival Training	3 weeks	Problem Youth
Willman & Chun	1973	Homeward Bound	6 weeks	Juvenile Offenders
Cytmbaum & Ken	1975	Connecticut Wilderness School	20 days	Troubled Youth
Gibson	1975	Connecticut Wilderness School	21 days	Problem Youth
Porter	1975	Outward Bound	8 days	Emotionally Disturbed Problem Youth
Unkovic, Brown & Mierswa	1975	Michigan Youth Services	7 days	Non-Delinquents Juvenile Delinquents and Pre-Delinquents
Partington	1977	Project WILD	25 days split 4 sessions	High-delinquency Risk Youth
Gaston, Plouffe & Chinsky*	1978	Wilderness School	19 days	Pre-Delinquents and Delinquent Teens
Hileman*	1979	Underway @ SIU	30 days	Unknown
Kimball*	1979	Wilderness Experience	Unknown	Unknown
Svobodny*	1979	Outward Bound	Unknown	Unknown
Wright*	1982	Outward Bound	26 days	Juvenile Offenders
Burdsal & Force	1983	Passport for Adventure	45 days	Behavior Problem Youth
West	1983	Camp Fire Camp	14 days	Juvenile Delinquents
Greenwood & Turner	1987	VisionQuest	At least one year	Chronic Delinquents
Boudette	1989	Outward Bound-Pacific Crest	24 days	Juvenile Offenders
Callahan	1989	The Sierra II Process	30 days	Adjudicated Youth
Sakofs	1991	Wilderness Alternative for Youth	24 days	Adjudicated Youth
Wichmann	1991	Spectrum Wilderness Program	30 days	Youth-at-risk
Castellano & Soderstrom	1992	Spectrum Wilderness	30 days	Juvenile Delinquents
Sachs & Miller	1992	No formal title	3 days	Behaviorally Disordered Adolescents
Durgin & McEwen	1993	Touch of Nature Environmental Center at Southern Illinois University	30 days	Troubled Youth
Minor & Elrod	1994	Local Adventure Center	3 days	Probationers
Pommier & Witt	1995	Outward Bound	42 days	Juvenile Delinquents
Riley & Campbell	Unknown	No formal title-3 sessions	2 weekends and one week	Juvenile Delinquents

* indicates that the results from these studies were obtained from a secondary source.

rationale for psychological outcomes to make the more tenuous case that a treatment that "has no measurable impact on illegal activities might still be seen as beneficial if it alters attitudes and perceptions such that subjects experience their lives in more fulfilling and realistic ways" (Minor & Elrod, 1994, p. 491). They believe that such benefits may be an integral part of a longer term maturation process that may culminate in desistance from crime with age.

The definition used by outcome-oriented researchers to define recidivism varied. According to Webster's dictionary (1999), recidivism is a "repeated or habitual relapse into crime" or "the chronic tendency toward repetition of criminal or antisocial behavioral patterns." Researchers have had to decide how to operationalize the terms "relapse" and "repetition." Some defined them as being convicted of another offense (which may not have resulted in incarceration), while the definition used by others was a return to incarceration (which infers another offense was committed). In both cases, the intent was to identify whether or not a juvenile had been rehabilitated.

Much of the research that has measured the psychological benefits of outdoor adventure programs has focused on the effect of participation on the self-concept or self-esteem of youth. High self-esteem and self-concept are included among the protective factors identified by Crompton and Witt (1997). They suggest that these "protective factors" enable resilient youth to avoid deviant behaviors that can result from exposure to a multiple-risk environment. Strengthening these protective factors is deemed likely to help at-risk youth avoid negative behaviors and their consequences.

Results of Recidivism Studies

When citing empirical support for the effectiveness of outdoor adventure programs in rehabilitating juvenile delinquents, the seminal reference is Kelly and Baer's 1968 study. In an effort to "determine whether a program of severe physical challenge can be more effective that a traditional training school experience in reducing further delinquency by adolescent boys" (p. 437), Kelly and Baer compared the recidivism rates of 60 adjudicated delinquents who had attended an Outward Bound school with a control group of 60 youth from similar circumstances who were handled "in a routine manner by the Massachusetts Division of Youth Services" (p. 437). One year later, the recidivism rates of the two groups were compared. The results showed that the recidivism rate of boys who had attended the Outward Bound school was 20%, while the recidivism rate of those in the comparison group was 42%. Thus, Kelly and Baer concluded that outdoor adventure programs could be more effective than traditional programs in rehabilitating delinquent adolescents.

Kelly and Baer also reported that programs requiring high levels of physical activity that did not incorporate adventure elements, were no more successful than traditional programs in reducing recidivism. They reviewed several variables that it was anticipated could explain recidivism and concluded that Outward Bound programs had a greater impact on those

delinquents whose first court appearances occurred after the onset of adolescence; those whose misbehavior was in the community, rather than directed against the home; those who returned to a home in which both parents were present; those with only one prior institutional commitment; and those whose delinquency was a direct response to home conflict. In summary, Kelly and Baer concluded that juveniles whose misbehavior resulted from an "adolescent crisis" rather than a "character flaw" were most likely to benefit from an outdoor adventure program.

A summary of the results of studies that have investigated the impact of outdoor adventure programs on juvenile recidivism rates is given in Table 3. Although Kelly and Baer were the first to use recidivism rates in measuring the rehabilitative potential of outdoor adventure programs, many researchers subsequently have followed their lead. Riley and Campbell (1985) suggested that one of the reasons for focusing research on recidivism rates is that they are easily identifiable and are readily obtainable behavioral measures.

