The Effects of a Corporate Adventure Training Experience on Group Dynamics and Individual Self-Actualization of Middle-Management Professionals

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THE EFFECTS OF A CORPORATE ADVENTURE TRAINING EXPERIENCE ON GROUP DYNAMICS AND INDIVIDUAL SELF-ACTUALIZATION OF MIDDLE-MANAGEMENT PROFESSIONALS

by

Scott A. Kelly

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THE EFFECTS OF A CORPORATE ADVENTURE TRAINING EXPERIENCE ON GROUP DYNAMICS AND INDIVIDUAL SELF-ACTUALIZATION OF MIDDLE-MANAGEMENT PROFESSIONALS

Scott A. Kelly, Ed.D.
Western Michigan University, 1996

Adventuresome programming has been utilized in the corporate world for training and team building. The focus of this study was to examine the effects of a 2-day corporate Adventure Training program on the group and individual functioning of middle-level managers in a Midwestern manufacturing company. The training utilized ropes course and group activities to develop teamwork and increase group functioning.

A work team consisting of 34 individuals, who were divided into three groups, participated in the training. A control group of 12 individuals was utilized for comparison. Variables of interest included group functioning and self-actualization. Group functioning was measured with the Work Environment Scale (WES) (Moos, 1994) and the Team Development Inventory (TDI) (Bronson, 1990). Self-actualization was measured with the Personal Orientation Inventory (POI) (Shostrom, 1974). A pretest-posttest design was utilized. The pretest occurred approximately 1 month prior to the training. The posttest took place approximately 2 months after the training.

Independent sample t tests were performed on the change scores between the control and experimental groups. Statistical significance
was not reached at the .05 level on any of the measures. Based on this research, no claims that the treatment increased group functioning or self-actualization as measured by these instruments could be made.
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Throughout this project, Caitlin, Megan, and Allie have been denied important time with their father. Too often they have had to find ways to entertain themselves and therefore have sacrificed for the sake of this project. Our adventures together have been nothing less than inspirational. They have reminded me to keep perspective on that which is truly important.
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Scott A. Kelly
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CHAPTER I

INTRODUCTION

Background

Adventure Education, Experiential Education, Outward Bound, and Outdoor Education are terms that have become synonymous. Originating with Kurt Hahn's development of Outward Bound in 1941 (James, 1990), adventure activities have developed into a useful tool for psychological growth and development. From wilderness experiences such as backpacking and canoeing to ropes courses and group initiative activities, there is a broad category of activities designed to stretch the individual's and group's perceived limitations. Adventure programming has been developed to provide specific and experiential activities to allow people to expand perceived limitations and to change problematic behaviors. Perceived risk heightens the experience (Ewert, 1988; Knerr, 1985; Smith, 1985), allowing individuals to work through fear and anxiety. As individuals and groups respond to challenges, facing their own difficulties in the struggle, boundaries are expanded, human capacities are broadened, and the experience of life is deepened. Specific processing techniques are employed to increase the likelihood of generalization to real life circumstances and behaviors (C. E. Knapp, 1993; Knerr, 1985; Nadler & Luckner, 1992; Schoel, Prouty, and Radcliffe, 1988; Smith, 1993).
Bagby and Chavarria (1980) defined Adventure Education as "learning programs in which outdoor pursuits that are perceived as either physically or psychologically dangerous are used within a framework of safety and skills development to present meaningful challenges leading to increased satisfaction and personal, social and environmental awareness" (p. 1). The goal of Adventure Education is to provide a sequenced set of activities that become more challenging as both individuals and groups experience success (Schoel et al., 1988). Human growth occurs when increasingly difficult challenges are mastered.

Adventure programming is based in the notion that direct experience is the basis for growth and change (Gass, 1993b). It is also assumed that individuals must move beyond emotional comfort and into experiences of dissonance. At this point, one is challenged to adapt in a healthy and growth-oriented manner to achieve equilibrium. Kraft and Sakofs (as cited in Gass, 1993b) identified five critical elements inherent in this process:

1. The learner is a participant rather than a spectator in learning.
2. The learning activities require personal motivation in the form of energy, involvement, and responsibility.
3. The learning activity is real and meaningful in terms of natural 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 in which he/she is a member. (p. 4)

Adventure programs utilize the environment of the wilderness and structured tasks and activities as the medium to bring about these
prerequisites for change.


Within the focus of Adventure Education, Knerr (1985) defined adventure as "a state of vulnerability created by risking and signified by a balance of discomfort and joy" (p. 35). Quinn (1990) poignantly captured the essence of adventure:
Adventure does not lie only within the objective natural world. It lies deeply within oneself, within the spiritual, emotional, and intellectual spheres of personhood. . . . Adventure is desire for something, a condition, which is absent. It is a process which begins with the acceptance of a situation where one knows one will need to call upon one's own supposed talents and spontaneously, irrevocably, act upon them. During the process of accepting the idea of placing oneself in a tenuous situation, one must harbor doubt as to the adequacy of one's ability. Without question, when complete confidence and competence reign, adventure cannot exist. (p. 22)

Adventure programs have captured this experience and capitalized on the growth that it produces.

Bringing the adventure experience closer to home yet maintaining the qualities of the wilderness, many programs have developed ropes courses and on-ground activities to provide an environment for the growth and/or healing effects of the experience of adventure. The last decade has seen the utilization of ropes courses in treatment facilities throughout the nation (Johnson, 1992). Currently, programs exist for utilizing adventure experiences for three types of groups: (1) recreational, (2) educational or growth, and (3) treatment. All have the focus of adventure and the potential gains from engaging in adventure as previously described. Recreational groups have a main focus of fun, relaxation, and leisure. There are no specific group goals or tasks. Educational or growth groups have specific objectives that are deemed important to the leadership of the group. For example, a corporate management team that seeks adventure programming to develop team unity and leadership would be considered an educational group. Treatment groups are groups with specific psychological treatment goals. Substance-abusing adolescents, adjudicated youth, and psychiatric patients would be examples of
One area of Adventure Education that has seen tremendous growth and development is corporate training. Corporate groups utilize the adventure experience to enhance performance. Priest, Attarian, and Schubert (1993) reported that American corporations invest billions of dollars annually in training and development programs, some of which are being utilized in Adventure Training programs. However, few studies regarding the effectiveness of corporate training programs are available. Most of the information that does exist is primarily anecdotal. This research project examines the effects of such a program, specifically measuring the impact on self-actualization, social climate of the group, and group dynamics.

**Definition of Terms**

**Adventure** is defined as "a state of vulnerability created by risking and signified by a balance of discomfort and joy" (Knerr, 1985, p. 35).

A **ropes course** is defined as a series of obstacles structured in such a way that they can be used as physical challenges for a group or individual. Steel cables are connected between trees or poles to create actual activities and for safety procedures (Gillis & Gass, 1993). Participants are on some type of belay system for safety at all times. A **dynamic belay** is a rope system by which the participant is tied to another person to prevent falling. A **static belay** is a rope system by which the participant is tied to an overhead cable to prevent falling.

**Group initiative, ground initiative, or teams course** are synonymous terms defined as activities that present a challenge to the group as
a whole. The group must move from planning an action or strategy to initiating purposeful action towards meeting the goal (Johnson, 1992).

Self-actualization is defined as "an ongoing achievement of an individual's potentials, capacities, and talents" (Ewert, 1989b, p. 12).

Overview of the Study

This research was conducted at the Black River Center, South Haven, MI. The Black River Center utilizes a teams challenge course, high ropes course, and a 50-foot climbing tower for Adventure Training programs that cater to corporate groups. This program was provided in two phases:

1. Needs analysis: This phase involved researching the corporate group's desired training outcomes and included on-site interviews and evaluation.

2. Training: This phase included the actual adventure program which utilized group assessment and outdoor activities structured to meet identified objectives.

In concert with the director of the Black River Center, a corporate group that was scheduled for a training was solicited to participate in this research. A middle management team from a Midwestern furniture manufacturing company in the machine processing division agreed to participate in this study. The subjects for this research included supervisors of manufacturing work teams. The control group consisted of individuals from the same work teams who often serve as temporary supervisors. These individuals actually function as members of the work teams and are utilized in leadership capacities on an as-needed basis.
They are considered next in line for the management positions, are often called upon to substitute for, and work closely with the management team members. It was not possible to keep a group of managers out of the training for the purposes of a control group for this study. This control group was utilized as it was viewed as the closest that could be obtained to an actual management team and operates in the same environment on a day-to-day basis. Because these groups were intact and already working together, random selection was not feasible. Thirty-four individuals participated in the experimental group and 12 participated in the control group. Due to the nature of the intervention, only groups of 8 to 15 people were in the training at a time. The participants were divided into three smaller groups chosen by the supervisor based on which participants worked more closely with one another in the workplace. The subjects then participated in a 2-day corporate Adventure Training program at the Black River Center.

Variables of interest included aspects of self-actualization and group dynamics. The instrumentation for this research included: (a) the Personal Orientation Inventory (Shostrom, 1974), a measure of variables of values and behavior considered important in the self-actualization of the individual; (b) the Work Environment Scale (Moos, 1994), a measure of variables of the work environment and attitudes and characteristics of the work group; and (c) the Team Development Inventory (Bronson, 1990), a measure of variables of team development and effectiveness.

These instruments were administered 1 month prior to the training experience and approximately 2 months following the training.
Research Questions

The following research hypotheses were investigated:

**Question 1:** Will there be a difference in self-actualization following the intervention as demonstrated by significant increases in all scale scores of the Personal Orientation Inventory (POI) when compared to control group scores?

**Question 2:** Will there be a difference in group functioning following the intervention as demonstrated by significant increases in all scale scores of the Work Environment Scale (WES) and the Team Development Inventory (TDI) when compared to control group scores?
CHAPTER II

REVIEW OF THE LITERATURE

This chapter contains a review of the literature in the field of Adventure Education. The historical roots of the field are presented. The theoretical underpinnings of Adventure Education are examined. Research relevant to change that occurs in the process of participating in adventure programs is discussed. Finally, the implications for further research are reviewed and proposed.

Historical Overview

In 1920, Kurt Hahn opened the Salem School in Germany. He emphasized noncompetitive physical activities and social cooperation in an attempt to create an environment in which youth could learn fitness, skills, responsibility, self-discipline, initiative and enterprise, memory and imagination, and compassion. Hahn was strongly influenced by the writings of Plato. He was interested in finding ways to develop a balance between mental and physical training that would build character and compassion. An outspoken opponent of Nazism, Hahn was imprisoned by Hitler in 1933. Assisted by well-connected friends, he was released and fled to England. While there, he started another school based on experiential learning principles (James, 1990).

Under Hahn's leadership, Outward Bound was founded in Wales. Originally the school was to prepare British seamen for survival in the
event of German attacks. Later, other Outward Bound schools were developed for the general population. The training was founded on Hahn's belief that certain experiences would produce prosocial values, stimulate students to a passion for life and growth, and cultivate social vision (Kimball & Bacon, 1993; Smith, Roland, Havens, & Hoyt, 1992).

Outward Bound was brought to the United States in 1962 and five schools were soon established. Outward Bound utilized the mountain experience to build strength of body and character. A 1993 Outward Bound course directory describes the 25-year-old mission:

To teach respect for self, concern for others, and care for the environment. We believe that a wilderness adventure provides a tangible and dramatic way to deliver our mission. . . . Outward Bound was founded on the assumption that one reveres life for having experienced it in real and dramatic terms. . . . We . . . impel our students into what we call "value-forming experiences." (p. 4)

Outward Bound originally established relationships with court systems to apply wilderness therapy to adjudicated youth. Later expansion led to specialized programs for Job Corps, inner-city youth programs, state training schools, group homes, and residential treatment centers. In the 1960s and 1970s, literally hundreds of programs using some aspect of the Outward Bound philosophy came into being. Today, many schools, colleges, youth services, Young Men's Christian Associations, hospitals, recreation centers, social service agencies, and vocational centers make adventure programming available to their clientele. Specialized programs have been developed for a wide variety of specific groups, for example, substance abusers, developmentally disabled, rape and incest survivors, psychiatric patients, and others (Gass, 1993b).

Smith et al. (1992) summarized the Outward Bound focus:
Basically, the Outward Bound curriculum involves initial experiences for group building, physical conditioning, goal setting, basic skill training and basecamp utilization of ropes and teams courses. Then the group moves to adventures and challenges for the individual and the group climbing, caving, canoeing, etc. There is also a component of the experience that involves "solo" journeys, emphasizing a time for reflection and introspection about the other aspects of the program. Outward Bound places considerable emphasis on physical challenge, not as an end in itself but as an instrument for training the individual's will to survive and master. (p. 10)

Typically, groups of 8 to 15 participants begin Outward Bound courses by training for and planning the experience. Facilitators teach basic wilderness skills as they are needed in the field. The group must work out problems that arise. Challenges like backpacking or rock climbing are provided. In this process, the group members experience difficulties and must learn to work as a team for a successful experience. The facilitators utilize these difficulties as opportunities for group discussion as the experience unfolds.

