

Adventure-Based Therapy and Self-Efficacy Theory: Test of a Treatment Model for Late  
Adolescents with Depressive Symptomatology

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(ABSTRACT)

The primary objective of the current study was to propose and test a model for conceptualizing changes that occur as a result of adventure-based therapy (ABT), using self-efficacy theory as the conceptual foundation. Other objectives were to test the effects of ABT on depressive symptomatology and related psychosocial variables (e.g., anxiety, self-esteem). One-hundred and nine college freshmen participated in the screening procedure. Subjects who indicated mild to severe depressive symptomatology on a self-report measure and did not report past history of trauma were invited to participate in the study. Forty-one individuals were randomly assigned to either the adventure-based therapy (ABT) condition (i.e., a one-day ropes course experience) or to a placebo-control condition (i.e., an extended walk outdoors in a group). Subjects were divided into two cohorts, each with treatment and control groups, because of safety requirements related to capacity on the ropes course. Self-report instruments were completed immediately prior to participation (i.e., pretest), immediately following participation (i.e., posttest), and at 2-weeks and 2-months post participation.

Primary multivariate analyses of variance performed on state and trait dependent measures did not yield statistically significant interactions; therefore, results indicated that ABT may not significantly decrease depressive and anxious symptomatology in late adolescents with depressive symptomatology. However, data were further analyzed for exploration in light of the generally low statistical power and group differences suggested by graphic displays of data. Exploratory analyses suggested that ABT may increase efficacy for coping with anxiety created by novel situations and efficacy for working and problem-solving in a group. It was therefore suggested that self-efficacy theory warrants

further consideration as a theoretical framework for explaining changes that occur as a result of ABT. In addition, exploratory analyses suggested that ABT may also reduce anxiety and general psychological distress. Finally, depressive symptomatology decreased for individuals in the ABT treatment group and the placebo-control group according to exploratory analyses; however, there were no differences between groups. Further exploration of the potential effects of ABT on depressive and anxious symptomatology and general psychological distress is warranted.

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be Dr. DeHart on paper, this page will be our moment...from one Dr. DeHart to another, Dad, I salute you.

This project, my career, and my life I owe to my Savior, Jesus Christ. He is my strength and my all. It is only through His love for me, in spite of myself, that I have completed this project. Through this experience, I have begun to learn how to “rejoice in my sufferings” (Romans 5: 3) and to “work [at whatever I do] with all my heart, as working for the Lord, not for men” (Colossians 3: 23). I look forward, with great anticipation, to seeing what the Lord has in store for me...for I know that He will complete the good work that He has started (Philippians 1: 6).

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# Introduction

It has been estimated that approximately 35% of adolescents experience subclinical levels of depressive symptomatology (Petersen, Compas, Brooks-Gunn, Stemmler, Ey, & Grant, 1993), while a lifetime prevalence rate of approximately 25% has been reported for Major Depressive Disorder (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Depressive symptomatology has been associated with numerous psychosocial problems for adolescents. Generally, adolescents experiencing depressive symptomatology report lower levels of self-esteem (Hops, Lewinsohn, Andrews, & Roberts, 1990), low perceived social acceptance (King, Naylor, Segal, Evans, & Shain, 1993), inadequate social skills (Hops et al., 1990), and low social self-efficacy (McFarlane, Bellissimo, Norman, & Lange, 1994).

Preliminary research efforts have suggested that adventure-based therapy (ABT), as it will be referred to in the current presentation, may address many psychosocial constructs associated with depressive symptomatology in adolescents (Gilliam, 1993; Kimball & Bacon, 1993; Schoel, Prouty, & Radcliffe, 1988), although depressed populations have not been studied in the empirical ABT literature. Thus, two objectives of the current study were to test the effects of ABT on depressive symptomatology and on psychosocial variables associated with depression in a late adolescent population reporting mild to moderate levels of depressive symptomatology.

Another objective of the study relates to the theoretical state of the ABT literature; that is, there is no theoretical framework from which to conceptualize changes that occur as a result of ABT. Thus, another objective of the current study was to take the first step in proposing and testing a theoretical model for conceptualizing changes which occur as a result of ABT using self-efficacy theory (Bandura, 1977) as the conceptual foundation (Priest, 1992, 1993; Priest & Ewert, 1992). The new model for interpreting ABT results was tested by assessing self-efficacy for various behaviors related to depressive symptomatology prior to and following an ABT experience.

# Chapter 1 : Aventure-Based Therapy

## Origins in Experiential Learning

The philosophies of ABT are grounded in the principles of experiential learning (Gass, 1993). Experiential learning philosophy contends that learning, or behavior change, occurs most readily when direct experience is a central part of the learning process (Carver, 1996; Joplin, 1981; Proudman, 1992). At its most basic level, the process begins when an individual is placed in a demanding novel reality context in which he or she must problem-solve using new skills. The individual then receives immediate feedback from the environment about performance, which may include feedback from peers, leaders, and/or the physical demands of the activity itself. Critical analysis and reflection, which are viewed as a central part of the experiential learning process, occur leading to behavior change. Proudman (1992) cautions that “experiential learning is not simply ‘learning by doing (p.20).’” He states that experiential learning involves direct experience as well as reflection and analysis of performance. The principles of experiential learning serve as the foundation for the components and procedures of ABT.

## Application of ABT

ABT has been implemented with various populations in numerous settings and has occurred as both primary and adjunct therapy. Generally, uses of ABT can be divided into three modalities of application. First, wilderness therapy involves implementing the principles of ABT in the wilderness setting. Wilderness programs, such as Outward Bound, typically last 24-28 days and involve a small group of individuals negotiating problems together. In the wilderness setting, therapy is thought to occur at all times; that is, there is no respite from the demanding challenges inherent in the program. The second venue in which ABT is applied is as adjunct therapy at or near an existing treatment facility, or as a part of a larger school prevention-education program. These programs typically involve work in small groups for 1-2 hours several times per week utilizing adventure-based activities (e.g., a ropes course). A third arena, which will not be given further attention in the current presentation, involves long-term residential camping. These programs, such as the Eckerd Foundation Camps, involve small

groups living together in the wilderness for 6 months to one year solving problems related to obtaining basic needs (e.g., food, shelter).