Willman and Chun (1973) reported a 20.8% recidivism rate among the experimental group in a Homeward Bound course, compared to their control group's rate of 42.7% (Wright, 1983). Similarly, Cytrynbaum and Ken (1975) found that six months following the program, the recidivism rate of 49 youth involved in an outdoor adventure program in Connecticut was 11.1%, while the 54 youths in the comparison group had a recidivism rate of 30.2%. Four years of research by Nold and Wilpers (1974) on participants in a program at the Florida Ocean Sciences Institute revealed a recidivism rate of 11.5% for 121 graduates of the program, compared to 14% for 158 other boys who "survived a rough 30-day orientation program."

A study by Baer, Jacobs and Carr (1975) investigated if a relationship existed between graduating from an Outward Bound school and nonrecidivism. Findings revealed "a significant association between nonrecidivism within a five-year period and the awarding of a certificate" (p. 553) upon graduation of the course. Further, almost every delinquent who was unable to earn a certificate for positively completing the Outward Bound course had been recommitted to an institution within the five-year period of the study. Course leaders were asked to evaluate participants according to Maturity, Leadership, Effort, Physical Ability, Extraversion, and Confidence. Results of these evaluations were then compared to recidivism rates and a significant relationship with recidivism rates existed with Maturity, Leadership and Effort. The authors concluded from their research that Outward Bound performance could predict a participant's potential for recidivism.

In the same year, Unkovic, Brown and Mierswa (1975) reported a recidivist arrest rate of 12.9% among 587 campers in the program they studied and compared this to a national recidivist rate of 70%. In addition, the authors' research revealed that 87% of those who had been arrested only once prior to the program and 96% of those who had never been arrested

prior to the program had not been arrested since they had completed it. Research by Hileman (1979) indicated a 22.9% recidivism rate for outdoor adventure program participants and a 39.6% recidivism rate for the compari-

Table 3
Differences in Recidivism Rates of Participants and Non-Participants

Author(s)	Post Intervention Time Lapse	Recidivism Rates Experimental	Control	Recidivism Criteria
Adams*	1 year	28%	40%	Unknown
Boudette	3 months	24%	18%	Allegations, Runaways, Problem Violations, Robbery Charges, Assault Charges
Castellano & Soderstrom (completed course)	1.5-3.4 years average=2.15	75%	62.60%	Arrests
Castellano & Soderstrom (dropouts)	1.5-3.4 years average=2.15	100% (crimes were less serious)	66.60%	Arrests
Cytrnbaum & Ken	6 months	11.10%	30.20%	Arrests
Greenwood & Turner	One year	63%	81%	Arrests
Hileman*	7 months	22.90%	39.60%	# Petitions Filed
Kelly & Baer	9 months	20 %	34%	Institutionalization
Kelly & Baer	12 months	20%	42%	Institutionalization
Baer, Jacobs & Carr	5 years	38%	58%	Institutionalization
Kimball*	9 months	22%	N/A	Police Contact
Minor & Elrod	18 months	No significant differences	Unknown	Police Contact
Partington	11 months	No significant differences	Unknown	School behavior
Porter	6 weeks	Unknown	Unknown	Unknown
Riley & Campbell	6 months	~45%	~65%	Reoffending and
Riley & Campbell	one year	~30%	~60%	going to court
Sakofs	3 months	No significant differences	Unknown	Unknown
Sakofs	one year	No significant differences	Unknown	Unknown
Unkovic, Brown & Mierswa	Varied from 1-3 years	12.90%	National Average= 70%	Unknown
Winterdyk	4 months	No significant differences in recidivism but fewer, less severe offenses	Unknown	Unknown
Winterdyk	6 months	No significant differences in recidivism but fewer, less severe offenses	Unknown	Unknown

* indicates that the results from these studies were obtained from a secondary source.

son group, while Kimball (1983) reported that the recidivism rates of participants who had completed an outdoor adventure program were 10-15%, compared with similar offenders who were recorded in official data as having a 40-60% rate. Although they were not able to compare their findings to a control group, research conducted by the Texas Department of Human Resources at the Hope Center Wilderness Camp revealed that 85% of program graduates did not recidivate during the first six months following the program (Clagett, 1989).

Not all research, however, has reported significant positive differences in the recidivism rates of those who completed an outdoor adventure program and those in a control group who did not. For instance, in a five-year follow-up study of participants from the program he had evaluated in 1968 with Baer, Kelly found that the recidivism rate of program participants was no longer significantly different from the rate found among the control group (Wright, 1983). Similarly, Sakofs (1991) was unable to detect any statistically significant increases or decreases in the recidivism rates between experimental and control groups. Minor and Elrod (1990) also reported no significant differences between their treatment and control groups, but their outdoor adventure experience was only of three days' duration. However, since recidivism may, at least in part, be a function of inadequacy of postprogram support (Hattie, et al. 1997), this intervention was reinforced with four job preparation workshops and seven family skill-building workshops.

Only one study was found that reported an increase in the recidivism rates of juvenile delinquents. Castellano and Soderstrom (1992) reported that after completing an outdoor adventure program, the recidivism rates of participants was 75%, while the control group's recidivism rate was 62.6%. Although they were not able to find significant evidence that the program was positively associated with recidivism, they did report a 50% increase in the arrest rates of the participants who had successfully completed the program.

Results of Self-Concept Studies

A summary of reported findings assessing whether changes in self-concept of participants occurred as a result of their participation in outdoor adventure programs is given in Table 4. According to Hunter (1984b), the rationale underlying "the relevance of self-concept to correctional rehabilitation is that: 1) it is negatively influenced during traditional institutionalization; 2) it is directly related to successful rehabilitation; as measured by recidivism rates; and 3) it affects a person's ability to function in society "(p. 5). If these premises are valid, then self-concept measures are likely to offer useful information about the potential of an outdoor adventure program to rehabilitate juvenile delinquents.