On ropes courses and initiative programs, the group is faced with obstacles or activities that present a challenge. The task is structured with enough difficulty to demand a significant effort from the group, yet still quite possible to accomplish. When problems and/or issues develop, the group must find ways to work through them. Tasks are sequenced to provide successful experiences based on the level of functioning exhibited by the group. The sequencing allows for more significant successes as they are progressively more challenging. As early tasks are mastered, individuals and groups move on to more complex and challenging experiences and, theoretically, more significant growth.
Adventure programming is based on the notion that direct experience is the basis for growth and change (Gass, 1993b). It is also assumed that the individual must be outside of a position of comfort and into the experience of dissonance. At this point the individual is challenged to adapt in a healthy and growth-oriented manner to achieve equilibrium. Kraft and Sakofs (as cited in Gass, 1993b) identified five critical elements inherent in this process:

1. The learner is a participant rather than a spectator in learning.
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5. Learning must have present as well as future relevance for the learner and the society in which he/she is a member. (p. 4)

Adventure programs utilize the environment of the wilderness and structured tasks and activities as the medium to bring about these prerequisites for change.

Gass (1993b) delineated the use of adventure therapy into three general areas:

1. Wilderness therapy occurs when the experience takes place in a remote wilderness area and is often a multiple-day experience (e.g., 24 days). Follow-up contact is minimal and programming is executed by Outward Bound and similar programs.
2. Adventure-based therapy occurs when the experience is often close to the therapeutic facility or organization utilizing adventure
programming. These programs often are utilized as a component of an ongoing treatment regimen and vary in duration depending on the treatment protocol and client abilities. The adventure experience is a simulated wilderness experience that provides a challenge such as physical structures including low and high ropes courses, wooden climbing towers, and ground initiatives.

3. Long-term residential camping occurs when adjudicated youth are placed in camps and develop skills to survive in a challenging environment. Efforts are made to transfer these survival skills to the home environment. Students are placed in these programs for long periods of time (e.g., one year). Programming is focused on the development of a positive peer culture, confronting problems of daily living, and dealing with natural consequences of choices.

In addition to these treatment uses of adventure, programs have been developed for educational and personal growth. From elementary school groups to college groups to corporate training, programs are available to help develop teamwork, group cohesion, problem-solving skills, and leadership. Many therapeutic, educational, and business organizations utilize adventure activities for further growth and development of individuals and groups.

Theoretical Overview

The Adventure Experience

Miles (1987) discussed how the wilderness experience has historically been a place of healing and restoration. Summarizing the work of
Kaplin and Talbot, Miles described three psychological benefits of the wilderness experience: (1) freedom from day-to-day stressors and distractions "with a functional demand on attention and an interesting environment" (p. 5), (2) "an increase in self-confidence and a feeling of tranquility" (p. 5), and (3) a sense of "contemplation" that allows for "reflection that can lead to discovery of a different self, a self less conflicted, more integrated and more desirable" (p. 5). Further, Miles described the influence of the wilderness experience on self-worth, the ability to learn, and physical fitness as well as seeing it as a metaphor for life. Miles claimed that the wilderness experience pulls a person from the confused focus of life to a specific and concrete challenge. Accomplishing this challenge demands a clarity of focus that brings serenity and accomplishment. It is possible that human beings have always retreated to more pristine environments for rejuvenation and recreation.

Implicit in these aspects of the wilderness experience is some level of adventure. Knerr (1985) defined adventure as "a state of vulnerability created by risking and signified by a balance of discomfort and joy" (p. 35). Quinn (1990) poignantly captured the essence of adventure:

Adventure does not lie only within the objective natural world. It lies deeply within oneself, within the spiritual, emotional, and intellectual spheres of personhood. . . . Adventure is desire for something, a condition, which is absent. It is a process which begins with the acceptance of a situation where one knows one will need to call upon one's own supposed talents and spontaneously, irrevocably, act upon them. During the process of accepting the idea of placing oneself in a tenuous situation, one must harbor doubt as to the adequacy of one's ability. Without question, when complete confidence and competence reign, adventure cannot exist. (p. 22)
Wilderness challenge programs have captured this experience of adventure and capitalized on the growth that it produces. Bringing the adventure experience closer to home yet maintaining the qualities of the wilderness, many programs have developed ropes courses and ground activities (often called ground initiatives) to provide an environment for the healing effects of the experience of adventure. The last decade has seen the utilization of ropes courses in treatment facilities throughout the nation (Johnson, 1992). Currently, programs exist for utilizing adventure experiences for basically three types of groups: (1) recreational, (2) educational or growth, and (3) treatment. All have the focus of adventure and the potential gains from engaging in adventure as previously described.

**Theoretical Underpinnings**

Adventure programming rests on a variety of theoretical viewpoints. Possibly the most often cited perspective is that of Maslow's (1968) concept of "peak experience." Ewert (1989b) maintained that Maslow's peak experience is basic to the adventure experience as both are "characterized by reports of focused concentration on the tasks at hand, a transcendence of reality, an event which contains a substantial amount of intrinsic value, a disorientation of time and space, a special flavor of wonder and humility, and a sense of playfulness" (p. 13). Typically, outdoor adventure programmers strive to enable their participants to achieve a peak experience. Knerr (1985) stressed the importance of Maslow's hierarchy of needs. The progression from basic tissue needs to safety needs, evolving to recognition and love needs, and on to
actualization or growth is critical to achievement of health and joy. The adventure experience presents the opportunity to expand capacities for meeting higher order needs. It is interesting that the more basic needs (such as safety while on a platform 20 feet off the ground) are utilized to operationalize the opportunity for a peak experience.

Related and similar to peak experience is Csikszentmihalyi's (1990) theory of "flow." Flow is the "state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it" (p. 4). In confronting the unknown in adventure, the individual can become lost in the experience and begin to focus only on the task at hand. It is this focus and engagement in the process that theoretically creates a higher order experience that is healing and growth producing in its nature.

Maslow (1968) theorized that the individual has an instinctual inner core that "has a dynamic force of its own, pressing always for open, uninhibited expression" (pp. 192-193). This instinctual force is one main aspect of "the urge to grow, the pressure to self-actualization, the quest for one's identity" (p. 193). Rogers (1951) proposed that self-actualization is a basic tendency of striving towards expression, wholeness, and satisfaction. This force is perceived as a push or "growth toward self-actualization" (Maslow, 1968, p. 197). Meador and Rogers (1984) discussed the "actualizing tendency" as "the inherent tendency of the organism to develop in ways to maintain or enhance the organism" (p. 156). Thus, these theorists see the tendency toward self-actualization as a fundamental quality of the individual. Adventure
Therapy capitalizes on this inherent push for growth. It assumes that the individual is striving to live in a more actualized manner. Thus, when presented with a difficult task, the individual can accomplish it in a growth-producing manner. It is the task of the facilitator to structure the activity to maximize the potential for growth and development of the individual and the group as a whole.

Object relations and interpersonal therapy rest on the assumption that the individual has developed a set of beliefs or meanings about the self and others based on the relationship dynamics with primary caretakers (Cashdan, 1988; Teyber, 1992). These relationships are characterized by some type of discomfort. The individual splits off parts of the self (natural attitudes, beliefs, and behaviors) that are deemed unacceptable by the caretaker. While split off, these tendencies move toward expression. The individual believes that this expression is bad and attempts to minimize expression. The individual fails to understand that these split off parts of the self may be perfectly acceptable in current relationships but go unexpressed due to past reactions by significant caretakers. The individual will have unconsciously set up relationships to replicate the developmental patterns (transference) with the hope that the outcome will be better than that which history provided. This "set-up" often does not work effectively as it is a replication of past dynamics and creates psychological stress or pain. When an individual confronts a difficult task, beliefs about the self that are rooted in his or her developmental history impact the process of confronting the task. Adventure Therapy allows the individual to begin experiencing replication of old patterns and then challenges the individual to risk acting and
thinking differently. Thus, an opportunity for a different outcome is presented.

"Person-centered theory focuses on the present experiencing of the client, believing that the reestablishment of awareness of and trust in that experiencing provides the resources for growthful change" (Meador & Rogers, 1984, p. 146). Adventure Therapy rests on the assumption that the present experiencing of the self and others is a powerful tool for fostering change. The facilitator often focuses the group on the present experience, allowing members to become aware of choices that have been unconsciously made. With awareness comes the possibility of new choices.

Wheelis (1973) pointed out that the most common illusion of clients and therapists is that insight produces change. While insight is instrumental and may even be necessary, change must occur at the behavioral level. As Wheelis appropriately observed, having a blueprint for a house does not get it built. Adventure Therapy provides the opportunity to change behavior in a novel environment and in the present.

Nadler and Luckner (1992) postulated that "disequilibrium" is necessary for change. Disequilibrium "refers to an individual's awareness that a mismatch exists between old ways of thinking and new information" (p. 7). This matches Gass's (1993b) description of dissonance. This experience pushes one out of one's comfort zone allowing for a new experience. Nadler and Luckner have coined the term "edgework" (p. 59) for the experience of being on the edge of comfort and discomfort. While on this "edge" there exists the possibility of a groundbreaking choice for a health enhancing behavior. Drebing, Willis, and Genet
(1987) and Ewert (1989a) discussed the importance of an appropriate level of anxiety; too little anxiety leads to complacency while too much leads to immobilization. The literature abounds with examples of adventure experiences providing an opportunity for more positive choices coming out of this discomfort. This is the experience of moving through one's fear and pain to try something new, thus leading to a greater capacity for happiness.

"Wilderness therapy, by design, is a frontal assault on learned helplessness, dependency, and feelings of low self-worth" (Kimball & Bacon, 1993, p. 20). Kimball and Bacon further ascribed value to performance-based success and mastery, allowing individuals "to discover previously untapped inner resources" (p. 20). Moving through anxiety and accomplishing a challenge that appears beyond one's capability leads to a greater sense of self-worth and potency. According to Bandura's Self-Efficacy Theory (Ewert, 1989b; Kimball & Bacon, 1993), individuals make an appraisal of their abilities to accomplish an adventure task and may experience doubt and discomfort. When people experience success at the task, a greater sense of efficacy is achieved. Self-perception is positively influenced when performance accomplishments are understood to be of great magnitude because the accomplishments are based on personal mastery and perceived competence. Increases in mastery and competence tend to generalize to other situations. This principle is critical to the adventure process.

The adventure experience typically occurs in the context of a group. Thus, the group process has become the context for the previously discussed experiences. Yalom (1995) proposed a therapy group is a
social microcosm. This indicates that the individual's relationship dynamics will unfold as the group progresses. He stressed the importance of a here-and-now approach that brings the opportunity to interact with group members in a more helpful fashion as opposed to continuing harmful patterns. Yalom purported that it is the here-and-now experience within a supportive, accepting environment that brings about therapeutic change. It is the behaving in a different fashion, the challenging of old assumptions in a tangible way, that creates a corrective emotional experience. Adventure Therapy offers an immediate opportunity to challenge belief structures about self and others.

Many authors present stages of group process in the adventure experience. None seem to deviate from Yalom's (1995) tasks, stages, and therapeutic factors of a group. Jensen (as cited in Johnson, 1992) succinctly described three stages of successful group process in the adventure setting: (1) orientation, (2) conflict, and (3) constructive work. The orientation stage involves a search for leadership and uncertainty as the group forms and confronts its tasks. The conflict stage is represented by the group's struggle to determine leadership and define commitments. This stage leads to conflict suppression or resolution. Success at this stage leads to the constructive work stage in which the group can function effectively as a team with cohesion and purpose. The goal of many intact groups is to enhance this constructive phase with the hope of taking the ability to function with cohesion and purpose back to the therapy, educational, or work environment.

Bacon (1987) discussed the evolution of Outward Bound curriculum that appears to apply to other similar programs as well. Bacon
described the early philosophy as relying heavily and primarily on the experience itself. He identified three curriculum models: (1) the Mountains Speak for Themselves, (2) Outward Bound Plus, and (3) the Metaphoric Curriculum Model. The Mountains Speak for Themselves curriculum was based on the assumption that the experience itself was powerful enough to create global change in the individual. Little attention was given to processing or generalizing the experience to day-to-day living.