ABT has been applied to multiple and varied populations. Some applications of ABT with adolescent populations have included programming for low-achieving high school males (Marsh & Richards, 1988), special education students (Burney, 1992), male and female juvenile delinquents (Castallano & Soderstrom, 1992; Wichmann, 1983), male juvenile sex offenders (Kjol & Weber, 1990), substance abusers (Kennedy, 1993), adolescents in outpatient settings (Davis-Berman & Berman, 1989; Levitt, 1994), adolescents in residential treatment facilities (Duindam, 1991; Duindam & Keus, 1994; Gillis, Williams, & Hollis, 1992; Witman, 1992), and for adolescents without diagnoses in programs such as Outward Bound (Ewert, 1988; Ewert & Heywood, 1991; Marsh, 1986; Marsh & Richards, 1990; Marsh, Richards, & Barnes, 1986, 1987). Application of ABT to adult populations has included women with diagnoses of major depressive disorder, post-traumatic stress disorder, dysthymia, anxiety, and adjustment disorder (Kessell, 1994), substance abusers (Gass & McPhee, 1990), female sexual assault survivors (Levine, 1994), females without diagnoses (Arnold, 1994; Powch, 1994; Stopha, 1994), and families presenting for treatment (Gass, 1995; Mason, 1987).

Improvement of self-concept/esteem is by far the most heavily cited goal of ABT (Gilliam, 1993; Schoel et al., 1988). Other goals include increasing self-confidence, trust in others and self, self-awareness, internal locus of control, goal setting skills, problem solving skills, acceptance of differences among individuals, and social skills (Gilliam, 1993; Kimball & Bacon, 1993; Levitt, 1994; Marsh, et al., 1986, 1987; Priest, 1992; Sakofs, 1991; Schoel, et al., 1988; Wichmann, 1991).

### ABT Components

The procedures and components of ABT will be explicated with the intent of making a logical case for utilizing self-efficacy theory to explain changes observed as a result of ABT later in the presentation. Several elements of ABT extrapolated from the multiple types and settings of adventure-based activities will be discussed as components central to an ABT prototype or template. First, ABT occurs *in vivo*. While the actual environment may be physically constructed in some types of ABT (e.g., a ropes course), individuals must negotiate real tasks in

that environment. Second, ABT involves the direct involvement of the individual in the prescribed activity. Performance by the individual is considered to be central to the adventure-based experience. Feedback, which can occur as a natural consequence of behavior, is viewed as an important tool for establishing a conceptual behavior-consequence link during the formal processing of experiences. Third, the individual is placed in novel, problem-solving situations in which he or she experiences disequilibrium. Specifically, psychological discomfort (e.g., anxiety) occurs when an individual becomes aware that coping strategies used in the past will no longer be useful in the new context (Nadler, 1993). Physiological arousal is also created by the novelty of the challenge. Neither the psychological discomfort or physiological arousal experienced is intended to overwhelm the individual, rather, mild levels of each are viewed as motivators for trying new strategies and skills. Fourth, a cooperative community environment is established in ABT. ABT *requires* that participants be placed in situations where it is necessary to work as a group to solve problems (Schoel, et al., 1988). Advantages of group therapy can include: 1) the establishment of group cohesiveness, which sets the stage for self-disclosure, risk-taking, and constructive conflict resolution within the group (Yalom, 1995), 2) promotion of social skills development as individuals receive feedback from one another as a natural consequence of their behavior in the group, and 3) the occurrence of verbal support, guidance, modeling, feedback and physical support from peers. Fifth, ABT is guided by a participant therapist who has several responsibilities within the group. He or she must act as the leader/authority and be aware of safety matters, model appropriate coping strategies, offer verbal support, guidance, and feedback, offer physical support when necessary, and facilitate the processing of the experience. An advantage of having the therapist directly involved in the therapeutic activities is that they are in the problem-solving environment with the individuals while problem-solving tasks are being attempted and thus, can observe behaviors, probe thoughts and feelings during formal processing before and after the event, and give immediate feedback, support, and guidance.

Processing of adventure activities is considered to be central to promoting therapeutic change in ABT. Within ABT, procedural elements are “processed” by trained leaders immediately preceding and following each specific adventure activity. Processing that occurs before engagement in an activity can be referred to as “briefing” and may include discussion of

group and individual goals, feelings about the activity, and strategies for completing the activity. Similarly, processing that follows the activity can be called “debriefing” and may include group discussion related to recollection of what behaviorally occurred during the experience, feelings associated with those behaviors, evaluation of personal and group goal attainment, feelings associated with achievement or failure to attain a specified goal, and the application of feelings and thoughts related to the present experience to past experiences, future goals, and the larger social environment (Schoel, et al., 1988). Interaction between individuals and the therapist may also occur during an activity, yet this interaction is not considered to be part of the “formal” processing experience. Personal and group goals, performance activities chosen, and the processing of those activities could potentially be therapeutically adapted to meet the needs of various clinical or subclinical populations. While processing is viewed as a critical part of the process of change for individuals involved in ABT, there is no theoretical basis for why or how processing leads to change.