In addition to their work on recidivism, Kelly and Baer also undertook pioneer work in the area of changes in self-concept. They reported significant positive changes in self-concept as well as reduced recidivism rates in their initial work in 1968. These findings appeared to reinforce the

premise that improvements in self-concept lead to reductions in recidivism. Adams (1970) also reported significant increases in participants' scores on scales measuring the personal self and physical self following survival

Table 4
Reported Changes in Self-Concept

Author(s)	Pre/Post Tests Given	Post Intervention Time Lapse	Changes in Self-Concept
Adams*	Tenn. Self-Concept Scale	1 year	Significant, positive
Boudette	Jessness Inventory Global Self-Concept Scale Others developed by the researcher regarding motivational readiness	3 months	Both groups were significant and positive, but there was no difference between groups
Clifford & Clifford	Self-Rating Scale Self-Description Scale Ideal Description Scale Counselor Rating Scale Word Meaning Test	1 month	Significant, Positive
Collingwood	Not Identified	3 months	Significant, Positive
Cytrnbaum & Ken	Semantic Differential Borgatta & Fansshed Behavior Rating Scale	6 months	Significant, Positive
Gaston, Plouffe & Chinsky*	Behavior Problem Checklist	6 months	Significant, Positive
Gibson	Coopersmith Behavior Rating Form, Rosenberg Self-Esteen Scale, Bills Index of Adjustment and Values	End of course	Significant, Positive
Kelly & Baer	Jessness Inventory (administered only to experimental group) Semantic Differential	9 months 12 months	Significant, Positive 5 years
Kimball*	Tenn. Self-concept Scale	9 months	Significant, Positive
Minor & Elrod (1994)	Self-concept scale developed by researchers	3 months	No significant differences
Partington	Ziller's Self-Other Orientation Tasks (adapted); Social System Control, Behavior Rating Schedule	11 months	No significant differences
Pommier & Witt	Harter's Self-Perception Profile for Adolescents	4 weeks 4 months	Significant Positive at 4 weeks Differences declined at 4 months
Porter	Piers-Harris Self-Eval. Measure, Coopersmith Behavior Rating Form	6 weeks	Significant, Positive
Stimpson & Peterson*	Self & Others Rating Scale	Unknown	Significant, Positive

Continued

Table 4 Continued
Reported Changes in Self-Concept

Author(s)	Pre/Post Tests Given	Post Intervention Time Lapse	Changes in Self-Concept
Svobodny*	Self-Concept measures developed by researcher	None-Test was given to juveniles immediately after they completed the course	Significant, Positive
Wright	Tenn. Self-concept Scale (modified) Int-Ext Locus of Control Means-Ends Problem Solving Procedure Generalized Expectancy for Success Scale	None-Test was given to juveniles immediately after they completed the course	Significant, Positive

* indicates that the results from these studies were obtained from a secondary source.

training (Gibson, 1979). Gibson (1979), in his review of literature, indicated that both Stimpson and Pederson, and McCreary-Juhasz and Jensen, found significant positive increases in the self-concept of participants who had successfully completed an outdoor adventure program. Gibson also noted that Porter found significant differences between the self-concepts of experimental and control groups, both at the end of an adventure program and six weeks later when follow-up measures were taken.

When Wright (1983) tested subjects who had participated in an adapted Outward Bound program using the Tennessee Self-Concept Scale, he found significant increases in self-concept between them and the control group, and he also reported significant increases in participants' self-esteem. Kimball (1983) used the same test without a control group, on participants in a wilderness experience program and documented significant changes in self-esteem and personal self (Wright, 1983). Wright (1983) similarly concluded that adapted Outward Bound programs could produce short-term changes in self-esteem. In addition to the Tennessee Self-Concept Scale, the Global Self-Esteem Scale has been administered to identify differences in the areas of self-esteem and self-awareness. For example, Boudette (1989) used the Global Self-Esteem Scale and the Jessness Inventory to evaluate the impact of an Outward Bound program. Results of self- reported data revealed significant differences in self-esteem between the experimental and control groups.

Collingwood (1972), in a study of 19 participants in an Arkansas program, and Cytrynbaum and Ken (1975), assessing 49 participants in a program in Connecticut, were also able to identify significant improvements in the self-concept scores of participants who had completed three-week survival courses. In a study of a week-long program run by Michigan Youth Services, significant improvements in self-opinion, attitudes and

behaviors were found (Unkovic, Brown & Mierswa, 1975). Although their research methodology was not identified, Bailey and Ray (1979) reported results they had obtained through "objective psychometric testing," which revealed changes in the personal identity of participants in a wilderness camping program in East Texas sponsored by the Texas Youth Council.

Pommier and Witt (1995) gave pre-tests to both treatment (n=61) and control groups (n=46) and conducted post-tests four weeks and four months after the program started. Their Outward Bound treatment group's program consisted of a two-day orientation period, a 16-day expedition, a 10-day reunion period with family, and a 10-day at home reinforcement period that included a community service project. Tests conducted four weeks after the program commenced showed significantly higher gains in self-concept among the treatment group. However, tests conducted four months from the beginning of the program showed a significant decline in treatment group scores between the first and second post-tests, and the differences between treatment and control groups had declined. Thus, the authors concluded there was a tendency for initial improvements to dissipate over time, even when the expedition program is reinforced by a family training program designed to support and sustain the initial gains.

Similar results to those of Pommier and Witt were reported by Minor and Elrod (1994). Recognizing that the benefits of outdoor adventure programs have frequently been found to be short-lived, they supplemented the program with job training and family skills workshops involving parents. No significant difference between the treatment and control groups emerged, but the adventure program element of the intervention was only three days.