Criticism of this model led to the Outward Bound Plus curriculum model. This model emphasizes the importance of discussing, processing, and debriefing the experiences to facilitate transfer of learning to daily living. Thus, an increased belief in the importance of reflecting on the current experience was developed. In this model, instructors are expected to have specific knowledge of special populations and their particular needs as well as specific techniques that may be useful. In effect, instructors began to import theories and techniques from psychological and educational disciplines such as introducing Alcoholics Anonymous principles for alcoholics or discussing communication skills for corporate training groups.

Bacon (1987) called on adventure educators to move to the Metaphoric Curriculum Model. This third stage of the evolution calls on leadership to utilize the experience as metaphor for daily life situations. The different activities are consciously framed as experiential metaphors for salient challenges in the lives of students. For example, the fears experienced in a rock climb would be experienced as metaphorical for fears that an adolescent may experience when facing peer pressure to use drugs. This model demands that the instructors set up the activities with
a verbal structure that fits with the needs of the group or individual. Techniques from strategic models of psychotherapy may be employed. Bacon very clearly recognized that the most powerful learning tool is the experience itself, but emphasized the importance of setting up and de-briefing the experience in ways that maximize the learning potential.

**Application of Theory: An Example**

An individual is faced with the task of moving across a cable that is suspended above the ground. The only means of support is a partner who is on a second cable. However, the distance between the cables increases as they progress. Other group members are spotters and are responsible for keeping the two members safe. To complete the task, they must lean on each other with more and more intensity, leaning in further and further. If an individual brings a history of difficulty in trusting others, this will surface as an issue. Tasks will not be accomplished until the individual challenges some assumptions about trust. This cannot occur only in the cognitive state, but must be operationalized into trusting behavior. Insight is not enough to accomplish the task. If individuals can successfully challenge this fear of trust through the experience of task accomplishment, then they have a new way of perceiving themselves and others that can be generalized to daily life. The advantage of Adventure Therapy is that this can be experienced in a short time. Thus, individuals are immersed in the experience of mistrust immediately and must search for new ways of maneuvering the situation in the here-and-now. It may take the office-bound client and therapist weeks or even months to get to this place of experientially challenging
the old thinking and behavior while it can happen immediately in an adventure activity. Following the experience, the group members process the experience and discuss ways to generalize it to daily life. However, whether discussed or not, the individual still has experientially confronted past beliefs and trusted another in a very practical fashion. Having experienced trust differently, current and past beliefs must be reconciled. This different experience provides an opportunity for growth through beginning to experience the area of trust in a more helpful fashion. The experience of trust is much more powerful than talking, reading, or thinking about trust.

Not all individuals would benefit from this activity in the same fashion. Other activities will bring out other issues. The activity becomes a metaphor for the individual's particular issue or challenge. The advantage of this metaphor is that it is experiential. The individual can move through the metaphor in an action-oriented manner.

The previous example consolidates many theories of psychological change. The individual's relational history impacts how trust is experienced. The group environment creates a social microcosm. The facilitator begins by providing relatively easy tasks that can be accomplished with little effort or distress. Tasks progressively increase in difficulty. Typically the individual or group would not move on to further tasks until mastery of previous tasks is achieved. The opportunity to change old behavior patterns exists in the here-and-now. The individual finds himself or herself on the edge of too much discomfort and just enough discomfort to make the experience worthwhile for challenging old assumptions. Thus, in the midst of anxiety or even fear about being let down once
again, the individual pushes through to experience others in a more positive fashion. The individual then has the opportunity to generalize this experience to daily living.

Adventure Therapy capitalizes on the tendency toward self-actualization by providing a safe environment for individuals to experience themselves and others in a different fashion. As progressively more difficult tasks are mastered, self-esteem and self-efficacy improve. Processing or discussing the experience helps individuals make choices regarding the possibility of behaving differently in a day-to-day life. Thus, a combination of change theories are seen coming together in the adventure experience.

Review of the Research

Introduction

The available literature regarding the effects of the outdoor adventure experience is summarized in this section, organized by populations which have been studied. Specific psychological topics that have been studied are also presented.

Gillis (1993), Gillis and Gass (1993) Attarian (1991), Ewert (1987, 1989b), Kimball and Bacon (1993), Hunter (1984), Winterdyk and Griffiths (1984), Crompton and Sellar (1981), and Gibson (1979) have presented literature reviews on research in the field of Adventure Education. Adjudicated youth appear to be the most studied population, likely due to relative ease in obtaining groups to study. Groups of psychiatric and addiction patients, students, victims of violence, disabled
persons, and corporate managers have been studied as well. Across all of the reviewed studies, the most researched topics are self-concept/esteem and locus of control. Many studies demonstrate an increase in self-esteem following participation in adventure programs. A similar increase is demonstrated when measuring internal locus of control.

**Adjudicated Youth**

Adjudicated youth appear to be the most studied group in Adventure Education. Specialized programs were developed for troubled youth from the earliest days of Adventure Education. Adventure programming is seen as especially useful with this population as the developmental tasks of adolescents push them towards adventurous (and sometimes problematic) endeavors. Also, adjudicated youth are often in groups that are logistically relatively easy to study and follow-up. Reduced recidivism and dropout rates for adjudicated adolescents have been significantly demonstrated.

Summarizing the research literature, Gillis and Gass (1993) reported that studies investigating the variables of problem solving, staff observations of behavioral change, grade point average, and attendance have had mixed results. Kimball and Bacon (1993) cited articles that demonstrate positive change in self-confidence, interpersonal competence, physical fitness, academic achievement, and reduced recidivism.

Winterdyk and Griffiths (1984) reviewed the literature on wilderness programs and adjudicated adolescents. Several studies showing improvements in social acceptance, self-concept, reducing recidivism,
and social skills were cited. All the programs examined were 14 days or longer. Generally these studies included measures of social attitudes, self-concept, self-esteem, and interpersonal skills, and various indicators of behavior upon release. There were mixed results with studies using quantitative measures. For example, none of the three studies which used the Jesness Inventory concurred on which scales represented changes. One study noted changes on 6 of the 11 scales and another on 8 of the 11 scales with only 5 scales in common. Another study found differences on only 2 of the scales. One study found differences on 4 of the 11 scales on the Tennessee Self-Concept Scale while another study found no changes on the same instrument. Winterdyk and Griffiths questioned the efficacy of adventure programming due to inconsistent research results. While this is an important factor, these reviewers did not consider programmatic or population differences in these studies. There undoubtedly were significant differences in the programs themselves. While all studies focused on adjudicated youth, there is a wide variety of levels of severity within this population.

Matthews (1993) reviewed several studies and literature reviews and noted that the basic rationale for the wilderness experience for adjudicated adolescents is that:

They will overcome patterns of antisocial behavior when confronted with an environment that cannot be manipulated, in which real obstacles must be overcome by hard work and cooperation with others, in which adolescents' actions have real-world positive or negative consequences, and in which initiative and responsible behavior lead to positive results. (p. 443).

However, Matthews accurately observed that there has been a paucity of research to consistently confirm or refute this rationale. While
generally favorable, research results are tentative and inconclusive.

Gillis (1993) compiled an annotated bibliography of actual abstracts from *Dissertation Abstracts International*. Thirteen of the 26 abstracts were studies on adjudicated youth. Another five of the abstracts represented studies of inpatient psychiatric youth, some of whom were also adjudicated. The results of these studies indicated mixed, but positive views of the programs. Results were positive for changes in self-esteem, locus of control, and behavior change. All suggested that adventure programming impacted the youth in a positive fashion.

One of the earliest and most reported studies was conducted by Kelly and Baer (1969). They studied the impact of an Outward Bound program on adjudicated youth (N = 60). They documented significant positive changes in social attitudes, value adjustment, ability to trust, aggression and control, and egocentric thinking as demonstrated by significant (p < .05) changes on 6 of 10 scales of the Jesness Inventory and 3 of 10 concept measures. This study indicated Outward Bound may be a desirable short-term means of promoting positive change in social attitude and self-concept in the juvenile delinquent.

In another study, Kelly and Baer (1971) examined recidivism rates from a similar Outward Bound program. Only 20% of the experimental group (N = 60) recidivated while 42% of the comparison group (N = 60) recidivated. This difference between groups was statistically significant (p < .01). Baer et al. (1975) found that successful completion of Outward Bound courses was a predictor of nonrecidivism.

Hunter (1987) used the constant comparison method to study how 10 male adjudicated youth changed during a 28-day Outward
Bound course. The constant comparison method involved the researcher making and recording observations at intervals throughout the program. Hunter reported "that self-confidence probably changed" (p. 42). Hunter also reported the data suggested that while only a few individuals demonstrated positive change, of those that did, the change seemed quite profound. Hunter attempted to draw conclusions about causes of change in behavior. However, these observations of change did not provide an adequate basis for causal statements as the data were not clearly stated.

Gaus (1981) reported on research conducted on adjudicated juveniles in a vocational high school. Pretreatment and posttreatment measures were compared. Those who participated in an off-campus, experience-based learning program demonstrated higher interpersonal maturity as measured by the Beverly-Grant Opinion Schedule (p = .012). Higher self-esteem as measured by the Rosenberg Self-Description Scale (p = .008) was also demonstrated. Positive reintegration with their families was measured by the Family Role Scale (p = .047). Changes in the experience of alienation and powerlessness did not reach significance as measured by the Dean Scale (p = .338). Students demonstrated a decrease in school problems as measured by the School Problems Checklist (p = .007) and observation. The off-campus experiential program included a 19-day wilderness experience, community service projects, and learning courses that relied heavily on community resources. There was no control group and these students were enrolled in the school for an average of 2 years so there is some question as to which factors of their experiences were most responsible...
for behavior change.

Boudette (1989) examined the impact of a 24-day Outward Bound course on juvenile offenders. Sixty-nine juveniles were randomly assigned to an experimental or control group. All subjects participated in a 1-day ropes course. The experimental group then participated in the 24-day Outward Bound program while the control group proceeded with ordinary probation plans with their probation agents. Significant differences (significance levels not reported) between the experimental and control groups were found on the Global Self-Esteem Scale while both groups improved significantly on 9 of 10 scales of the Jesness Inventory. Boudette did not comment on the possibility that the 1-day ropes course experience may have contributed to the changes noted on the Jesness Inventory.

Kjol and Weber (1990) described a 5-day adventure counseling component to residential treatment program for juvenile sex offenders. They reported on the increase in self-disclosure that occurred during this experience. These authors reported that the adventure component to this program was helpful in building an environment of trust and safety. This trust and safety is believed to have contributed to self-disclosure regarding personal victimization as well as perpetration towards others. This disclosure was seen as critical to successful treatment.

Durgin and McEwen (1991) followed the progress of several youth after completing a 7-week adventure program. While the participants typically showed improvement in social behaviors and self-confidence, they were unable to sustain the positive changes after leaving the program. Durgin and McEwen echoed the concerns of many who
work with this population: "Troubled young people may leave an adventure course with positive behaviors and good intentions to achieve desirable goals but these changes, no matter how small, are soon lost in the struggle against poor family interactions and negative community environments" (p. 34).

Psychiatric Population

Adventure Therapy has been utilized for patients hospitalized due to a variety of psychiatric illnesses. Some programs involve taking groups of patients to a wilderness setting. More often, patients are taken to a ropes course and initiative setting and these are utilized for treatment purposes.

Kelley (1993) reviewed several studies of the therapeutic benefits of adventure programs for the mentally ill. He appropriately concluded that the research is weak due to design problems, inadequate reporting, and improper statistical treatment of data. However, there was evidence of positive results. Further research that utilizes sophisticated methods is needed.

Banaka and Young (1985) studied a 2-week wilderness camp with chronic mentally ill hospital patients, most with the diagnosis of schizophrenia. Staff selected 78 patients based on chronicity and the ability to adapt to program demands. The average age of participants was 30 years. Forty-eight patients were assigned to the treatment and 30 were assigned to the control group. Compared to the control group, improvement was demonstrated in 7 of 10 areas by the end of camp including social interactions, motivation to learn and optimism to learn, and
decreases in symptoms as rated by staff and patients on the Staff Personal and Social Functioning Instrument. Kelley (1993) found fault with aspects of this study, particularly its instrumentation, but still stated it "remains to date the best study on the therapeutic benefits of outdoor adventure for the adult mentally ill" (p. 114).

Stich and Sussman (1981) reported on the impact of an Outward Bound experience on adult patients of a Veteran's Administration Hospital that met for one 4-hour session per week for 3 consecutive weeks. The program consisted of a ropes course, several rock climbs, and a rappel. Pre- and posttest change scores on the Hudson Generalized Contentment Scale and the Hudson Index of Self-Esteem demonstrated no significant differences when compared to the control group.