#### ABT Procedures

To enhance understanding of ABT, the establishment and procedures of a generic adventure-based program will be briefly outlined. The outline has been derived from sample programs sponsored by Project Adventure, Inc. (Schoel et al., 1988). Program goals and objectives are established based on a needs assessment for the target population. Specific adventure-based activities designed to address program objectives are chosen and included in the agenda. Briefing and debriefing, or processing as it is referred to above, occur prior to and following engagement in and completion of each adventure-based element or task attempted. A program agenda for an adult inpatient substance abuse population currently used at the Institute of Pennsylvania Hospital is called the TREC Adventure Program (Training on Ropes Experiencing Challenge) and affords an example of ABT. Individuals participate in several hours of ABT activities daily. Goals for the first week include establishing trust in the group and discussing basic issues of addiction. Goals change for each of four weeks of ABT treatment and daily sessions involve addressing addiction topics within the context of adventure-based activities. In any ABT program, issues are addressed through the processing of the adventure-based experiences.

## ABT Literature

A critical review of ABT literature will set the stage for recommending a theoretical framework within which to conceptualize changes that occur as a result of ABT. ABT studies were located via electronic searches (e.g., PsycLit, ERIC) and from reference sections in obtained articles. In addition to a plethora of commentary expositions, several review articles, a meta-analysis, and 48 empirical studies were located. An attempt was made to obtain *all* studies concerning ABT; the search was not limited by study demographics (i.e., population age, diagnosis). Only 6 empirical studies that were obtained used adult populations and 4 of those used control groups. The remaining 42 studies involved adolescent populations, 14 of which used control groups. This, in part, contributed to the choice of using ABT to enhance treatment for adolescent, as opposed to adult or child, populations. The meta-analysis, review articles, and outcomes from empirical studies are reviewed.

Review articles. Reviews of the effectiveness of adventure-based programs/treatments suggested improvement with regard to several psychological constructs following an adventure-based experience (Ewert, 1987; Kimball & Bacon, 1993; Levitt, 1994; Priest, 1992). In addition, reviews varied in the degree to which they relied on methodologically sound studies from which to draw conclusions. For example, while Levitt recognized the methodological weaknesses on which her conclusions were based, she continued to list several therapeutic benefits of ABT experiences without qualification. On the other hand, in a more cautionary approach, Priest stated that a descriptive research base exists which is replete with methodologically flawed studies. Specifically, he commented that “something about outdoor education or adventure programming appears to enhance self-concept, but we have little evidence to claim that we are certain what it is” (p. 8). In general, the review articles make a plea for more controlled studies and for a theoretical framework from which to investigate more pointed research questions concerning how, when, and for whom adventure-programming may be useful.

Meta-analysis. In an effort to quantify the state of ABT literature, Cason and Gillis (1994) conducted a meta-analysis of outdoor adventure programming for adolescents which

involved the calculation of 147 effect sizes describing 19 outcome measures for 43 studies which met inclusion criteria. The analysis yielded an average effect size of .31 (SD = .62) with a range of effect sizes from -1.48 to 4.26. The wide range of effect sizes, along with the sizable standard deviation, indicates considerable variability in effect sizes and reflects the broad range of characteristics studied; thus, little insight can be gleaned from this average effect size.

Rather, it is of more clinical utility to examine effect sizes for specific variables. For example, effect sizes based on outcome measures revealed an effect size of 1.047 (SD = .459) for Clinical Scales (i.e., depression and anxiety). This suggests potential utility for ABT not only in the clinical arena, but specifically with adolescents who have internalizing disorders or tendencies.

Empirical studies. Outcomes associated with ABT for adolescent populations will be discussed in the following categories: self, social, cognitive, academic, internalizing, externalizing, and physical. The present discussion will integrate findings from studies with various experimental designs; however, outcomes from controlled studies only will be utilized at a later point in the presentation and are provided in Table 1. A discussion of methodological limitations will follow the integration.

Self-esteem and self-concept are by far the most frequently studied constructs in ABT. Of the 42 empirical studies acquired for review, 24 included self-concept, or some variation, as a target variable. Thirteen out of 18 measurements related to self-esteem/concept in the controlled studies reported significant improvement following an ABT experience (Bertolami, 1981; Cuff & Radcliffe, 1988, Gillett, Thomas, Skok, & McLaughlin, 1991). Of the 15 studies without control groups, statistically significant improvement was reported in 14 studies (Hazelworth & Wilson, 1990; Marsh & Richards, 1988, 1990; Smith, 1992), while no change was reported in one (Andrew, 1971). Empirical evidence from both controlled and uncontrolled studies suggests that improvement in self-concept likely occurs following ABT.

Within the social domain, 15 out of 19 measurements in controlled studies which assessed variables related to social functioning showed significant improvement following ABT (Gass, 1987; Ritter & Mock, 1980; Kolb, 1988). Of the uncontrolled studies, eight demonstrated an increase in social skills (Fersch & Smith, 1978; Young & Ewert, 1992) while two showed no change (Hazelworth & Wilson, 1990); four reported increases in perceived social acceptance (Andrew, 1971; Wright, 1982), while two reported no change (Fersch & Smith,

1978); five demonstrated a decrease in asocial behavior (Davis-Berman & Berman, 1989; Flor, 1990); and one reported more acceptance of others following ABT (Smith, Gabriel, Schott, & Padia, 1975). Again, evidence from both controlled and uncontrolled studies suggests improvement in social functioning following ABT.

Cognitive variables such as locus of control, problem-solving confidence, and self-efficacy also demonstrated a trend in improvement following ABT. Five out of seven measurements of these cognitive variables assessed in controlled studies showed significant improvement following ABT (Bertolami, 1981; Sakofs, 1991). Of the uncontrolled studies, four out of five which assessed locus of control (Davis-Berman & Berman, 1994; Marsh, et al., 1986, 1987), four out of four which assessed problem-solving ability (Clapp & Rudolph, 1990; Marsh & Richards, 1988; Marsh, et al., 1986, 1987), and one out of one study which assessed self-efficacy (Davis-Berman & Berman, 1989) reported significant improvement following an adventure-based experience. Results from both controlled and uncontrolled studies suggest improvement of certain cognitive variables following ABT.