Research Design Options

The goal of an experiment is to determine if an "effect" is caused by a treatment. This effect is determined by measuring the change or lack of change that occurs on a dependent variable. In the studies reviewed, researchers sought to identify if an outdoor adventure program (the independent variable) would influence any psychological or sociological variables, such as self-concept (dependent variable) or would lead to a change in delinquency behavior or recidivism (dependent variables).

In their classic work on experimental and quasi-experimental research designs, Campbell and Stanley (1963) suggest the experiment is "the only means for settling disputes regarding educational practice, the only way of verifying educational improvements, and the only way of establishing a cumulative tradition in which improvements can be introduced without the danger of a faddish discard of old wisdom in favor of inferior novelties" (p.2). Although their context was education, their observations can be extended to all experiments. Properly performed research tests the validity of a theory. Improperly performed, however, it not only fails to validate a theory, but also has the potential to grossly mislead.

Campbell and Stanley examined the validity of various experimental designs against potential threats to valid inference. Table 5 lists the eight

Table 5
Sources of Threats to Internal Validity

Source of Invalidity	Description
History	The specific events occurring between the first and second measurement in addition to the experimental variable.
Maturation	Processes within the respondents operating as a function of the passage of time, ex. Growing older, getting hungrier/more tired.
Testing	The effects of taking a test upon the scores of a second test.
Instrumentation	Changes in the calibration of a measuring instrument or changes in the observers or scorers used may produce changes in the obtained measurements.
Statistical Regression	Operates where groups have been selected on the basis of their extreme scores.
Selection	Biases resulting in differential selection of respondents for the comparison groups.
Mortality	Differential loss of respondents from the comparison groups.
Selection-maturation interaction	

Source: Campbell, D.T. & Stanley, J.D. (1963). Experimental and quasi-experimental designs for research. Chicago: Rand McNally.

sources that Campbell and Stanley identify as having the potential to jeopardize the internal validity of an experiment. Internal validity refers to whether or not changes in the dependent variable can legitimately be attributed to the independent variable. By classifying the research conducted on outdoor adventure programs according to the framework developed by Campbell and Stanley, the internal threats to validity in each study can be evaluated collectively.

Using these eight factors as their criteria, Campbell and Stanley assessed the advantages and disadvantages of ten research designs. The studies reviewed here used the four designs listed in column 1 of Table 6. The strength of the designs increases as the numbers progress. That is, the internal validity of Design 4 is much stronger than that of Design 1, because Design 4 controls for an increased number of potential sources of error. The outdoor adventure programs reviewed here are categorized into the Campbell and Stanley classification. The design classifications and their associated sources of potential internal invalidity are summarized in Table 6.

Design 1 consists of an experiment in which a single group is measured only after the experiment has been completed and no control group is used. Campbell and Stanley (1963) suggest, "such studies have such a total absence of control as to be of almost no scientific value (p. 6)." Inferences from Design 1 experiments are based on what researchers expected would have happened to the experimental group if there had been no application

Table 6
Campbell & Stanley's Design Classifications and Their Flaws

Design Type	Sources of Internal Invalidity	Studies Using This Design Type
Design 1: The One-Shot Case Study	History Maturation Selection Mortality Testing Instrumentation Regression Interaction of selection and maturation	Baer, Jacobs & Carr Teaff & Kablach Unkovic, Brown & Mierswa* Bailey & Ray
Design 2: The One-Group Pretest-Posttest Design	History Maturation Testing Instrumentation Interaction of selection and maturation Regression	Burdsal & Force Cifford & Clifford Gibson West* Collingwood* Porter
Design 3: The Static-Group Comparison	Selection Mortality Interaction of selection and maturation	Baer, Jacobs & Carr Kelly & Baer (1971) Riley & Campbell Wichmann
Design 4: Pretest-Posttest Control Group Design	Mortality	Boudette Castellano & Soderstrom Partington Sachs & Miller Willman & Chun Wright Sakofs Greenwood & Turner** Riley & Campbell Minor & Elrod Pommier & Witt

*incomplete information presented on this source in the studies cited
**compared to another group, not an actual control group

of the independent variable. Researchers often suggest that average results from standardized tests can take the place of a control group, but the characteristics of the experimental group and those of the standardized reference group are often so different that it is meaningless to consider this latter group as a control group.

In Design 2 experiments, a single group is studied both prior to and after its members have been exposed to an independent variable. Although Campbell and Stanley state that Design 2 is better than Design 1, they feel it is still only worth doing when no alternative design is available.

Design 3 experiments involve the comparison of an experimental group that has been exposed to a treatment (independent variable) with a control group that has not been exposed to the treatment. Table 6 shows that the inclusion of a control group removes several of the sources of potential invalidity associated with the first two designs.

Design 4 is highly recommended by Campbell and Stanley, and is the one most frequently advocated for use in experimental research. In Design 4, equivalent groups are achieved through randomization, then both groups are pre-tested, and a treatment is applied to one group. Afterwards, the two groups are compared. Design 4 experiments control seven of the eight sources of potential internal invalidity, mortality being the only potential source that may not be controlled. History, maturation and testing are controlled through the use of a control group in that they should have similar effects on both the experimental and control groups. Using standardized instruments, such as printed tests where observer bias can be minimized, can control instrumentation errors. Regression and selection are controlled through the use of randomly assigning participants to the control or experimental group.

Analysis of Research Designs

Each of the reviewed studies was classified by design type. The last column in Table 6 shows this classification. Many of the studies reviewed could not be classified because they reported results without identifying the methodologies employed. By identifying the types of internal validity prevalent in each design type, the inherent flaws and potential sources of error in each study can be identified. It was encouraging to note that over one-third of those studies that could be classified used the relatively strong Design 4.