Davis-Berman and Berman (1989) presented the results of a study of the Wilderness Therapy Program involving 23 adolescents in outpatient counseling. Following a 10- to 13-day backpacking trip that included daily group therapy sessions, significant changes ($p < .05$) were demonstrated on the Self-Efficacy Scale, Piers-Harris Self-Esteem Scale, and Behavioral Symptoms Inventory. Significant change was not demonstrated on the Rotter Locus-of-Control Scale. The authors presented changes in mean scores from pre- to posttest but the information presented was not complete. There was no control group for comparison.

Berman and Anton (1988) studied two wilderness therapy trips with adolescents ($N = 14$) from inpatient groups from two psychiatric hospitals. Participants demonstrated more internal locus of control and symptom reduction when compared to pretesting as measured by the
Rotter Locus-of-Control Scale, Wilderness Therapy Checklist, Brief Symptom Inventory, and staff observation. Change was reported as more rapid than during other phases of hospitalization. The presentation of statistical analysis of these data was incomplete and there was no control group.

Addictions Treatment

According to Gass and McPhee (1990), substance abuse and addiction programs are increasing adventure programming as a component of the treatment process. They surveyed 61 programs identified as utilizing adventure experiences with substance abuse populations. Eighty-two percent of the programs used adventure programming for a therapeutic function and 18% for diagnostic purposes. Gass and McPhee found that programs typically use general approaches to all groups and reported a need for program specificity within the field of substance abuse.

Gillis and Simpson (1991) reported results from their pilot study of Project Choices, an adventure-based treatment program for court-involved youth with alcohol and drug abuse behavior. The program consisted of an 8-week treatment component and 8-week follow-up component. Traditional substance abuse treatment methodology was combined with adventure therapy. Twenty-seven clients in three groups participated in the study. Significant \( p = .03 \) improvements were observed in change scores on the Revised Behavior Problem Checklist between the second and eighth week of treatment. Participants demonstrated similar change on peer and self-ratings. Other significant pre-
posttest changes were demonstrated on the Minnesota Multiphasic Personality Inventory. Significant decreases were demonstrated on the following scales: (a) Depression (Scale 2, \( p = .0001 \)), (b) Psychasthenia (Scale 7, \( p = .002 \)), (c) Schizophrenia (Scale 8, \( p = .0006 \)), (d) Hypomania (Scale 9, \( p = .009 \)), (e) Anxiety (Scale A, \( p = .0001 \)), and (f) Control (Scale Cn, \( p = .001 \)). A significant increase in Ego Strength (Scale Es, \( p = .001 \)) was also reported. Self-esteem, as measured by the Battle Culture-Free Self-Esteem Inventory, improved significantly (\( p = .001 \)) as well. There was no control group or randomization for this study. Implications for utilization of adventure programming with traditional substance abuse treatment are positive.

Disabled Persons

Individuals with physical disabilities have benefited from programming specific to their needs. These programs are very similar to other adventure programs with specialized equipment and modified activities.

Sugarman (1988) reported Adventure Education as beneficial for persons with physical disabilities as the experience can lead to gains in self-confidence, self-knowledge, outdoor skills, independent living, self-reliance, and employability. While this appears to be accurate, this statement does not appear to be supported by research. Sugarman's 1988 review concluded that current literature was deficient in research specific to this population. Positive gains noted in the literature for the nondisabled population may indicate similar gains for the disabled population.
It would seem that the experience provided in adventure activities would affect disabled and nondisabled individuals in a similar fashion. In fact, there are currently many programs available specifically for disabled persons through Outward Bound and other organizations. Activities are often the same with adaptations in equipment and procedures making participation possible. For example, Schoel et al. (1988) described modifications of a traditional ropes course where a wheelchair-using paraplegic can be hoisted up to do traverses and other activities. They reported on specifically designed accessible challenge ropes course activities. The philosophy and challenge aspect of programming remain the same as with nondisabled populations.

Two years following Sugarman's review, McCleary and Chesteen (1990) researched the impact of four 2-day river trips with combined disabled and nondisabled persons. Positive gains were noted in both groups. Forty-three percent of the disabled group said they felt more confident about seeking employment and 47% reported they thought they could do more things than they previously thought. Forty-one percent reported they could do things better than prior to the trip. Perhaps the most significant impact of this project was that 73% of the nondisabled individuals reported that they were more inclined to support or promote hiring of the disabled in their business after this experience.

McAvoy et al. (1989) studied the effects of participation in a wilderness adventure program on disabled and nondisabled persons. Subjects (N = 180) were in groups that were composed of equal numbers of disabled and nondisabled participants. Most experiences were 4- to 12-day canoe trips in wilderness areas. The individuals who
participated in longer (7 to 12 days) groups showed a statistically significant decrease in anxiety as measured by the State-Trait Anxiety Scale. There were no differences between disabled and nondisabled groups. In addition to these quantitative data, 40 randomly selected participants, 24 with disabilities and 16 without, were interviewed by telephone 6 to 7 months after the program. A structured interview format was used. The authors concluded that both groups experienced positive changes in attitudes toward persons of varying abilities, confidence, interpersonal relationships, willingness to take risks, feelings about self, goal setting abilities, development of leisure skills, tolerance of stress, and an increased ability to approach new situations, with the nondisabled group reporting a more dramatic change.

Luckner (1985/1986, 1989a, 1989b) investigated the effectiveness of a 10-day winter Adventure Education course with hearing impaired individuals on enhancing self-esteem and altering locus of control. Subjects were 10 students from Gallaudet College who were hearing impaired. A control group chosen from other students at the same college and matched for sex, age, ethnicity, degree of hearing loss, age of onset, parental hearing status, and lack of secondary handicapping condition was utilized. Participation had a significant positive effect ($p < .05$) on internal locus of control as measured by the Rotter Locus-of-Control Scale. These gains were maintained at a 2-month follow-up evaluation. There were no changes on the Orientation of Powerful Others and Chance subscales (Luckner, 1989a). A significant positive effect ($p < .05$) on self-concept/esteem was demonstrated on the Culture-Free Self-Esteem Scale and the Semantic Differential Self-Concept
Scale. The gains were maintained at the 2-month follow-up evaluation (Luckner, 1989b).

Corporate Training

Adventure programming has been utilized in the corporate world for training management teams and work groups. Often this training has been utilized to assist corporate teams to work in new and more effective ways while keeping an eye on profitability.

Wagner et al. (1991) reported that over 100 training organizations offer some type of outdoor training for individual managers, management teams, and corporate groups. These authors reported that participants in corporate training programs include Fortune 100 executives, nurses, and civic group volunteers. Several organizations such as the Norton Company, Nike Corporation, the Naval Weapons Support Center, Indiana University, and Xavier University have participated in outdoor adventure executive training programs. There is much controversy among corporate leadership regarding the value of this training.

Wagner et al. (1991) surveyed training directors from the Fortune 500 Industrial and Service Companies and other organizations randomly selected from the American Society for Training and Development's mailing list. They also reviewed published sources and interviewed various outdoor training specialists and participants. These authors concluded that current practice can be divided into two categories: (1) wilderness programs where participants live outdoors and engage in activities such as mountain climbing and whitewater rafting, and (2) outdoor-centered programs where participants engage in structured
activities such as ropes courses and group initiatives. Twenty-three percent were wilderness programs and 77% were outdoor-centered programs. Of the participants in the programs, 70% were top executives, 20% were sales representatives or supervisors, and 10% were other nonmanagers. The most common objectives were: leadership development, team building, increasing productivity, promoting self-esteem, and enhancing decision making and problem solving. The corporate world is utilizing adventure programs in an attempt to create a more productive work environment.

Wagner and Fahey (1992) studied the results of a 2½ day outdoor-based experiential training program attended by 43 managers or professional employees of an electrical products manufacturing company. The program integrated classroom and experiential activities with approximately two-thirds of the program utilizing low- and high-ropes course activities. A control group of 12 employees was randomly selected from managers and professionals who did not attend the program. A questionnaire was administered previous to the training and 4 months after the training. The groups completed the questionnaires simultaneously. The experimental group demonstrated that the training had a positive effect ($p < .05$) on "group awareness" as measured by a scale from the Michigan Organizational Assessment Questionnaire and "acceptance of change" as measured by a scale developed by the researchers. There was no change in group task effectiveness, trust, self-esteem, or locus of control as measured by a subscale of the Survey of Organizations and other scales that were not identified by a title. There were no significant changes in the control group.
Bronson, Gibson, Kichar, and Priest (1992) reported positive significant \((p < .05)\) changes on 8 of 10 statements on the Team Development Inventory (TDI) for an experimental group of 17 members of an intact work unit from an American aerospace engineering corporation. No changes were observed in the control group of 11 members from within the same company. The control group was also an intact work group, with similar functions and level of responsibility as that of the experimental group. The TDI was administered pre- and posttest with the posttest administration 2 months after the treatment of a 3-day Adventure Training program. The TDI consists of 10 items related to team development.

Priest and Lesperance (1994) presented two separate studies. The first study examined the change in team behaviors following a 3-day corporate Adventure Training program. The second study examined the impact of different follow-up procedures following a 3-day corporate Adventure Training program. In both studies, the treatment consisted of morning lectures on group developmental roles and responsibilities. Afternoon and evening outdoor experiences consisted of group initiative activities and problem-solving tasks. In both studies, the TDI was utilized to measure change.

Subjects for the first study consisted of 15 members of a computing systems and data analysis group within a financial company. There was no control group. The TDI was administered over the course of the study at nine strategic points in the program in a repeated measures design. Significant increases \((p < .05)\) were found on all 10 items.
Subjects for the second study included the group from the first study and three groups made up of 20 members each from three financial risk analysis groups from separate regional offices of a well-known bank. One of these three groups served as the control group and received no treatment. The authors stated that the four groups were relatively equivalent in their type of company, organizational functions, hierarchical structure, and sum scores of all scales on the TDI measured prior to the initial treatment. The control group and one experimental group received no follow-up intervention. One experimental group utilized specific debriefing exercises as used by their trainer as follow-up procedures. The single group from the first study utilized their own follow-up in the form of strategic meetings back at the office, additional refresher training, and self-initiated projects. Thus, four groups were studied: (1) control, (2) no follow-up, (3) self-facilitating, and (4) follow-up. The TDI was administered to the three groups not involved in the first study 1 month prior to treatment, and at the beginning, middle, and end of the treatment. The TDI was administered to all groups at 2 weeks, 4 weeks, 3 months, and 6 months following the treatment. The sum of the scale scores was used as a measure of overall team behavior. The measures taken 1 month prior to treatment did not demonstrate significant (p < .05) differences when compared to measurements taken on the first day of treatment, prior to beginning the training. All three experimental groups demonstrated significant (p < .05) change between beginning and ending measurements demonstrating that the program improved the teamwork of the groups. At the 6-month measure, the no follow-up group reverted to before treatment levels indicating that
significant change occurred but was not maintained over time. The self-facilitating group demonstrated a significant increase ($p < .05$) on the TDI between the ending and 6-month measurements. This indicated that change was not only maintained but continued in a positive direction for at least 6 months. There were no changes in the control group measures. Overall, this study demonstrated significant changes as the result of a corporate Adventure Training program with varying effects over time.

**Family and Couples**

Little research is available on family and couple adventure programming although many programs are described in the literature. This appears to be a more recent use of this approach.

Gillis and Gass (1993) discussed the therapeutic use of adventure activities for family therapy. The authors of this clinically-focused article suggested ways to structure and utilize family therapy methods within adventure activities. Gillis and Gass reported that several programs for families in recreational, enrichment, and therapeutic environments are utilizing adventure activities. Most family programs were an adjunct treatment for an individual in a residential treatment setting. They concluded that the integration of marriage and family therapy and adventure experiences promises new therapeutic innovations. Gillis and Gass also called for further research in this area to help develop this integration.

Creal and Florio (1993) described the Family Wilderness Program which is an adjunct therapy for hospitalized adolescents and families. Adventure activities are utilized for ongoing family therapy. Families are
faced with challenges and must find ways to work together to resolve them. There was no research presented regarding the effectiveness of this program.

Clapp and Rudolph (1993) described the Family Challenge program. The program employs a multifamily group which participates in five sessions over a 3-week period. The sessions are sequenced and include 2 full-day sessions. Adventure activities are utilized for family enrichment. A pilot study was conducted on six families using pre- and posttest measurements on the McMaster Family Assessment Device and the F-Copes Scale. Significant positive increases (significance level not reported) were found in areas of family problem solving and general functioning skills, including the families' ability to cope with stressful events.