More uncontrolled studies have investigated academic variables than controlled studies in ABT. One controlled study reported a significant increase in grade point average following ABT (Gass, 1987), while two controlled studies reported no changes in learning or confidence in academic ability after ABT experiences (Gillett, et al., 1991; Ritter & Mock, 1980). However, several uncontrolled studies reported improvement in academic domains after completion of ABT; two demonstrated significant improvement in school adjustment (Fersch & Smith, 1978; Gaus, 1981), five showed increased academic performance (Marsh & Richards, 1988, 1990; Smith, 1992), and three reported increased achievement/motivation (Fersch & Smith, 1978; Koepke, 1973). Improvement in academic functioning is suggested more by results from uncontrolled rather than controlled studies.

Studies available for review did not involve depressed and/or anxious populations; however, depressive and anxious symptomatology was assessed in some studies which utilized adjudicated youth or “normal” adolescent populations, that is, populations without diagnoses. With regard to measurements in the controlled studies, 4 out of 5 reported a significant reduction in depressive and/or anxious symptomatology following ABT. One controlled study reported a significant decrease in depressed mood and a decrease in social anxiety in an

adjudicated population following a wilderness course compared to adjudicated youth who did not participate in the program (Sakofs, 1991). In another controlled study, anxiety, as assessed by self-report and behavioral observation, reportedly decreased significantly in a self-selected population of adolescents following an Outward Bound course compared to adolescents who did not participate in the course (Ewert, 1987). However, one controlled study reported no differences between ABT and a control group on a measure of anxiety following a mandatory adventure-based school program (Kolb, 1988). Only one out of seven uncontrolled studies which targeted anxiety did not report significant change following ABT (Andrew, 1971). The study not reporting change involved adjudicated youth, while the six studies which did report anxiety reductions were conducted with “normal” populations (Braverman, Brenner, Fretz, & Desmond, 1990; Bunting, Little, Tolson, & Jessup, 1986; Drebing, Willis, & Genet, 1988). Empirical evidence from both controlled and uncontrolled studies suggests that, although they did not utilize clinically depressed and/or anxious populations, depressive and anxious symptomatology may decrease following participation in ABT.

Studies of the effects of ABT on externalizing behavior have yielded mixed results. Within the controlled studies, 5 out of 7 measurements demonstrated significant improvement following ABT. Improvement was demonstrated with regard to recidivism rates for adjudicated youth (Castellano & Soderstrom, 1992), retention in school (Gass, 1987, 1991), and “acting out” behavior (Ritter & Mock, 1980). A program for adjudicated youth, however, yielded no change in disciplinary problems in school or in drug and alcohol use following an ABT experience (Wichmann, 1991). In one uncontrolled study, 91 substance-abusing adolescents who received inpatient treatment consisting of a 3-day stabilization/detoxification period and a 22-day wilderness experience were followed for one year after completing the treatment program. Forty-seven percent of the adolescents reported complete abstinence and 38% reported regular participation in AA/NA at one-year follow-up (Kennedy, 1993). Results from both controlled and uncontrolled studies suggest improvement with regard to certain externalizing behaviors following ABT.

Physical self-concept was assessed in several ABT studies in addition to actual physical ability. Two controlled studies reported significant increases in physical self-concept for individuals who experienced ABT as compared to those in the control group (Cuff & Radcliffe,

1988; Kolb, 1988), while one reported no change (Gillett, et al., 1991). In addition, six uncontrolled studies reported significant improvement in perceptions of physical ability (Marsh & Richards, 1988, 1990; March, et al., 1986, 1987; Wright, 1982), while two reported no differences following ABT (Fersch & Smith, 1978; Hazelworth & Wilson, 1990). Interestingly, in one uncontrolled study, no differences in perceptions of physical self were reported, however, significant improvement in physical ability was reported following ABT (Fersch & Smith, 1978). Results from more uncontrolled than controlled studies suggested improvement of physical ability following ABT, while there is some evidence from controlled studies to suggest that improvement of physical self-concept may occur following ABT.

Methodological limitations. Although many of the aforementioned studies generally suggest that ABT yields improvement in several domains of psychosocial functioning, these conclusions are tenuous, as they are based on studies with significant methodological limitations. First, 28 of the 42 studies reviewed involving adolescent populations lacked control groups. Collecting pre-post data on a group of individuals that received an ABT experience without also collecting data on similar individuals who did not participate in an ABT experience makes it impossible to conclude that changes on outcome measures are a result of the treatment and not a result of other influential variables. For example, changes observed on outcomes measures may have been a result of maturation that would have occurred naturally during the course of treatment, nonspecific effects of treatment, and/or subject expectancies. Further, Priest (1992) suggested that simply being away from the daily routine and being involved in *anything* that differs from the normal routine may be enough to improve self-concept. This is not to suggest, however, that providing a control group eliminates potential problems with interpretation. Specifically, lack of random assignment to groups, which occurred in many studies, creates fertile ground for subject expectancies to affect outcome. That is, adolescents who self-select for a particular adventure-based experience may *expect* to see self-change, while those who do not wish to participate are used for comparison and may not perceive the activity to be potentially beneficial. Using a control group in this fashion does not eliminate the variable of expectation. This said, the available controlled studies, even with their limitations, are the best that the empirical ABT literature currently has to offer.