In addition to the sources of internal validity identified by Campbell and Stanley, there are other potential problems in drawing inferences from these studies. First, problems always arise with using human subjects, because it is difficult to control for all of the variables that may influence their behavior. For example, even if the counselors were the same, the participants, and thus the interactions between the two, would vary. However, randomization plays an important role in accommodating this potential source of error. Similarly, the characteristics of programs vary. Thus, replication of the contextual and subject mixes of studies is difficult.

Dependent variables were often defined differently. For example, researchers defined recidivism differently. Kelly and Baer, (1969) who were the pioneers in research on juvenile rehabilitation, defined it as a return to incarceration for a new offense, while others defined it as merely being convicted for another offense. Similarly, the social-psychological constructs of self-concept, self-esteem, self-efficacy, self-image, self-actualization often were loosely defined and operationalized differently. The use of a plethora of constructs, descriptors, and operationalizations made it difficult to view this research collectively and draw reasonably generalizable conclusions from it.

It has been pointed out that the design and nature of adventure programs make it inevitable that sample sizes will be small, which limits the generalizability of findings (Bocarro & Richards, 1998). The absence of a theoretical foundation and the short timeframe of many of these studies also posed threats to generalization. In addition, all of the participants in

each of the studies reviewed were pre-selected. They were all willing, physically and mentally able referrals, who had not committed violent crimes. Indeed, in many cases, volunteers with low IQ's (under 70) were prohibited from participating. Further, dropouts generally were excluded from the final analyses (i.e., mortality in Campbell and Stanley's terms). For example, in Boudette's (1989) study, 50 individuals were assigned to both the experimental and the control groups, but six dropped out of the experimental group, and 25 dropped out of the control group. Their inclusion may have changed the results and the conclusions drawn from them.

Summary of Results

The evaluative research reviewed in this paper offered qualified support for the claims that outdoor adventure programs can be an effective intervention for alleviating the negative behaviors of at-risk youth. The cumulative body of reported findings reviewed here are quite convincing in suggesting that participants' self-concept is enhanced and that recidivism rates are lower for participants in outdoor adventure programs. These findings emerged consistently, irrespective of the quality of the research designs.

Fourteen out of 16 studies, investigating changes in the self-concept of participants, found significant positive changes. Boudette (1989) and Minor and Elrod (1994) were the exceptions, although Pommier and Witt (1995) reported substantial decay of the initial treatment gains in self-concept over a three-month period. The results of the research related to recidivism rates also tended to be positive, with eight out of 14 studies reporting reduced rates of recidivism among their experimental groups. However, four of the studies, those by Minor and Elrod (1994); Sakofs (1991); Winterdyk (1980) and by Partington (1977), found no significant differences, while Castellano and Soderstrom (1987) and Boudette (1989) reported higher incidences of recidivism among participants from the treatment group. Another source of concern is that three out of eight studies (Adams, 1970; Greenwood & Turner, 1987; Unkovic, Brown, & Mierswa, 1975) which did report lower recidivism rates among participants from the treatment group, did not use an actual control group, but instead compared their results with the general population or with national averages.

Because the studies were so varied in their research objectives and designs, and the designs of many of the studies were weak, the findings of individual studies should be viewed with caution. Further, it is possible that studies are more likely to be published if positive changes result, so the studies reviewed may not be representative of all the studies undertaken. Nevertheless, in aggregate the reported studies do tend to add credence to the notion that outdoor adventure programs can contribute to alleviating negative behaviors among youth at-risk. This reinforces the positive findings reported by Hattie et al. (1994) in their meta-analysis of adventure program evaluation results, most of which related to normal populations including adults rather than at-risk youth.

A review of this literature revealed frequent claims that outdoor adventure programs can successfully rehabilitate juvenile delinquents based on anecdotes, testimonials or success stories of individual participants, rather than on any quantitative data. These success stories offer useful insights into the potential of adventure programs, but do not address how representative these successes are in a given population. There were also many instances of authors referring to research that had been undertaken, but failing to offer details of the variables or procedures involved. For example, West (1985) claimed that psychological testing done before, during, and after a camp experience indicated significant positive changes occurred in three out of four groups, but there was no discussion of which tests were administered, how they were administered or the nature of the significant changes that occurred. Without this type of specific information, it is not possible for readers to evaluate the legitimacy of the author's claims. Similarly, Collingwood (1972) reported that "several assessment measures used indicated that the participants made significant and positive gains in physical fitness, body image, self-concept, and self-acceptance (p. 25)" without ever indicating what those measures were. Unkovic, Brown and Mierswa (1975) presented actual results in percentage form, but also failed to identify the assessment measures they employed.

Recommendations for Future Research

To improve the credibility of future quantitative evaluations, both the methodological and the theoretical foundations of the work need to be stronger. In these respects, the research reviewed here has not progressed substantially since the early studies reported in the 1960s. The research done by Kelly and Baer in 1968 remains among the strongest methodologically on outdoor adventure programs, and much of the subsequent work did not attain that standard. Design 4 suggested by Campbell and Stanley should be the minimum design standard used by researchers, because it incorporates a control group where participants are randomly assigned to either that control group or a treatment group. Ten of the studies reviewed here used this design, and these models serve as a useful point of departure for the design of future studies in this area. Given the plethora of studies that are already in the literature using weaker designs, there appears to be little merit in investing resources to replicate the weaker designs if the goal is to meaningfully add to the body of knowledge.

An obvious niche exists for future research that helps guide practitioners in the development of their programs. Research that measures the effects of variables that characterize outdoor adventure programs, such as location, duration, work group size and student-to-staff ratios, would guide practitioners in how to improve the effectiveness of their programs. In addition, there is a need to study the long-term effects of programs on participants. If these positive effects decay significantly when they return to the home environment as the findings of Pommier and Witt (1995) suggest, the usefulness of outdoor adventure programs in alleviating problems associated with at-risk youth may be challenged.