In some programs, specific family therapy theory and techniques have been imported into adventure programming. Gass (1993c) reported on methodology to utilize Structural Family Therapy techniques in Adventure Therapy. Bacon (1983, 1987) described ways to utilize Strategic Therapy methods in the wilderness. Farragher, Harmon, and Bullard (1993) utilized Family-of-Origin Therapy methods to assess and interrupt maladaptive and multigenerational patterns of behavior. Gillis and Bonney (1986) presented rationale for utilizing adventure activities in group counseling for couples and single-parent families. Adventure Therapy is beginning to be utilized for family enrichment and family therapy. While these articles are not research based, they indicate a growing field for the use of adventure programming. Research is needed to assess the effectiveness of this modality for family work.
Survivors of Violence

The Colorado Outward Bound School has developed 3-day programs designed to assist female victims of sexual assault, sexual abuse, and domestic violence. Webb (1993) reported research conducted on these programs. Program alumni responded to questionnaires indicating the course was helpful in increasing insight, understanding, and working through fearful situations. Research conducted with rape victims demonstrated a decreased level of fear, a decreased perception that chance and powerful others controlled their lives, and an increased self-concept as measured by the Modified Fear Survey, the Levenson Locus-of-Control Scale, and the Tennessee Self-Concept Scale. Changes were significant at the .10 level. A second study, conducted on battered women, demonstrated a significant ($p < .05$) positive effect on increased self-concept and problem-solving appraisal, and decreased perception that chance and powerful others controlled their lives as measured by the Problem-Solving Inventory, the Levenson Locus-of-Control Scale, and the Tennessee Self-Concept Scale. These changes remained significant ($p < .05$) at a 1-month follow-up.

College Students

Adventure programming has been utilized as part of orientation programs for colleges and universities. These programs are an attempt to assist new students in orientating to college life and to reduce dropout rates.
Gass (1987) investigated the impact of a 5-day Wilderness Orientation Program on incoming freshmen at the University of New Hampshire. Three groups of first-year students participated in the study. The experimental group participated in 5 days of adventure activities. A comparison group participated in 4 days at a residential camp which included education about college life but no adventure activities. This group was utilized as a nonequivalent comparison group as it matched many of the selection characteristics of the experimental group. Students in the control group were members of the incoming class who did not participate in any additional activities. After two semesters, the experimental group had a significantly ($p < .05$) higher retention rate and grade point average than both other groups. The Student Developmental Task Inventory was used to measure developmental status. Following the intervention, the experimental group was significantly ($p < .05$) higher on the scales of Developing Autonomy and Developing Interpersonal Relationships, as well as on subtask areas of Interdependence, Tolerance, and Developing Appropriate Relationships With the Opposite Sex when compared to both other groups. This study indicated that adventure programming may have a profound effect on the success of college students, both socially and academically. Gass (1991) reported retention rates for these students at 3.5 years. The experimental group had an 81% retention rate, while the comparison group demonstrated a 69% retention rate, and the control group had a 61% retention rate. These rates did not show a statistically significant difference ($p = .061$). However, Gass appropriately speculated that further
programming after the first year may have further impacted retention rates. Follow-up data on the other measures were not reported.

Psychological Change

Studies on psychological changes resulting from adventure programs are summarized. Anxiety, leisure, self-concept, and self-actualization are the dependent variables that have been utilized in the majority of these types of studies.

Anxiety

The level of trait anxiety can be reduced through the Outward Bound experience (Ewert, 1988). Levels of fear in specific situations were reduced at immediate posttest and 1-year measures following Outward Bound courses. Fear reduction in younger students (15 to 20 years) was more pronounced than in older students (20 years and older). Younger students reported significantly higher fears related to not fitting in with the group. No comments were offered about the generalizability of reducing fears in everyday life. However, this research seems to suggest that these courses better equip people to manage and reduce fears.

Leisure Needs

Teaff and Kablach (1987) examined the impact of different adventure activities (caving, rock climbing, ropes course, teams course) on the psychological variables of independence (the chance to accomplish something by oneself), rewards (receiving something in return for the
effort), and variety (the chance to do a variety of things). Using the Paragraphs About Leisure-Form E, it was determined that rock climbing and ropes course experiences provided the benefits of independence and rewards to a greater extent than caving or the teams course experiences. Only the ropes course satisfied the need of variety. Clearly, this study is limited in the scope of results that it measures, but it demonstrates that different adventure activities may satisfy different needs. Also, different activities may be appropriate for different groups or different stages of group development.

**Self-Concept**

Increases in positive views of the self and a sense of empowerment are often goals of adventure programs. Self-concept and locus-of-control measures have been utilized to measure these constructs.

Marsh, Richards, and Barnes (1986a) measured self-concept with the Self-Description Questionnaire III (SDQ III) and the Rotter Locus-of-Control Scale on a total of 27 groups (N = 361) of Outward Bound participants. The subjects in this study ranged from age 16 to 31 and participated in a 26-day program. The instruments were completed 1 month before the program, on the first day of the program, and on the last day of the program. Scores from the second and third administrations demonstrated statistically significant (p < .01) increases in all 13 scales of the SDQ III. However, the authors reported that the magnitude of change did not seem clinically significant for all scales. The results from the Rotter Locus-of-Control Scale indicated a statistically significant shift towards more internal responses. The study supports the Outward
Bound program as an effective intervention for changing multiple dimensions of self-concept.

Adding credibility to these findings, Marsh, Richards, and Barnes (1986b) asked all participants to complete the same instruments 18 months after completion of the program. Two hundred and twenty-nine of the 361 (63%) participants returned the instrument. The authors estimate that about one quarter of the nonrespondents did not receive the request due to the inability of the researchers to locate them. Nonrespondents did not differ from respondents in terms of gender, age, or Rotter Locus-of-Control Scale scores at earlier administrations. There were no significant ($p < .05$) differences in the Rotter Locus-of-Control scores when the third and fourth administrations were compared. Significant differences ($p < .05$) were found on only three scales of the SDQ III. There were no significant differences on the remaining eight scales. While a 63% participation rate indicates that these results must be interpreted cautiously, this study supports the notion that the Outward Bound experience promotes long-term change in self-concept.

**Self-Actualization**

The self-actualizing individual is considered to be more fully functioning and experiencing a more enriched life. The concept of increasing or improving self-actualization captures the intent of many if not all adventure programs.

Vogel (1989) studied changes in self-actualization of students ages 14 to 18 years who participated in an Outward Bound type experience. Self-actualization was measured by the Personal Orientation
Inventory (POI), a course description (a semiprojective instrument to elicit participants' perceived responses to an experience), responses in a participant's journals, and instructor evaluation. Thirty-nine students, placed into five different groups, were compared to a control group \((n = 20)\) using a pre-post design. Posttest scores on the course description were correlated with POI scores. This procedure allowed the researcher to compare participants' self-perception of change with POI measures of change. The five experimental groups differed significantly from the control group \((p < .05)\) on 7 of the 12 scales of the POI. Ten of 12 POI scale scores correlated significantly at the .05 level with self-perception of personal change as measured by the course description. These results indicated that these participants increased their levels of self-actualization, internalized their personal changes, and reported them.

Vander Wilt and Klocke (1971) reported the results of the Outward Bound experience on 20 participants as measured by the POI. Comparisons of pre- and posttest scores for the entire group demonstrated significant \((p < .10)\) positive differences in 7 of 12 scales. When compared by gender, females \((n = 10)\) demonstrated positive changes \((p < .10)\) on 8 of the 12 scales. The males \((n = 10)\) demonstrated no significant difference on any scale. It is interesting to note that the changes in the female group were large enough to demonstrate change for the entire group while the males demonstrated no change. This study suggests that the adventure experience may impact males and females in different ways.

Lambert, Segger, Staley, Spencer, and Nelson (1978) studied students in four groups: (1) a survival course which involved 30 days of
wilderness survival training \((n = 37)\), (2) an applied sociology course that involved participation in a T-group in an isolated wilderness environment \((n = 28)\), (3) a traditional academic personal adjustment course \((n = 18)\), and (4) a traditional social psychology course that served as the control group \((n = 21)\). Pre- and posttest scores on the POI and the Tennessee Self-Concept Scale were compared. No significant differences were found on the POI. Groups 1 and 2 demonstrated positive changes on the Tennessee Self-Concept Scale \((p < .005)\) when compared to the control group. The groups in this study were not randomly selected and did not appear to have equivalency of characteristics.

Implications and Future Research

Researchers have mainly focused outcome studies measuring variables germane to the particular program being measured. Some of the research suffers from design flaws. Some design flaws are inevitable as these programs are generally conducted with small groups and there is little opportunity for control groups. While this is a relatively young field, much research has been conducted. More research needs to occur to establish Adventure Education and Therapy as a viable option for human growth.

Gass (1993a) reported on the outcome of a research symposium sponsored by the Coalition for Education in the Outdoors in January 1992. Twenty-seven interested professionals participated in this symposium and developed research questions in six categories:

1. Treatment effectiveness: The key issues include understanding what treatment is most effective with specific clients given their
particular issues.

2. Issues of training and competence of professionals in Adventure Therapy: Questions need to be answered regarding which professionals are most qualified to conduct Adventure Therapy and what type of training is necessary.

3. Integration of Adventure Therapy with other therapeutic approaches: What models of treatment and what other disciplines are best combined with adventure programming?

4. Treatment issues: Certain issues regarding treatment groups have arisen. Research regarding contraindications for Adventure Therapy is needed. Are there certain adventure experiences that are not useful or more useful for particular populations? Further investigation on the impact of Adventure Therapy on clients who are on medications is needed. The influence of the group composition on effectiveness of treatment needs exploration.

5. Clearer definitions of programs: Symposium participants were concerned that the profession needs to differentiate among the types of programs delivered. Issues of length, goals, intensity, and level of training for different focused groups and programs need to be clarified. For example, what are the critical differences in focus and level of intensity between a group for adjudicated youth and a group of incest survivors?

6. Funding issues: Issues regarding funding future research and how to best find and utilize resources were raised.

The literature abounds with examples of the impact of Adventure Education on the self-concept and locus of control of the individual. While this research is often contradictory, there is sufficient evidence of
change in these areas. However, there is little actual research about how and why these changes occur. An investigation of specific factors which contribute to these changes could also be conducted.

Ewert (1989b) discussed the need for further research from psychological and sociological perspectives. The psychological perspective, the most widely researched perspective, involves studying the impact of adventure programs on the individual. Ewert called for further research on the psychological impact on the individual. The sociological perspective involves researching what happens in the group context. Communication patterns, support structures, cohesion, task process, and completion are all areas where the present research is incomplete.

While Adventure Education almost always occurs in the context of a group, there is a paucity of research examining the actual group dynamics. Whitman (1987) examined cooperation and trust changes and Wagner and Fahey (1992) studied changes in trust, group awareness, and effectiveness. All of the available literature cites the development of a trusting and highly functioning group as critical to growth. However, empirical studies regarding the actual impact of the intervention on the group are minimal. It is often assumed that a highly functioning group is critical to growth. This may not be true. Perhaps the individual gains can be made regardless of group dynamics. Corporate and educational groups are utilizing adventure for actual change in the work group environment. Research regarding the changes that may occur in the group as a whole as a result of adventure experiences is needed.

Another area worthy of questioning is the relationship of what actually occurs in the field to its theoretical underpinnings. Theory-based
research is needed to examine and increase understanding of why and how adventure makes a tangible difference in the lives of participants. Increased knowledge in this area would contribute to the refinement and development of programs.

Finally, the vast majority of research studies have been conducted on longer-term wilderness programs, for example, 28-day Outward Bound courses. While most programs offer one-half to 3-day experiences that center around ropes courses and group activities, very little research has been conducted on these programs. Gass (1993a) identified the need for more research on short-term programs.

Summary

The adventure experience has been a source of growth and development since at least 1920. Beginning in the 1970s, the experience of risk and adventure has been structured for specific objectives related to the growth of the individual. Drawing upon psychological and educational theory, leaders in Adventure Education have developed programs for a wide variety of people. This being a relatively new field, Adventure Education research is just beginning to demonstrate the significant impact of structured programs upon participants whether in recreational, educational, or therapeutic milieus.
CHAPTER III

METHODOLOGY

The sample characteristics, treatment, research design, instrumentation, and data collection procedures, are reviewed in this chapter. The statistical analysis and null hypotheses are presented.

Sample Characteristics

After consultation with the director of the Black River Center, a corporate group that was scheduled for training was solicited to participate in the research. The subjects for this research were mid- to upper-level management employees of a Midwestern furniture manufacturing corporation. The experimental group was comprised of 34 individuals who supervise various work groups on the manufacturing floor of the corporation. These individuals make a team that functions together on a day-to-day basis in leadership of the manufacturing of products. The control group consisted of 12 individuals who function from within the same work teams. They were asked to volunteer for this study by the manager in charge of this unit. These individuals serve as temporary supervisors when needed and are viewed as informal leaders within the work teams. They are utilized in leadership positions on an as-needed basis. They would be considered next in line for promotion to management positions. Random selection was not feasible because these groups were intact and already working together. The training was offered
to the control group following completion of the research.