### Theoretical State of ABT Literature

Adventure-based therapy is in its infancy as a form of treatment, and while not by any means conclusive, existing studies suggest favorable effects. One factor which has likely contributed to the seemingly disorganized ABT literature is its lack of theory. That is, although ABT programs espouse a philosophical reason for their existence, they lack a theoretical foundation. A coherent theory explicating *how* various factors, which are believed to be involved in the therapeutic processes of ABT, operate does not currently exist. This should not necessarily be viewed as a deficiency resulting from inadequate research or lack of interested persons in the area, but rather as a reflection of the relatively recent conceptualization of ABT as treatment rather than solely as recreation. That is, the recognition that ABT has potential therapeutic application grew out of persons in the recreation/camping arenas noting behavior changes in participants following adventure-based activities. It has only been in the last 10-15 years that ABT has been conceptualized by counselors and therapists as having therapeutic potential. As mentioned previously, one purpose of this study was to propose and test a model for conceptualizing changes as a result of ABT using self-efficacy theory (Bandura, 1977) as the conceptual foundation (Priest, 1992, 1993; Priest & Ewert, 1992).

## Chapter 2 : Self-Efficacy Theory

### Self-Efficacy Defined

According to social cognitive theory, individuals contribute to their own motivation and behavior within a system of triadic reciprocal causation (Bandura, 1986). The interacting determinants include behavior, internal personal factors such as cognition, affect, and biological factors, and the external environment. Therefore, any model proposed according to this theory must include human agency as a causal determinant of behavior. That is, there must be a concession for self-generated influential factors. According to Bandura (1986), a person's belief (i.e., self-efficacy) in their capability to exert some control over circumstances and events in their lives is the most powerful self-generated influence in determining human action.

Self-efficacy theory states that an individual's judgment of his or her own capability to successfully execute behaviors required to obtain a desired outcome (i.e., efficacy expectation) mediates attempts to engage in the behavior (Bandura, 1977, 1986). Simply knowing what behavior is required in a situation to achieve a particular outcome is not predictive of behavior in and of itself, rather, it is the *perceived ability* to perform the behavior that determines whether or not an individual will engage in a behavior. Efficacy beliefs, then, serve as a proxy for determining how individuals will behave in a given situation and for predicting thoughts and emotions associated with those situations (Bandura, 1986).

### Effects of Self-Efficacy on Psychological Functioning

Psychosocial functioning is affected by efficacy expectations in various ways. To begin with, perceived efficacy acts as a determinant of an individual's choice of activities (Bandura, 1986). Generally, an individual will engage in activities in which he or she possesses a certain level of confidence about attaining success. Relatedly, individuals tend to avoid activities in which they do not view themselves as having the capabilities necessary to elicit success. This avoidance of challenging activities could restrict the amount of positively reinforcing feedback that an individual receives from the environment. In a depressed individual, a lack of positive reinforcement from the environment may serve to maintain or exacerbate maladaptive cognitive beliefs that he or she is not capable of success in various situations (i.e., low efficacy).

Perceived efficacy is also instrumental in determining both the amount of effort that an individual will put forth and the length of time that an individual will persist in obtaining the desired behavior when faced with obstacles (Bandura & Adams, 1977). The individual who persists in the face of aversive experiences (i.e., has higher perceived efficacy) will receive positively reinforcing feedback from several sources (e.g., social environment, self) that serve to reinforce or strengthen efficacy for executing that behavior. The opposite is also true. The individual with low perceived efficacy, or the individual who ceases behavioral effort toward the desired outcome prior to reaching the outcome, will receive feedback which reinforces his/her perceived inability to execute the required behaviors in a specific situation (Bandura, 1977). To revisit the depressed individual, feedback which occurs as a result of failure due to lack of effort or perseverance may confirm the individual's belief that he or she does not have the skills required to attain success, thus, reinforcing his or her feelings of inadequacy. Finally, efficacy expectations affect thought patterns and emotional reactions prior to and during engagement in behavior (Bandura, 1986). An individual with low perceived efficacy will dwell on personal deficiencies, thus, taking the focus off of potential areas of strength, which can create stress. Depressed individuals, then, might avoid engaging in potentially rewarding behavior as a result of the stressful reaction created by their own felt inadequacy.

#### Sources and Processing of Self-Efficacy Information

According to self-efficacy theory, four sources of information influence perceived efficacy: performance accomplishments, or mastery experiences, vicarious experiences, verbal persuasion, and emotional and physiological arousal (Bandura, 1977, 1995). Performance accomplishments are thought to be the most influential source of efficacy information, as they are based on personal mastery experiences which provide tangible, usually immediate evidence of whether or not one can succeed at a particular task (Bandura & Adams, 1977). Performances which result in the desired effect may increase efficacy for achievement of that particular outcome in the future, whereas performances which do not yield the desired affect can result in lowered perceived competence. It should be noted that performance per se does not necessarily provide information about perceived efficacy. That is, a one-to-one relationship between performance and efficacy does not exist; rather, multiple factors (e.g., preconceptions of ability,

perceived difficulty of the task, amount of effort expended) are weighted and integrated in the cognitive processing of the performance. Only after performance and its surrounding factors are sifted through various cognitive filters is the effect of performance on efficacy revealed (Bandura, 1986) (see Figure 1). Since performance is viewed as the source of information that has the greatest influence on efficacy beliefs, modes of treatment which include a performance component are thought to be more successful in increasing self-efficacy than those that do not require individual performance to occur (Rosenthal & Bandura, 1978).

The second source of information that influences self-efficacy is that of vicarious experience provided by social models. Information received through observation of experience is thought to be less influential in changing efficacy beliefs than direct performance by the individual; however, it remains a significant means of influencing efficacy expectations (Bandura, 1977). Increases in an individual's perceived ability to successfully execute specific behaviors occurs when individuals observe someone that they perceive to be similar to themselves (e.g., adolescent peers) persevering and successfully performing desired behaviors (Bandura, 1995; Schunk, 1987). Efficacy may increase when an individual observes a failure if the individual believes that he or she has better coping alternatives than the model (Bandura, 1997). As was the case with performance experiences and perceived efficacy, the simple occurrence of modeling does not offer information about efficacy; rather, four subprocesses, which will not be elaborated upon, mediate the effects of modeling on perceived competence: attentional processes, retention processes, production processes, and motivational processes (Bandura, 1997).