The literature review suggested a number of questions that remain unanswered. It is recommended that they be addressed in future research on the impact of outdoor adventure programs on at-risk youth. They can be grouped under the headings of program and outcome issues, although the two categories overlap. Although they are presented as independent issues, the research challenge is to identify their relative importance and to measure their combined effect.

Program Issues:

- Is there an optimum duration for programs? Does the therapeutic effect plateau after a given period of time, rendering longer duration programs ineffective?
- Does there need to be a high adventure element, or is teamwork the key to success? How critical is the teamwork component? What are the optimum sizes for teams?
- To what extent is it important for participants to make their own decisions?
- What is the right participant-to-counselor ratio? Can greater success emerge from higher levels of interaction between youth and counselors?
- Is there an "ideal" counselor profile? Are there particular traits that increase the likelihood of success? Is success dependent on finding the "ideal" counselors?
- Is the amount of physical activity a factor?
- Does the level of program structure play a role?
- Are the freedom, faith and/or trust given to participants to solve their own problems (no walls, handcuffs) an important factor?

Outcome Issues:

- Does the requirement that all subjects must volunteer make a differ ence? Maybe only those delinquents who are ready to change their lifestyles volunteer. Are volunteers and non-volunteers from the same population?
- Is it important that the programs are outdoors in rural areas? Could similar outcomes be achieved in an indoor or urban setting that is likely to be less expensive, easier to organize and of longer duration?
- Does the ability of participants to master and control the elements and the environment have an effect? Can this be replicated in contexts other than an outdoor adventure program?
- Does peer acceptance play a role? Can group dynamics affect the success of individual participants? Would there be a difference if the rules were determined by a higher authority rather than from within the group? What if the group chose to enforce the "wrong" rules?
- Are there commonalities between the elements in an outdoor adventure program group and an urban gang in which there is: a high thrill level; cooperation among group members; intense competition be-

tween groups; decisions and rules made and enforced by the group; and a requirement for participants to "prove themselves" by mastering their environment?
- Does the potential for participants to be "paroled" after successfully completing the course make a difference?
- Are differences a result of the absence of effects from the home environment, of either family or friends?

Research on these issues would serve to uncover what components most influence the success of these programs. Practitioners could use this information to develop more effective programs.

Concluding Comments

A review of these studies revealed frequent misapplication of theory development and subsequent research practice, despite the majority of findings indicating positive outcomes from outdoor adventure programs. Although research can be used to assist in the development of a theory or, when properly designed, to approve or disprove a hypotheses, a study cannot simultaneously be used to create a particular theory and then to argue support for it. In other words, rather than developing a hypothesis based on a particular theory that explains the origin of delinquent behavior and then using the results of an evaluation instrument to test the hypothesis, some researchers have taken the evaluation results and subsequently composed a hypothesis that is consistent with their findings. This would be similar to looking at the increases in production levels at a factory where the lights were brightened and concluding that by increasing the light levels in a factory, one can increase production levels. Had a similar misapplication of the scientific process occurred in the Hawthorne factory, then researchers may not have discovered that, rather than the change in light levels, the workers' productivity increases were the result of being observed for a study (Mayo, 1933).

In addition to methodological flaws, a limitation of the findings presented in this review of the literature is that the objectives pursued were narrow in scope. They addressed only self-concept or a similar social-psychological construct. Work in the 1990s, which post-dated many of the studies that were reviewed, emphasized that possession of a comprehensive set of protective factors or assets was the key to youth avoiding engagement in deviant behavior (Jessor, 1992, Leffert et al., 1998). Protective factors include such elements as youth knowing there is at least one adult who supports their positive development; the existence of places for youth to spend free time in a positive, productive environment in their home area; opportunities for youth to work together in a group and how to constructively resolve conflicts; and the opportunity to be around other youth consistently who are demonstrating positive conventional behavior. Improvement in self-concept may have been convincing evidence of the value of outdoor adventure programs in previous decades, but this is unlikely to be the case today, given the full range of protective factors that have now

been identified (Witt & Crompton, 1997). It is now widely accepted that many assets in addition to self-concept are likely to be involved. This means that even when self-concept scores increase, if there is no strengthening of the other protective factors, then recidivism may not be reduced. The self-concept-recidivism link is likely to be viewed as simplistic today, and future work needs to incorporate additional protective factors to be convincing.

Finally, it should be noted that the generalizability of this body of literature is also limited by the narrow sample profiles. Almost all the studies' subjects were white, male adolescents (Wilson & Lipsey, 2000). The effectiveness of adventure programs on at-risk female adolescents or members of minority groups remains relatively unexplored.

References

(1999). *Webster's Encyclopedia Unabridged Dictionary of the English Language.* New York: Gramercy, Random House.

Adams, W.D. (1970). Survival training: Its effect on self-concept and selective personality factors of emotionally disturbed adolescents. (Doctoral dissertation, Utah State University). *Dissertation Abstracts International, 21,* 38888B.

Bacon, S. (1988). *Outward Bound and troubled youth.* Greenwich, CT: Outward Bound.

Baer, D., Jacobs, P., & Carr, F. (1975). Instructors' ratings of delinquents after Outward Bound survivial training and their subsequent recidivism. *Psychological Reports, 36,* 547-553.

Bailey, B., & Ray, P. (1979). Juvenile correction in the wilderness - An improvement in incarceration. *Parks & Recreation, 14,* 40-43.

Barcus, C., & Bergeson, R. (1972). Survival training and mental health: A review. *Therapeutic Recreation Journal, 6,* 3-7.

Bernstein, A. (1972). Wilderness as a therapeutic behavior setting. *Therapeutic Recreation Journal, 6,* 14-20.