Due to the nature of the intervention, only groups of 8 to 15 individuals can participate in the training at one time. Therefore, the experimental group was divided into three subgroups and training was provided for each subgroup. The subgroups were chosen by the corporation leadership based on which individuals worked more closely with one another. Again, random sampling was not possible.

Treatment

Setting

The Black River Center is a corporate training center that utilizes adventure activities as a medium for helping work teams enhance their performance. Founded in 1984, the Black River Center has a proven history of producing safe and effective programs. The center is located in South Haven, Michigan, on the Black River, in a secluded woods environment. A lodge houses participants overnight and is utilized for part of the programming. Adventure activities include ground-level challenge activities, an aerial high ropes course, and a 50-foot climbing tower. The staff is highly trained and qualified to develop and facilitate adventure experiences. Most programming is done at the Black River Center, although off-site programs are available utilizing transportable outdoor activities.
Experience

The treatment of the experimental group consisted of two phases:

1. Needs analysis: This phase involved researching the corporate group's desired training outcomes and included on-site interviews and evaluation of program participants.

2. Training: This phase included the actual adventure program and utilized group assessment and outdoor activities structured to meet identified objectives.

The experimental group participated in a 2-day experiential program at Black River Center. The program consisted of ground initiatives, ropes course, and climbing tower activities.

Ground initiatives consisted of structured group activities that presented a challenge for the group to complete. These included a group climbing wall in which the task was to get all members of the group over a smooth 12-foot wall. A trust fall was used. This initiative involved having a group member fall backwards from a 3-foot high platform to be caught by the group members. The electric fence involved finding a way to move all group members through horizontal strings tied between trees. In all of these activities, the group facilitator provided safety regulations were followed. The facilitator led processing or debriefing sessions at appropriate times throughout the experience to help the group members understand the dynamics of the group as well as to generalize the experiences to other aspects of their lives. Material gleaned from the assessment phase was utilized to help the group function more effectively as a team.
The ropes course consisted of a series of challenging activities that were built off the ground and in the trees. There was a belay system to keep participants safe and specific safety procedures were followed. The height made the activities more challenging by adding the dimension of perceived risk. This dimension enabled participants to experience and move through fear and anxiety. Meeting the challenge and finding resources within one's self and from the group to move through this discomfort was verbally processed to help generalization to other areas of life.

The climbing tower consisted of a 50-foot simulated rock climb. This wall has hand- and footholds to enable the participant to climb. Using a belay system, in which other group members kept the climber safe, the individual had the opportunity to find resources within him- or herself and had to rely on the group for support, safety, and encouragement. Again, the facilitator helped the group process the experience to confront any difficulties in the dynamic of the group, to better work together, to rejoice in success, and to generalize from the experience.

Experimental Design

The research consisted of a nonequivalent control group design as shown in Figure 1 (Campbell & Stanley, 1963).

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>0</td>
<td>X</td>
</tr>
<tr>
<td>Control group</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

Figure 1. Nonequivalent Control Group Design.
Instrumentation

**Personal Orientation Inventory**

The Personal Orientation Inventory (POI) (Shostrom, 1974) was created to measure values and behavior considered important in the self-actualization of the individual. The POI consists of 150 two-choice comparative value and behavior judgments. Scoring provides measures on 2 basic scales and 10 subscales. The scales are described in Shostrom’s (1974) *Personal Orientation Inventory Manual* as follows:

- **Time Competence**: Measures the degree to which one is "present" oriented.
- **Inner Directed**: Measures whether reactivity orientation is basically toward others or self.
- **Self-Actualizing Value**: Measures affirmation of the primary values of self-actualizing persons.
- **Existentiality**: Measures ability to situationally or existentially react without rigid adherence to principles.
- **Feeling Reactivity**: Measures sensitivity of responsiveness to one's own needs and feelings.
- **Spontaneity**: Measures freedom to respond spontaneously or to be oneself.
- **Self-Regard**: Measures affirmation of self because of worth or strength.
- **Self-Acceptance**: Measures affirmation or acceptance of self in spite of weaknesses or deficiencies.
- **Nature of Man**: Measures degree of the constructive view of the nature of man, masculinity, femininity.
- **Synergy**: Measures ability to be synergistic, to transcend dichotomies.
- **Acceptance of Aggression**: Measures ability to accept one's natural aggressiveness as opposed to defensiveness, denial, and repression of aggression.
**Capacity for Intimate Contact**: Measures ability to develop contactful intimate relationships with other human beings, unencumbered by expectations and obligations. (p. 5)

Shostrom (1974) identified the Time Competence and Inner Directed scales as an overall and quick estimate of self-actualizing. Also these two scales are used to obtain ratio scores that provide further interpretive data. These ratio scores were not utilized in this study. The manual recommends that the Time Competence and Inner Directed scales be used in preference to the ratio scores due to statistical complexities in using them in correlational or other statistical analysis. R. R. Knapp (1990) reported that the Inner Directed scale was the best single estimate of self-actualizing.

The values measured by all of these scales are directly related to human capacities that adventure activities are designed to develop and discover in the individual.

**Reliability**

Test-retest coefficients were obtained utilizing a sample of 48 undergraduate college students. The instrument was administered twice, 1 week apart. Test-retest reliability coefficients for the major scales of Time Competence and Inner Direction were .71 and .77, respectively. Coefficients for the subscales ranged from .52 to .82 (Shostrom, 1974).

Based on a sample of 46 student nurses over a 1 year period, test-retest coefficients ranging from .32 to .74 were reported (Ilardi & May, as cited in Shostrom, 1975). While not clearly stated, the implication from the manual was that this range included all scales.
Wise and Davis (as cited in R. R. Knapp, 1990) reported test-retest coefficients of .75 and .88 for the Time Competence and Inner Directed scales, respectively. The sample consisted of 172 university students with a 2-week interval between administrations. No report of the other scales was provided.

Kaats (as cited in R. R. Knapp, 1990) reported Cronbach's alpha of .80 for the Inner Directed scale and .65 for the Time Competence scale. Again, no report is provided regarding the other scales with no indication as to why these were not included.

### Validity

The validity of the POI has been demonstrated by comparing two groups determined to be "relatively self-actualizing" or "non-self-actualizing" by practicing, certified clinical psychologists. Results of this study as reported in Shostrom (1974) indicate the POI significantly distinguished between these two groups on 11 of the 12 scales. In another study, Shostrom reported a group of clients in the advanced stages of psychotherapy (n = 39, mean of 26.6 months in outpatient treatment) was compared with beginning clients (n = 37). The POI differentiated between the groups on all scales at the .01 confidence level or higher. The Minnesota Multiphasic Personality Inventory (MMPI) was also administered in this study. Correlation coefficients with the MMPI are presented. Overall, correlation coefficients were relatively low indicating that these two instruments measure different constructs. Shostrom (1974) reported that there were no other instruments available to measure self-actualization for correlational studies. Therefore,
correlations with other standard personality inventories and measures of
general pathology have not been particularly helpful.

**Work Environment Scale**

The Work Environment Scale (WES) (Moos, 1994) is 1 of 10 Social Climate Scales developed by Moos to measure various aspects of a work group's milieu and conditions. The WES consists of 10 subscales that assess three underlying sets of dimensions: (1) relationship dimensions, (2) personal growth dimensions, and (3) system maintenance and change dimensions. The subscales are defined by Moos (1994) as follows:

**Relationship Dimensions**

**Involvement:** The extent to which employees are concerned about and committed to their jobs.

**Co-worker Cohesion:** How much employees are friendly and supportive of one another.

**Supervisor Support:** The extent to which management is supportive of the employees and encourages employees to be supportive of one another.

**Personal Growth Dimensions**

**Autonomy:** How much employees are encouraged to be self-sufficient and to make their own decisions.

**Task Orientation:** The emphasis on good planning, efficiency, and getting the job done.

**Work Pressure:** The degree to which high work demands and time pressure dominate the job milieu.

**System Maintenance and Change Dimensions**

**Clarity:** Whether employees know what to expect in their daily routine and how explicitly rules and policies are communicated.
Managerial Control: How much management uses rules and procedures to keep employees under control.

Innovation: The emphasis on variety, change, and new approaches.

Physical: The extent to which the physical surroundings contribute to a pleasant work environment. (p. 1)

Reliability

Moos (1994) reported a Cronbach's alpha range of .69 to .86 across the 10 subscales with a sample size of 1,045 subjects. A second study of internal consistency with a sample size of 742 produced a Cronbach's alpha range of .68 to .82. Moos cited other research that demonstrated internal consistencies from .66 to .84 in a sample of nurses and .60 to .84 in a sample of teachers. Sample sizes were not reported.

Test-retest reliabilities were reported for 75 employees in four work groups with a 1-month interval between administrations. The reliabilities ranged from .69 to .83 (Moos, 1994).

Validity

Moos (1994) reported numerous studies that described and compared work settings and focused on the determinants and outcomes of work climates. He stated that these studies support the construct, concurrent, and predictive validity of the WES. However, Moos did not present clearly understood rationales for these conclusions.

Vaux (1992) discussed convergent and discriminant validity. He reported that to his knowledge no multidimensional measure of work
setting social climate comparable to the WES exists. Therefore, explicit
tests of concurrent and discriminate validity have not been conducted.
However, Vaux reported that a great many studies support the construct
validity of the WES as findings conform to theoretical predictions based
on the underlying theoretical construction of the instrument.

Mueller (1995) reported that the validity of the WES was not
adequately established in the manual.

Sheehan (1995) questioned the accuracy of the organization of
the subscales into the three domains. He suggested that this organiza­
tion may contribute to ambiguous conclusions and indicated that these
domains must be interpreted with caution. He reported that the WES had
adequate internal consistency and test-retest reliability.

A factor analysis was presented by Booth, Norton, Webster, and
Berry (1976). Data were obtained from 580 enlisted Navy personnel.
Five of the original WES subscales were represented by factors in this
analysis. Clarity and Staff Support subscales loaded on a common
dimension that was interpreted as a measure of "communication."
Involvement and Task Orientation subscales loaded on a common scale
interpreted as "task involvement." The separated factors included:
Cohesion, Work Pressure, Control, Innovation, and Physical Comfort.
Autonomy did not emerge as a singular factor.

In critiques of the WES, both Vaux (1992) and Moses (1994)
supported the use of the WES. Vaux stated that overall the WES is an
excellent measure of the social climate of work settings. Five factors
contributing to its strength include the following: (1) It rests on a pro­
vocative theoretical base; (2) it belongs to a family of measures that
address a wide range of settings in a similar fashion; (3) a substantial body of research has built up around it; (4) its multidimensional nature allows a more sophisticated examination of settings; and (5) an excellent, quite recently updated manual exists. This review was completed before the most recent manual (Moos, 1994) was available.

In support of the WES, Vaux (1992) stated:

The WES is a strong multidimensional measure of the social climate of work settings. The psychometric properties of the instrument are good. Existing validity data are encouraging, and the measure has a broad range of practical applications for those interested in the workplace. It is strongly recommended for the consideration of vocational, human resource, and I/O practitioners as well as researchers of vocational, management, or organizational issues. (p. 673)

Moses (1994) also supported the use of the WES and stated:

The WES clearly offers a sensitive, specific, brief, and accurate multidimensional measure of perceived occupational environmental "social climate" characteristics. It has proven value as a descriptive tool, and preliminary evidence shows that it may have significant predictive validity as well. The range of vocational assessment problems to which the scale has been applied successfully is highly varied, but these demonstrations only mark the beginnings of its potential applications to functional analysis of job settings. (p. 840)

After reviewing the available literature for an instrument that measures group constructs, the WES appears to be the strongest available. The manual and test critiques offer strong support for the validity of the WES. It has been utilized in numerous studies that support its underlying theory.

Team Development Inventory

The Team Development Inventory (TDI) was originally presented by Kormanski and Mozenter (1987) and was adapted by Bronson
Bronson (1994) stated that there is no manual for the TDI. Bronson also provided permission for the use and publication of the TDI for this study (Appendix A). The TDI is not copyrighted and is presented in Appendix B. Bronson reported that the TDI has been a valuable tool for evaluating the progress of corporate Adventure Training programs and that it can be used to measure change within the process of the training as well as measuring outcomes. The TDI consists of 10 items related to team development. It has been used with both a 5-point and 10-point Likert scale. Priest and Lesperance (1994) instructed subjects to place an "X" on a line with "never" at the left, "half the time" in the center, and "always" at the right. Priest and Lesperance (1994) utilized this method of measurement to construct continuous data as opposed to nominal data produced by the Likert form. In this study, the line with no numerals was utilized in the same fashion as the Priest and Lesperance (1994) study. Scores were then obtained by measuring in millimeters from the left end of the line to the point where the "X" was placed on the line. The scores ranged from 0 to 127.