A third influence on self-efficacy, verbal persuasion, involves an individual receiving messages from persons in the social environment that he or she is capable of performing certain behaviors (Bandura, 1977). Similar to vicarious experience, verbal persuasion is not considered to be as powerful an influence on efficacy beliefs as performance experiences; however, it may contribute to other sources of information to alter efficacy expectations. As an adjunctive method for increasing perceived efficacy, verbal persuasion is thought to be most effective when an individual has confidence in the source of the persuasion; that is, when they are confident in the knowledge and skills that the persuasor possesses. As was the case with performance accomplishments and vicarious experiences, the occurrence of social persuasion in and of itself

does not necessarily offer information about changes in efficacy beliefs; rather, various factors (e.g., confidence in persuasor) are weighted and integrated during the cognitive processing which mediates the effects of verbal persuasion on perceived efficacy.

The final influence on self-efficacy involves the perception and interpretation of physiological and emotional states. Individuals tend to interpret somatic information as an indication of ability (Bandura, 1997). Autonomic arousal may increase or decrease efficacy for performance depending, in part, on previous success or failure following similar physiological arousal. With regard to emotional influences of self-efficacy, it has been demonstrated that positive mood tends to increase efficacy while negative or apathetic mood tends to decrease perceived self-efficacy, as mood tends to bias attention, coding, and recollection of information (Eich, 1995; Kavanagh & Bower, 1985). As has been stated with regard to the three other sources of efficacy information, the degree of physiological and emotional arousal in and of itself does not offer information about perceived ability to execute specific behaviors; rather, it is the perception and interpretation of the information that has its effect on efficacy beliefs.

In sum, four sources of information, performance accomplishments, vicarious experience, verbal persuasion, and physiological and emotional states, influence efficacy beliefs via cognitive processing. By themselves, these sources of influence do not offer information about perceived competence; rather, effects on efficacy beliefs are mediated by cognitive processes. In a similar fashion, the effects of perceived efficacy on human functioning are mediated by cognitive, motivational, affective and selective processes in addition to exerting direct effects on psychosocial functioning (Bandura, 1995) (see Figure 1).

#### Generalizability of Self-Efficacy

While efficacy is generally conceptualized as perceived competence for executing specific behaviors in a specific situation, it would be of little therapeutic value if its effects were not generalizable to other environmental domains and/or areas of functioning to at least some degree. Several researchers have demonstrated the generalizability of efficacy using various methodological approaches. Hackett, Betz, O'Halloran, and Romac (1990) demonstrated the generalizability of perceived competence from one task to another in the same domain of functioning (i.e., efficacy generalized from one academic area to another). One-hundred and

forty-nine undergraduates were placed in one of four conditions (i.e., verbal task success, verbal task failure, math task success, math task failure) and were asked to complete the appropriate verbal/math task. Verbal and math tasks were structured such that individuals in the “success” conditions were assigned easier items than those in the “failure” conditions. In addition to other assessment tools, measures of efficacy for the targeted task were completed prior to and immediately following completion of the tasks. An additional measure of efficacy was administered at posttest assessing the academic area that was not assigned. Results indicated that at posttest, individuals in the “success” conditions rated their belief in their ability to succeed at the opposite academic task significantly higher than their initial efficacy ratings in their assigned area, while individuals in the “failure” conditions demonstrated the opposite effect. In addition, individuals in the “success” conditions rated their confidence in their ability to perform the opposite task significantly higher than those individuals in the “failure” conditions. In sum, belief in ability in one target area generalized to degree of confidence in another separate, yet related area. This study provides an example of the generalizability of efficacy beliefs from one activity to another within the same functional domain.

A seemingly more therapeutically relevant example of the generalizability of efficacy beliefs involves that which occurs from situation to situation. Ideally, upon completion of cognitive-behavioral therapy, individuals will be “armed” with the necessary behavioral and cognitive skills to cope with their difficulty without the aid of the therapist. This requires that treatment effects generalize, at least to some degree, to the individual’s natural living environment in which he or she does not enjoy the protective trappings of the therapeutic relationship and the clinical setting itself. Bandura, Adams, and Beyer (1977) demonstrated the situational generalizability of efficacy beliefs by applying treatment consisting of either performance-based enactive mastery experiences or vicarious experiences (i.e., modeling) to snake phobic adults. Among other measures, individuals in all conditions (i.e., enactive mastery, vicarious, control) completed measures of perceived efficacy for performing the “snake-approaching” behaviors prior to and immediately following treatment. At posttest, individuals completed measures indicating their degree of perceived ability to execute similar behaviors with various animals and to execute those behaviors in various social situations. Results indicated that efficacy for performing “approach” behaviors with the snake used in

treatment was significantly enhanced for subjects who received enactive mastery treatment compared to those who received modeling alone. Further, subjects in both treatment conditions significantly increased efficacy beliefs for coping with a variety of animals in diverse social situations; a between-group difference was not found. In sum, the above study provides evidence for the generalizability of efficacy beliefs from one task or domain to various other domains.