Bocarro, J., & Richards, A. (1998). Experiential research at-risk: The challenge of shifting traditional research paradigms. *The Journal of Experiential Education, 21*(2), 102-107.

Boudette, R.D. (1989). The therapeutic effects of Outward Bound with juvenile offenders (Doctoral dissertation, Berkeley University, 1989). *Dissertation Abstracts International, 50,* 11-B, 5306.

Burdsal, C., & Force, R.C. (1983). An examination of counselor ratings of behavior problem youth in an early stage, community-based intervention program. *Journal of Clinical Psychology, 39,* 353-360.

Callahan, R.C. (1989). Academic and therapeutic potential of the Sierra II process: An evaluation of an adopted Outward Bound diversion program for adjudicated juvenile delinquents. *Dissertation Abstracts International 51,* 103A (University Microfilms No. AA 90-07084).

Campbell, O.T., & Stanley, J.C. (1963). *Experimental and quasi-experimental designs for research.* Chicago: Rand McNally.

Cason, D., & Gillis, H.L. (1994). A meta-analysis of outdoor adventure programming with adolescents. *The Journal of Experiential Education, 17*(1), 40-47.

Castellano, T.C., & Soderstrom, I.R. (1992). Therapeutic wilderness programs and juvenile recidivism: A program evaluation. *Journal of Offender Rehabilitation, 17,* 19-46.

Clagett, A.F. (1989). Effective therapeutic wilderness camp programs for rehabilitating emotionally disturbed, problem teenagers and delinquents. *Journal of Offender Counseling Services and Rehabilitation, 14,* 79-96.

Clifford, E., & Clifford, M. (1967). Self-concepts before and after survival training. *British Journal of Social and Clinical Psychology, 6,* 241-248.

Collingwood, T.R. (1972). Survival camping with problem youth. *Rehabilitation Record, 13,* 22- 25.

Crompton, J.L., & Witt, P. (1997). Repositioning: The key to building community support. *Parks & Recreation, 10,* 80-90.

Cytrynbaum, S., & Ken, K. (1975). *The Connecticut Wilderness program: A Preliminary Evaluation Report.* Hartford, CT: The Council on Human Services.

Davis-Berman, J., & Berman, D.S. (1994). Therapeutic wilderness programs: A national survey. *Journal of Experiential Education, 17,*49-53.

Durgin, C.H., & McEwen, D. (1991). Troubled young people after the adventure program: A case study. *Journal of Experiential Education, 14,* 31-35.

Gass, M.A. (1993). *Adventure therapy: Therapeutic applications of adventure programming.* Dubuque, IA: Kendall/Hunt.

Gaston, D., Plouffe, M,. & Chinsky, J. (1978). *An empirical investigation of a wilderness adventure program for teenagers: The Connecticut Wilderness School.* Paper presented at the 49th Annual Meeting of the Eastern Psychological Association Washington, D.C., 3/31/78. (ERIC Document Reproduction No. ED 178 250).

Gibson, P. (1979). Therapeutic aspects of wilderness programs: A comprehensive literature review. *Therapeutic Recreation Journal, 13,* 21-33.

Gibson, P. (1981). The effects of, and the correlates of success in wilderness therapy program for problem youth (Doctoral dissertation, Columbia University, 1981). *Dissertation Abstracts International, 42,* 140A.

Greenwood, P., & Turner, S. (1987). *The Vision Quest Program: An evaluation.* Santa Monica, CA: Rand.

Hattie, J., Marsh, H.W., Neill, J.T., & Richards, G.E. (1997). Adventure education and Outward Bound: Out-of-class experiences that make a lasting difference. *Review of Educational Research, 67*(1), 43-87.

Hawkins, J.D., & Catalano, R.F. (1992). *Communities that care.* San Francisco: Jossey-Bass.

Hebborn, J. (1993). The Sierra Nevada expedition. *Journal of Adventure Education and Outdoor Leadership, 10,* 6-8.

Hileman, M.A. (1979). *An evaluation of an environmental stress challenge* programme of social attitudes and recidivism behavior of male delinquent youth. Unpublished doctoral dissertation, Southern Illinois University, Carbondale.

Huizinga, D., Loeber, R., & Thornberry, T. (1992). *Urban delinquency and substance abuse.* Washington, D.C.: Office of Juvenile Justice and Delinquency Prevention. U.S. Department of Justice.

Hunter, I.R. (1984a). The impact of voluntary selection procedures on the reported success of outdoor rehabilitation programs. *Therapeutic Recreation Journal, 18,* 38-44.

Hunter, I.R. (1984b). The psychological impact of high adventure outdoor programs: A review of therapeutic potential. *Corrective & Social Psychiatry, 30,* 1-7.

Jessor, R. (1991). Risk behavior in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health, 12,* 597-605.

Kaplan, L. (1979). Outward Bound: A treatment modality unexplored by the social worker profession. *Child Welfare, 58,* 37-47.

Kelly, F.J., & Baer, D.J. (1968). *Outward Bound Schools as an alternative to institutionalization for adolescent delinquent boys.* Boston: Fandel.

Kelly, F.J., & Baer, D.J. (1969). Jessness inventory and self-concept measures for delinquent boys before and after participation in Outward Bound. *Psychological Reports, 25,* 719- 724.

Kelly, F.J., & Baer, D.J. (1971). Physical challenge as a treatment for delinquency. *Crime and Delinquency, 17,* 437-445.

Kimball, R.O., & Bacon, S.B. (1993). The wilderness challenge model. In M. A. Gass (Ed.), *Adventure therapy: Therapeutic applications of adventure programming* (pp. 11-41). Dubuque, IA: Kendall/Hunt.

Kimball, R.O. (1983). The wilderness as therapy. *Journal of Experiential Education, 5,* 6-9.

Kraft, R., & Sakofs, M. (1985). *The theory of experiential education.* Association for Experiential Education, Boulder, CO.