The items included:

- **Group goals**: Understanding and being committed to group goals.
- **Interested**: Having friendly and genuine interest in one another.
- **Conflict**: Openly acknowledging and constructively confronting conflict.
- **Listening**: Listening to one another with sensitivity and understanding.
- **Decisions**: Promptly making decisions and executing solutions.
**Diversity**: Recognizing and respecting individual differences and diversity.

**High standards**: Holding high standards for own work and group efforts.

**Help and advice**: Looking to one another for help and advice during challenges.

**Celebrate**: Recognizing, rewarding, and celebrating group achievements.

**Feedback**: Encouraging and accepting feedback on group performance.

**Global**: The Global scale is an overall measure of team development. It is comprised of the sum of the mean scores of all the other scales.

Because it is short, the TDI can be completed in 5 to 10 minutes. The TDI has been utilized in corporate Adventure Training program research (Bronson et al., 1992; Priest & Lesperance, 1994).

**Reliability**

Bronson et al. (1992) reported the TDI has an equivalent forms reliability of .95. No further information on this equivalent forms study or further reliability data are provided.

**Validity**

Priest and Lesperance (1994) reported that the original TDI was determined by a panel of experts to accurately measure the constructs that it purports to measure. No further information is available regarding
validity. Thus, the most that can be said about the TDI is that it has face validity. It was utilized in this study as it appears to be an accepted instrument for measurement of team development in the field of Adventure Training.

Data Collection

In accordance with ethical guidelines to protect the rights and confidentiality of the participants, a proposal for this study was submitted to and approved by the Human Subjects Institutional Review Board (HSIRB) at Western Michigan University (Appendix C).

The instruments were administered to both the experimental and control groups approximately 1 month prior to the experience and approximately 2 months following the experience. Informed consent forms (Appendix D) were explained and signed by all participants at the pretest sitting. The administration of pre- and posttests took place at the industrial site in a group setting. A few participants could not attend the posttest sitting and completed the instruments on their own time and returned them by mail. Four participants did not return the posttests.

Data Analysis

An independent sample t test was utilized using SAS, Version 6.08 (SAS Institute, 1990) for data analysis testing for differences between pre- and posttest group mean change scores for each scale of the POI, WES, and TDI. Change scores were determined by subtracting the pretest scores from the posttest scores. Thus change scores would
show the degree of change that occurs on these variables between the
test administrations.

Null Hypotheses

The following null hypotheses related to the research questions were tested in this study. The alpha level for statistically significant
differences was .05.

$H_0$: There will be no significant differences between the exper­
mental and control group pre- to posttest mean change scores on all
scales of the POI (12 scales), WES (10 scales), and TDI (11 scales).

This null hypothesis was applied to every scale. Thus, it was
utilized 33 times in the analysis as there was a total of 33 scales.
CHAPTER IV

ANALYSIS AND EVALUATION

This chapter is composed of two sections. The first section contains an examination of the statistical analysis of the data. The second section contains an evaluation of the hypotheses as they pertain to the results.

Analysis

The focus of this study was to evaluate the results of a 2-day structured corporate Adventure Training on individual self-actualization and group dynamics. The research questions suggested that this training would increase self-actualization for the individual and improve group functioning. Change was measured utilizing pre- and posttests on the Personal Orientation Inventory (POI) (Shostrom, 1974), Work Environment Scale (WES) (Moos, 1994), and Team Development Inventory (TDI) (Bronson, 1990).

Results

The data were analyzed utilizing an independent sample t test on the mean change scores. Pretest scores were subtracted from posttest scores to obtain the change scores. A t test was utilized to test for differences between the control and experimental groups. Results of the testing were accepted or rejected at the .05 level of probability. The
three smaller experimental groups were collapsed into one group of 34 subjects for the statistical analysis. Four subjects did not complete the posttest. Therefore, the statistical analysis was completed utilizing 30 change scores for the POI and WES. On the TDI, one subject did not complete the pretest. Therefore, the statistical analysis utilized 29 change scores for this instrument. The control group consisted of 12 subjects. All 12 subjects completed all the pre- and posttest instruments. Levine's Test was utilized to measure for homogeneity of variance on all test procedures; significance was accepted or rejected at the .01 level. A separate variance estimate was utilized when homogeneity of variance was rejected; these are indicated by an asterisk in the tables.

Findings regarding the POI are presented in Table 1. A comparison of the mean change scores of the experimental and control groups resulted in no significant difference for any POI scales.

<table>
<thead>
<tr>
<th>POI scale</th>
<th>Group</th>
<th>Mean differences (post-pre)</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Competence</td>
<td>Ctl</td>
<td>0.000</td>
<td>-0.344</td>
<td>40.0</td>
<td>.733</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>0.367</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner Directed</td>
<td>Ctl</td>
<td>1.750</td>
<td>-0.317</td>
<td>40.0</td>
<td>.753</td>
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<tr>
<td></td>
<td>Exp</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POI scale</td>
<td>Group</td>
<td>Mean differences (post-pre)</td>
<td>t</td>
<td>df</td>
<td>p</td>
</tr>
<tr>
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<td>-------</td>
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<td>------</td>
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</tr>
<tr>
<td>Self-Actualizing</td>
<td>Ctl</td>
<td>0.417</td>
<td>0.062</td>
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<td>.951</td>
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<td>Exp</td>
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<tr>
<td>Existentiality</td>
<td>Ctl</td>
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<td>-0.600*</td>
<td>36.0</td>
<td>.553</td>
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<td></td>
<td>Exp</td>
<td>0.567</td>
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<tr>
<td>Feeling Reactivity</td>
<td>Ctl</td>
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<td>-0.642*</td>
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<td></td>
<td>Exp</td>
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<td>Exp</td>
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<td>Exp</td>
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<tr>
<td>Self-Acceptance</td>
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<td>0.613</td>
<td>40.0</td>
<td>.544</td>
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<td></td>
<td>Exp</td>
<td>0.733</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nature of Man</td>
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<td>-1.944</td>
<td>40.0</td>
<td>.059</td>
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<td></td>
<td>Exp</td>
<td>0.567</td>
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<td></td>
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<td>Synergy</td>
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<td>-1.019</td>
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<td>Exp</td>
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<td>Acceptance of Aggression</td>
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<td>Exp</td>
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Table 1--Continued

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<th>POI scale</th>
<th>Group</th>
<th>Mean differences (post-pre)</th>
<th>t</th>
<th>df</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Capacity for</td>
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<td></td>
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<tr>
<td>Intimate Contact</td>
<td>Ctl</td>
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<td>-0.748*</td>
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<td></td>
<td>Exp</td>
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</tbody>
</table>

*Results of Levine’s Test indicated unequal variance.

The WES findings are presented in Table 2. No significant differences were identified when control and experimental groups were compared.

Table 2

<table>
<thead>
<tr>
<th>Between Group Comparison of Change Scores on the Work Environment Scale</th>
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</thead>
<tbody>
<tr>
<td>WES scale</td>
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<tr>
<td>-------------------------</td>
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<tr>
<td>Involvement</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Co-worker Cohesion</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Supervisor Support</td>
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Table 2--Continued

<table>
<thead>
<tr>
<th>WES scale</th>
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<th>p</th>
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</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>Ctl</td>
<td>0.250</td>
<td>-1.391*</td>
<td>37.4</td>
<td>.173</td>
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<td></td>
<td>Exp</td>
<td>0.733</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Orientation</td>
<td>Ctl</td>
<td>0.750</td>
<td>0.748</td>
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<tr>
<td></td>
<td>Exp</td>
<td>0.367</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Work Pressure</td>
<td>Ctl</td>
<td>-0.500</td>
<td>1.171</td>
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<tr>
<td></td>
<td>Exp</td>
<td>-1.233</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarity</td>
<td>Ctl</td>
<td>0.333</td>
<td>-1.004</td>
<td>40.0</td>
<td>.322</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>0.933</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial</td>
<td>Ctl</td>
<td>-0.333</td>
<td>0.057</td>
<td>40.0</td>
<td>.955</td>
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<tr>
<td>Control</td>
<td>Exp</td>
<td>-0.367</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td>Ctl</td>
<td>0.583</td>
<td>-0.643</td>
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<td>.524</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>0.967</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Physical Comfort</td>
<td>Ctl</td>
<td>0.250</td>
<td>-0.381</td>
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</tr>
<tr>
<td></td>
<td>Exp</td>
<td>0.500</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Results of Levine's Test indicated unequal variance.

Findings regarding the TDI are presented in Table 3. Again no significant differences were found in a comparison of experimental and control group mean change scores.
### Table 3
Between Group Comparison of Change Scores on the Team Development Inventory

<table>
<thead>
<tr>
<th>TDI scale</th>
<th>Group</th>
<th>Mean differences (post-pre)</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Goals</td>
<td>Ctl</td>
<td>15.083</td>
<td>0.327</td>
<td>39</td>
<td>.746</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>12.138</td>
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<tr>
<td>Interested</td>
<td>Ctl</td>
<td>0.750</td>
<td>-0.880</td>
<td>39</td>
<td>.384</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>7.483</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict</td>
<td>Ctl</td>
<td>-4.333</td>
<td>-0.877</td>
<td>39</td>
<td>.386</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>5.448</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening</td>
<td>Ctl</td>
<td>4.000</td>
<td>-0.984</td>
<td>39</td>
<td>.331</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>14.000</td>
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<td></td>
</tr>
<tr>
<td>Decisions</td>
<td>Ctl</td>
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<td>-1.076</td>
<td>39</td>
<td>.289</td>
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<tr>
<td></td>
<td>Exp</td>
<td>13.276</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity</td>
<td>Ctl</td>
<td>7.083</td>
<td>-0.250</td>
<td>39</td>
<td>.804</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>8.966</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Standards</td>
<td>Ctl</td>
<td>-0.833</td>
<td>-0.432*</td>
<td>36.3</td>
<td>.668</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>2.483</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help and Advice</td>
<td>Ctl</td>
<td>-5.167</td>
<td>0.856</td>
<td>39</td>
<td>.397</td>
</tr>
<tr>
<td></td>
<td>Exp</td>
<td>2.483</td>
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</tr>
</tbody>
</table>
Table 3--Continued

<table>
<thead>
<tr>
<th>TDI scale</th>
<th>Group</th>
<th>Mean differences (post-pre)</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celebrate</td>
<td>Ctl</td>
<td>-4.583</td>
<td>-0.747</td>
<td>39.0</td>
<td>.460</td>
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<td></td>
<td>Exp</td>
<td>3.276</td>
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<td></td>
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<tr>
<td>Feedback</td>
<td>Ctl</td>
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<td></td>
<td>Exp</td>
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<tr>
<td>Global</td>
<td>Ctl</td>
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<td></td>
<td>Exp</td>
<td>70.690</td>
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</table>

*Results of Levine's Test indicated unequal variance.

Analysis of Hypotheses

The research questions for this study predicted a direct relationship between the corporate Adventure Training and the increase of self-actualization and group functioning. It was hypothesized that this training would improve self-actualization and group functioning.

Null Hypotheses

$H_0$: There will be no significant differences between the experimental and control group pre- to posttest mean change scores on all scales of the POI (12 scales), WES (10 scales), and TDI (11 scales).

Utilizing 33 independent sample t tests on the mean change scores between the pre- and posttest scores, there were no significant
differences at the .05 level between the experimental and control groups as measured by these instruments. Therefore, none of the 33 null hypotheses can be rejected. This research did not demonstrate differences between the treatment and nontreatment groups.
CHAPTER V

SUMMARY AND CONCLUSIONS

This chapter contains a summary of this study and its findings, a discussion of the findings, suggested limitations, and implications for further research.

Summary

This study was intended to measure the impact of a corporate Adventure Training on the self-actualization of participants. It also examined the impact on the functioning of the group. The Personal Orientation Inventory (POI) (Shostrom, 1974) was used to measure self-actualization. The Work Environment (WES) (Moos, 1994) and the Team Development Inventory (TDI) (Bronson, 1990) were utilized to measure group dynamics and functioning. The quasi-experimental design for nonequivalent groups was utilized. Pre- and posttest measures were utilized and compared. Independent sample t tests were performed on the mean change scores between the control and experimental groups. Statistical significance was not demonstrated at the .05 level on any of the measures. Thus the null hypotheses could not be rejected. Based on this research, no claims that the treatment increased self-actualization or group functioning as measured by these instruments can be made.
Discussion of Findings

The results of this research study suggest that corporate Adventure Training is not an effective means to increase the functioning of the corporate group or the self-actualization of the corporate individual. No statistically significant difference was found between group pre- and posttest mean change scores. This research indicates that corporate training dollars may be better spent in another arena. While this study indicates that this treatment was not effective for increasing group functioning or self-actualization, there are observations that merit consideration.