### Self-Efficacy and Adolescents

Before proposing a treatment model for internalizing adolescents that is conceptually founded on social cognitive theory, it is important to establish the utility of the construct of self-efficacy with this population, particularly since self-efficacy theory grew out of the adult literature. There is evidence to suggest that self-efficacy can be manipulated in adolescents and that improved clinical outcomes are associated with increased efficacy. While depression, eating disorders, and academic problems have been studied in adolescent populations with regard to changes in self-efficacy (Ehrenberg, Cox, & Koopman, 1991; Moss & Dadds, 1991; Scarpati, Malloy, & Fleming, 1996), by far the most intensely studied areas concern perceived efficacy as it relates to sexual behavior and substance use. In general, studies reported that perceived ability (i.e., efficacy belief) to handle oneself in sexually risky situations correlated with sexually risky behavior (Kasen, Vaughn, & Walter, 1992; Zimmerman, Sprecher, Langer, & Holloway, 1995), and that self-efficacy for performing appropriate coping behaviors in those situations could be increased with the use of interventions (Weeks, Levy, Zhu, Perhats, Handler, & Flay, 1995; St. Lawrence, Jefferson, Alleyne, & Brasfield, 1995). Similar findings in the substance abuse literature have revealed significant relationships between adolescents' belief in their ability to control substance abuse situations and their actual ability to control them (Allen, Leadbeater, & Aber, 1990; Myers & Brown, 1990). While studies concerning self-efficacy and adolescents began emerging only a decade ago, it is clear that perceived efficacy can be manipulated in adolescents and that increased efficacy is associated with improved clinical outcomes. This provides support for using self-efficacy theory as the conceptual framework for a treatment model with adolescent populations.

## **Chapter 3 : Self-Efficacy Theory and ABT**

The conceptualization of components of ABT as sources of efficacy information will be presented followed by a discussion based on empirical literature concerning enactive mastery treatment. That is, with regard to the latter, results from empirical studies revealing increases in perceived efficacy following enactive mastery experiences (i.e., performance accomplishments) in clinical populations will be presented. The similarities between enactive mastery procedures and the performance component of ABT will then be discussed with the intent of concluding that increased efficacy may also occur as a result of ABT.

### Components of ABT as Sources of Self-Efficacy Information

As reviewed in detail previously, efficacy beliefs are considered to be influenced by several diverse sources of information. Each of these sources is found within the structure of ABT and is considered to be central to its effectiveness, although the similarity has not been historically stated as such. In an effort to bridge the theoretical chasm that exists between ABT components (i.e., practices) and outcomes, the components of ABT and their relevance as sources of efficacy information will be highlighted.

To begin with, ABT is predicated on the assumption that performance by the individual is not only necessary, but central to the facilitation of the achievement of therapeutic goals. Similarly, according to self-efficacy theory, performance accomplishments are thought to make a significant contribution to movement toward therapeutic goals (i.e., to facilitate desirable change in efficacy beliefs). Moreover, it has been demonstrated that modes of treatment which include a performance component are more successful in increasing self-efficacy than those that do not require individual performance to occur (Rosenthal & Bandura, 1978). It is feasible, then, to suggest that ABT may be a powerful modality from which to effect changes in perceived competence. Given that individual performance is a central component of ABT and that performance accomplishments are considered to be the most influential source of efficacy information, it can be concluded that self-efficacy theory may be a logical choice for conceptualizing changes that occur as a result of ABT.

Another component of ABT involves performance by the individual in novel, problem-solving situations in which he or she experiences disequilibrium (Nadler, 1993). When an individual becomes aware that former strategies for coping will not be useful in the new context, psychological discomfort (i.e., anxiety) and/or physiological arousal (e.g., increased heart rate) may occur. According to Bandura (1997), an individual's interpretation of his or her own physiological and emotional states has an impact on perceived efficacy and resultant engagement in behavior. Since ABT involves the induction of physiological and emotional arousal, these aspects of treatment may prove useful as influences of efficacy. In addition, as physiological experiences and accompanying psychological reactions are more likely to influence efficacy expectations in situations that demand physical strength and stamina (Kavanagh & Bower, 1985), they may serve as a more powerful influence on perceived efficacy in an adventure-based setting than in traditional therapy settings because many ABT tasks are physically as well as psychologically challenging.

Another element viewed as an important contributor to therapeutic change in ABT is the establishment of a cooperative community environment. Verbal support, guidance, and feedback from both peers and therapists occur in this setting. To review, verbal persuasion, an influence on efficacy beliefs, involves receiving the message from persons in the social environment that the individual is capable of performing certain behaviors (Bandura, 1977). Verbal persuasion is thought to be most effective in increasing efficacy beliefs when at least one of the following are in place: 1) verbal persuasion is used as an adjunctive method of increasing efficacy, 2) situations in which the individual is predicted to be successful are pre-arranged, 3) encouraging statements are realistic, that is, not beyond the realm of the individual's capabilities, and 4) the individual has confidence in the source of the persuasion (Bandura, 1986). To the extent that verbal support and persuasion from peers and therapists in ABT meets these criteria, efficacy is likely to increase as a result of an ABT experience.

An additional therapeutic benefit of working within a group in an ABT setting is the occurrence of modeling. Individuals involved in ABT observe peers engaging in and negotiating problem-solving tasks. As discussed previously, vicarious experience provided by social models serves as an influential source of efficacy information. Bandura (1977, 1995) stated that the degree to which modeling affects an individual's efficacy for performing an

observed behavior depends largely upon the individual's assessment of the similarity between themselves and the model. The probability of an observer perceiving similarity between he or she and a model is particularly salient in ABT since the context not only allows, but inadvertently requires peer modeling to occur. Each of the individuals is, in effect, a model for other participants at any given time during a task. Therefore, it is appropriate to suggest that efficacy may increase following the observation of a peer success on an ABT element. Furthermore, when individuals observe someone failing to negotiate a task, efficacy for performing the behavior may increase if they perceive themselves to have better coping skills than the individual who did not succeed on the attempt (Bandura, 1997). In sum, as ABT provides a setting in which vicarious experiences not only readily occur, but are provided primarily by peers, ABT likely provides an opportunity for perceived competence to be altered.