Leffert, N., Benson, P.L., Scales, P.C., Sharma, A.R., Drake, D.R., & Blyth, D.A. (1998). Development assets: Measurement and prediction of risk behaviors among adolescents. *Applied Development Science, 2*(4):209-230.

Lipsey, M.W., & Derzon, J.H. (1998). Predictors of violent or serious delinquency in adolescence and early adulthood: A synthesis of longitudinal research. In R. Loeber, & D.P. Farrington (Eds.), *Serious and violent juvenile offenders: Risk factors and successful interventions* (p. 86-110). Thousand Oaks, CA: Sage Publications.

Mayo, E. (1933). *The human problems of an industrial civilization.* New York: Macmillan.

McRoberts, M. (1994). Self-esteem in young offenders. *Journal of Adventure Education and Outdoor Leadership, 11,* 9-11.

Middleman, R., & Sever, F. (1963). Short-term camping for boys with behavior problems. *Social Work, 8,* 88-95.

Minor, K.L., & Elrod, H.P. (1990). The effects of a multi-faceted intervention on the offense activities of juvenile probationers. *Journal of Offender Counseling Services and Rehabilitation, 15,* 87-108.

Minor, K.L., & Elrod, H.P. (1994). The effects of a probation intervention on juvenile offenders' self concepts, loci of control, and perceptions of juvenile justice. *Youth and Society, 25,* 490-511.

Mixdorf, L., & Paugh, P. (1989). Experiential education and corrections: Teaching through action. *Corrections Today, 51,* 38-42.

Nold, J., & Wilpers, M. (1974). Wilderness training as an alternative to incarceration. In Calvert R. Dodge (Ed.), *A nation without prisons* (155-169). Lexington, MA: Lexington.

Partington, J. (1977). Project WILD: A wilderness learning experience for high-delinquent risk youth. *Journal of Leisurability, 4,* 34-41.

Pommier, J.H., (1994). *Experiential adventure therapy plus family training: Outward Bound school's efficacy with status offenders.* Unpublished doctoral dissertation, Texas A&M University, College Station.

Pommier, J.H., & Witt, P.A. (1995). Evaluation of an Outward Bound School plus family training program for the juvenile status offender. *Therapeutic Recreation Journal, 29,* 86-103.

Porter, W. (1975). *The development and evaluation of a therapeutic wilderness program for problem youth.* Unpublished doctoral dissertation, University of Denver.

Riley, D., & Campbell, W. (1985). *Recidivism following involvement in an outdoor expeditionary report.* Unpublished paper.

Rillo, T.J. (1983). Megatrends in outdoor education: past, present and future. *Journal of Outdoor Education, 18,* 4-17.

Roberts, A. (1988). Wilderness programs for juvenile offenders: A challenging alternative. *Juvenile and Family Journal, 39,* 1-2.

Sachs, J.J., & Miller, S.R. (1992). The impact of a wilderness experience on the social interactions and social expectations of behaviorally disordered adolescents. *Behavioral Disorders, 17,* 89-98.

Sakofs, M. (1991). Assessing the impact of the wilderness alternative for youth programme: An outward bound program for adjudicated youth. *The Journal of Experiential Education, 14,* 49-50.

Stimpson, D., & Peterson, D. (1970). Effects of a survival training experience on evaluation of self and others for underachieving high school students. *Perceptual and Motor Skills, 31,* 337-338.

Svobodny, L.A. (1979). *Increasing self-concept through Outward Bound.* Paper presented atthe 57th Annual International Convention for Exceptional Children (ERIC #171009), Dallas, Texas.

Unkovic, C.M., Brown, W.R., & Mierswa, C.G. (1975). Synergy pays off - Air Force fights delinquency. *Journal of Rehabilitation, 41,* 19-21, 37.

Weir, J.H. (1928). *Parks: A manual of municipal and county parks.* New York: A.S. Barnes.

West, L.S. (1985). Youth-at-risk. *Camping Magazine,* 14-16.

Weston, R., & Tinsley, H.E.A. (1999). Wilderness adventure therapy for at-risk youth. *Parks and Recreation,* July, 30-39.

Wichmann, T. (1983). Evaluating Outward Bound for delinquent youth. *The Journal of Experiential Education, 5,* 10-16.

Wichmann, T. (1991). Of wilderness and circles: Evaluating a therapeutic model for wilderness adventure programs. *The Journal of Experiential Education, 14,* 43-48.

Willman, H., & Chun, F. (1973). Homeward Bound: An alternative to the institutionalization of adjudicated juvenile offenders. *Federal Probation, 37,* 52-57.

Wilson, J.J., & Howell, J.C. (1993). *A comprehensive strategy for serious, violent and chronic juvenile offenders.* Washington, D.C.: Office of Juvenile Justice and Delinquency Prevention. U.S. Department of Justice.

Wilson, S.J., & Lipsey, M.W. (2000). Wilderness challenge programs for delinquent youth: A meta-analysis of outcome evaluations. *Evaluation and Program Planning, 23,* 1-12.

Winterdyk, J. (1980). *A wilderness adventure program as an alternative for juvenile probationers: An evaluation.* Unpublished master's thesis, Simon Frasier University, Canada.

Witt, P.A., & Crompton, J.L. (1996). Recreation programs that work for at-risk youth. State college, Pennsylvania: Venture Publishing.

Witt, P., & Crompton, J.L. (1997). The protective factors framework: A key to programming for benefits and evaluating for results. *Journal of Park and Recreation Administration, 15*(3): 1-18.

Wright, A.N. (1983). Therapeutic potential of the Outward Bound process: An evaluation of a treatment program for juvenile delinquents. *Therapeutic Recreation Journal, 17,* 33-42.

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