Although statistical significance was not demonstrated, some tendencies towards positive change were observed. On the TDI, mean scores on all scales for the experimental group moved in the positive direction between pre- and posttest mean scores. For the control group, six mean scores increased while five mean scores decreased (Appendix E). On the POI, 11 of the 12 mean scores increased for the experimental group while 7 of the control group mean scores increased, 3 decreased, and 2 showed no change (Appendix F). On the WES, 8 of the experimental group mean scores increased while 2 decreased. Seven of the control group mean scores increased while 3 decreased (Appendix G). Although these changes are not statistically significant, there appears to be a tendency in the direction of positive change as demonstrated by the TDI and POI, with no evident tendencies in the WES scores.

A possible factor in interpreting the data is the level of functioning before the intervention as demonstrated by the pretest scores. The
pretest scores indicated a fairly high level of functioning. In a comparison of pretest experimental group mean raw scores to the normative sample mean scores identified in the manual (Moos, 1994), the differences ranged from -0.51 to 2.01 (Appendix H). For the experimental groups, all mean raw scores scales fell within one standard deviation from the norm of the normative scores. This indicates that this group was functioning as well as the normative groups at the pretest measurement. In a similar comparison on the POI, the pretest mean raw scores were found to be within a range of -2 to 1.3 for the experimental group (Appendix I). These mean scores also all fell within one standard deviation from the norm for the normative group. These mean scores indicate that individual self-actualization for the experimental group participants were comparable to the normative group levels of self-actualization.

While there are no normative group scores for the TDI, a comparison with data from Priest and Lesperance (1994) indicated that the groups in this study began at a higher level of functioning than those in their study. In the Priest and Lesperance study, three experimental groups demonstrated the following pretest mean scores: 49.11 (n = 15), 52.03 (n = 20), and 49.79 (n = 20). The control group demonstrated a pretest mean score of 52.21 (n = 20). No standard deviations were provided. These scores are the sum of the 10 item scores. This sum score was used as a global assessment of each group. The scale was set from 0 to 100. Converting scores from this study to a 0 to 100 scale indicates a pretest global score of 61.8 for the experimental groups (the three experimental group mean scores were collapsed for analysis).
and 61.1 for the control group. As measured by the TDI, the groups in this study appeared to be higher functioning than the groups in the Priest and Lesperance study prior to the treatment (Appendix J). Using this same scoring schemata, the posttest mean scores of 68.8 for the experimental group can be compared to posttest mean scores in the Priest and Lesperance study, where posttest mean scores were 67.68, 70.07, and 68.93 for experimental groups, and 52.41 for the control group (Appendix K). In the Priest and Lesperance study these posttest mean scores were significantly higher \((p < .05)\) than pretest scores. Posttest mean scores from this study were very similar to posttest mean scores in the Priest and Lesperance study but no statistically significant difference between experimental and control groups was demonstrated. One explanation for this phenomena would be that this study began with a fairly high functioning group as indicated by higher pretest mean scores.

Discussions with the leadership person of the corporate groups and the training provider indicated a strong focus on growth and development within this corporation. This training was a part of an ongoing corporate philosophy that encourages leadership and teamwork. Accordingly, this training was not an initial attempt at growth or change, but was a part of a growth process initiated by the corporate leadership. Due to these factors, change may have occurred prior to this training. Also, the instrumentation may not have been sensitive enough to measure further change that may have occurred due to the training.
Limitations

This study did not provide a random sample or random selection, thus generalization can be made only to those in similar groups as used for the study. Attempts were made to match characteristics of the experimental and control groups in terms of age, gender, and level in the corporation. The control group members were in contact and worked with the experimental groups on a daily basis, creating a potential for contamination.

The study is limited to the philosophy and techniques used at the Black River Center. The ability to generalize to other training centers is dependent upon a similar focus in goals and techniques. Generalization to other types of groups such as treatment groups is not possible. Each program is tailored to the specific need of the group, thus a standard approach is not consistent with the Adventure Training model.

This research is hampered by the lack of research-based validation for the instruments chosen to measure group dynamics. It appears that instruments to measure these variables have not been adequately developed. Many that are available lack appropriate support by reviewers. The WES was supported as a useful instrument by reviewers (Moses, 1994; Vaux, 1992). The TDI has been utilized in similar research. However, there is no research available on the reliability or validity of the TDI. For both instruments, further research regarding validity is desired. Priest et al. (1993) reported that instrumentation to effectively measure the constructs of group dynamics such as conflict resolution, goal setting, time
management, leadership, problem solving, decision making, and organizational ethics are a problem in the field in general.

Implications for Future Research

Much of the research cited in the review of the literature was conducted on fairly long-term experiences in which positive results were observed. This research was conducted on a 2-day program and no significant change was apparent. Research that analyzes the most efficient length of time would be helpful. Optimal length of programming is not clear from the current research. What is the minimal amount of resources that could produce a significant change?

Future research might also examine group dynamics in a different way. The instruments in this research appeared to be the best available, yet there is some question as to how accurately they measure group dynamics. Perhaps more appropriate measures can be developed. Research utilizing observations of group functioning are difficult to carry out, but could make a significant contribution.

In this research, the control group was not specifically drawn from the same population as the experimental groups. Future research could utilize intact groups that serve in the same capacities and could be compared over time. Large corporations are the likely environments to find such situations.

Examination of raw scores indicated that on some of the measured scales there was a wide range of responses which suggested that some individuals had a major positive response and some a major negative response. The mean of these scores indicated no change. However,
some individuals' responses indicated a favorable reaction to the training. These large variations in change raise the question of what characteristics may make an individual or group more amenable to this type of treatment. There may be individuals with particular personality styles, attitudes, or mind-sets that would respond more favorably than others to this training. Further research could explore this hypothesis.
Appendix A

Statement Granting Permission to Utilize the Team Development Inventory
TO WHOM IT MAY CONCERN:

My signature below indicates that I have granted Scott Kelly permission to use the Team Development Inventory (TDI) for his dissertation research. This includes permission to reprint the TDI within the dissertation. Permission is also granted for University Microfilms Inc. (UMI) to supply copies on demand.

Permission granted by: James L. Roman
4/15 - 9/9 - 2010
Appendix B
Team Development Inventory
Team Development Inventory

Please mark the line with an "X" in the place that best represents the extent to which your work group exhibits each behavior. The extreme left of the line represents "Never," the midpoint represents "Half the Time," and the extreme right represents "Always."

Team members understand group goals and are committed to them.

Team members are friendly and interested in each other.

Team members acknowledge and confront conflict openly.

Team members listen to others with sensitivity and understanding.

Team members are prompt in making decisions and initiating solutions.

Team members recognize and respect individual differences.

Team members have high standards for their own work and the team's performance.

Team members look to each other for consultation on resolving challenges.

Team members recognize and reward team achievements.

Team members encourage and appreciate comments about team efforts.

Reproduced by permission (J. Bronson, Appendix A).
Appendix C

Protocol Clearance From the Human Subjects
Institutional Review Board
Date: October 1, 1994

To: Scott Kelly

From: Richard Wright, Interim Chair

Re: HSIRB Project Number 94-09-07

This letter will serve as confirmation that your research project entitled "The impact of a 2-day adventure education experience on self-actualization and group dynamics" has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you must seek specific approval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date. In addition if there are any unanticipated adverse or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: Oct. 1, 1995

xc: Hedstrom, CECP
Appendix D
Informed Consent Form
Western Michigan University  
Department of Counselor Education and Counselor Psychology  

Principal Investigator: Suzanne Hedstrom, Ed.D.  
Research Associate: Scott Kelly, M.A.  

You are being asked to complete three instruments which will take you 45 minutes to one and one-half hours to complete. You are being asked to do this two times, 2-3 months apart. There are no foreseeable risks in completing the instruments. They are paper and pencil evaluations that are considered standard measures of individual and group dynamics. As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to the participant except as otherwise stated in the consent form.

It is expected that this research will be useful in program evaluation and development. This information will be used to help establish credibility of adventure education in the field of corporate training.

Confidentiality of records will be maintained by the issuance of an identification number to all participants prior to evaluation. Once the instruments are turned in the numbers will be removed to insure confidentiality. Aggregate scores will be reported to the leadership of your group. No individual scores will be available.

Any questions regarding the research, its purpose and intent, or participants' rights can be directed to: Scott Kelly at (616) 375-7915 or (616) 345-0909 or Suzanne Hedstrom, Ed.D. at (616) 387-5114. The participant may also contact the Chair, Human Subjects Institutional Review Board (387-8293) or the Vice President for Research (387-2398) if questions or problems arise during the course of the study.

Participation in this research project is completely voluntary. You may discontinue participation at any time with no penalties of any kind.

Your signature below indicates that you have read and understood this statement in its entirety and you agree to participate in this research.

Name ________________________________ Date _____________
Appendix E

Team Development Inventory: Pre- and Posttest
Scale Score Means
<table>
<thead>
<tr>
<th>Scale</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Pretest</th>
<th>Posttest</th>
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<td>82.5</td>
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<td>778.5</td>
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</table>

*aWhen comparing the changes from pre- to posttest mean scores with the mean change scores in Table 3 (p. 72), slight discrepancies exist. The mean scores in this appendix are derived from the group sample while the mean change scores are derived from paired samples. Not all participants completed all instruments at each administration creating a slightly different data base from which these mean scores are calculated.
Appendix F

Personal Orientation Inventory: Pre- and Posttest
Scale Score Means
### Personal Orientation Inventory: Pre- and Posttest
#### Scale Score Means

<table>
<thead>
<tr>
<th>Scale</th>
<th>Experimental group</th>
<th>Control group</th>
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<td>Posttest</td>
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*a When comparing the changes from pre- to posttest mean scores with the mean change scores in Table 1 (p. 68), slight discrepancies exist. The mean scores in this appendix are derived from the group sample while the mean change scores are derived from paired samples. Not all participants completed all instruments at each administration creating a slightly different data base from which these mean scores are calculated.*
Appendix G

Work Environment Scale: Pre- and Posttest
Scale Score Means
Work Environment Scale: Pre- and Posttest
Scale Score Means

<table>
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<th>Scale</th>
<th>Experimental group</th>
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</thead>
<tbody>
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<td>Pretest</td>
<td>Posttest</td>
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<td>7.8</td>
</tr>
<tr>
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*aWhen comparing the changes from pre- to posttest mean scores with the mean change scores in Table 2 (p. 70), slight discrepancies exist. The mean scores in this appendix are derived from the group sample while the mean change scores are derived from paired samples. Not all participants completed all instruments at each administration creating a slightly different data base from which these mean scores are calculated.*
Appendix H

Work Environment Scale: Comparison of Experimental Group Pretest Mean Raw Scores With Normative Sample Scores
## Work Environment Scale: Comparison of Experimental Group Pretest Mean Raw Scores With Normative Sample Scores

<table>
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<th>Normative group standard deviations</th>
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**Note.** Normative sample scores taken from Moos (1994, p. 22).
Appendix I

Personal Orientation Inventory: Comparison of Experimental Group Pretest Mean Raw Scores With Normative Sample Scores
### Personal Orientation Inventory: Comparison of Experimental Group Pretest Mean Raw Scores With Normative Sample Scores

<table>
<thead>
<tr>
<th>Scale</th>
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<th>Normative group standard deviations</th>
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<tr>
<td>#12</td>
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<td>16.9</td>
<td>3.3</td>
</tr>
</tbody>
</table>

**Note.** Normative sample scores taken from Shostrom (1974, p. 9).
Appendix J

Team Development Inventory: Comparison of Pretest Global Scores With Priest and Lesperance (1994)

Pretest Global Scores
Team Development Inventory: Comparison of Pretest Global Scores With Priest and Lesperance (1994) Pretest Global Scores

<table>
<thead>
<tr>
<th>Group</th>
<th>TDI pretest scores</th>
<th>Priest and Lesperance pretest scores</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

*The scores from the three experimental groups were collapsed into one score for statistical analysis.
Appendix K

Team Development Inventory: Comparison of Posttest Global Scores With Priest and Lesperance (1994)

Posttest Global Scores
**Team Development Inventory: Comparison of Posttest Global Scores With Priest and Lesperance (1994)**

*Posttest Global Scores*

<table>
<thead>
<tr>
<th>Group</th>
<th>TDI posttest scores</th>
<th>Priest and Lesperance posttest scores</th>
</tr>
</thead>
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<tr>
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<td>Control</td>
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<td>52.41</td>
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</table>

*The scores from the three experimental groups were collapsed into one score for statistical analysis.*
BIBLIOGRAPHY


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applications of adventure programming (pp. 283-297). Dubuque, IA: Kendall/Hunt.