In conclusion, the critical components of ABT provide sources of efficacy information. Therefore, it seems a logical deduction that self-efficacy theory provides a useful theoretical framework within which to conceptualize changes that occur as a result of ABT. To briefly elaborate, if components of ABT provide sources of efficacy information, then they also lend themselves to manipulation in order to achieve desired therapeutic outcomes. In addition, if self-efficacy theory were used to explain ABT outcomes, it could be inferred that the cognitive processes thought to mediate sources of efficacy information and efficacy beliefs could potentially be used to explain cognitive processes which occur in ABT. Similarly, the cognitive, motivational, affective, and decisional processes which are believed to mediate the effects of efficacy beliefs on human functioning could also potentially be utilized to explain the effect of efficacy on subsequent engagement in problem-solving behaviors both during and following ABT.

#### Enactive Mastery Experiences

An additional source of support for suggesting the use of self-efficacy theory to conceptualize changes that occur as a result of ABT involves examination of empirical evidence which supports the efficacy of enactive mastery treatment procedures. Of central importance in self-efficacy theory is the use of enactive guided mastery experiences as a means of promoting self-efficacy enhancement. Enactive learning theory, from which enactive mastery developed,

purports that physical performance serves as an important mechanism of translation between knowledge and skilled action (Bandura, 1986). Enactive, or guided mastery, at its most basic level involves action on the part of the individual in treatment accompanied or guided by the therapist in a setting in which the skills will actually be used by the client. This experience entails the modeling of behaviors by the therapist, attempts that approximate the behavior by the client, immediate feedback from the therapist and potentially the environment, and corrective suggestions by the therapist, the culmination of which increases an individual's confidence in his or her ability to manage difficult daily events (Bandura, 1997).

The potential for enactive mastery procedures to increase perceived efficacy in clinical populations has been documented. A number of studies with phobic individuals have demonstrated the superiority of enactive mastery treatments in increasing efficacy as compared to both control groups and other treatments (Bandura, et al., 1977; Williams, Dooseman, & Kleifeld, 1984; Williams, Turner, & Peer, 1985), while others have reported significant improvement for enactive mastery and other treatments as compared to control groups with no differences reported between treatment groups (Williams and Zane, 1989; Zane and Williams, 1993).

While it has not been conclusively demonstrated that enactive mastery is the treatment of choice over other treatments for phobic disorders, enactive mastery has been shown to produce therapeutic change. As the point of this discussion is to provide further evidence to support a conceptual link between ABT and self-efficacy theory, all that need be demonstrated is that enactive mastery procedures produce positive change. It is of added benefit when studies demonstrate that enactive mastery treatment produces change above and beyond that of other treatments. The following section will take the next step in creating a link between ABT and self-efficacy theory by describing similarities between enactive mastery procedures and those of ABT.

#### Enactive Mastery Procedures and ABT Procedures

ABT components and procedures closely resemble the procedures and strategies used in enactive mastery treatment. First, both adventure-based and enactive mastery treatments occur *in vivo*. That is, individuals must negotiate tasks in real contexts in real time. Second, activities

in both treatments are conducted in a step-wise fashion beginning with tasks perceived to be less threatening until those determined to be more threatening are mastered. Third, in both ABT and enactive mastery treatments, enabling conditions are created by a participant therapist. That is, the therapist conducts therapy with the individual in real settings in real time; the individual is never without the therapist when being asked to perform potentially threatening behaviors. In both treatments, the presence of the participant therapist provides the opportunity for the therapist to model appropriate coping strategies and offer verbal guidance, support, and feedback as the individual attempts new behaviors. In ABT and enactive mastery treatments the therapist has the opportunity to process the individual's thoughts and feelings prior to, during, and immediately following attempts at a new behavior. In sum, the similarities between enactive mastery procedures and those of ABT are numerous and provide further conceptual support for the interpretation of ABT procedures within a social cognitive framework.

### Conclusion

One purpose of the present study was to investigate the potential utility of using self-efficacy theory to interpret outcomes that occur as a result of ABT. Before this could be tested, a rationale for creating a conceptual link between self-efficacy theory and ABT needed to be explicated. To work toward achieving this goal, components of ABT were discussed as sources of efficacy information. In addition, empirical literature supporting clinical improvement following enactive mastery treatment, particularly as it related to increases in self-efficacy in various domains of functioning, was presented. The similarities between the procedures of enactive mastery treatment and the components and procedures of ABT were then made apparent. When considering the following information: 1) That components of ABT serve as sources of efficacy information, 2) that efficacy has been demonstrated to increase as a result of enactive mastery treatment, and 3) that the procedures and components of enactive mastery treatment and ABT are strikingly similar, it can be concluded that increased efficacy may also occur as a result of ABT. That is, since enactive mastery procedures produce therapeutic change in certain internalizing populations, and the procedures of ABT and enactive mastery are closely related, by extension, ABT may also produce therapeutic change in the same manner in which enactive mastery treatment produces change (i.e., by manipulating self-efficacy) in similar

populations. The overriding goal of ABT, then, could be restated in terms of increasing an individual's perceived efficacy, or increasing an individual's belief in his or her ability to successfully execute the behaviors necessary to achieve a desired outcome in a given situation. Furthermore, if ABT were interpreted using self-efficacy theory as the conceptual framework, it would then stand to reason that the cognitive processes which mediate the effects of sources of efficacy information on efficacy beliefs, as well as the various processes which mediate the effects of efficacy on human functioning, may also operate in ABT. This analogous argument provides a rationale for testing the effects of ABT on self-efficacy, thus, exploring the utility of using self-efficacy theory to explain changes that occur as a result of ABT.

## **Chapter 4 : Adolescents and Depressive Symptomatology**

In a large-scale community-based epidemiological survey involving 1,508 adolescents ages 14-18, called the Oregon Adolescent Depression Project, a point prevalence of approximately 3%, a total annual incidence of 7.7%, and a lifetime prevalence rate of approximately 25% were reported for unipolar depression (Lewinsohn et al., 1993). An estimate of the rate at which adolescents experience subclinical levels of depressive symptomatology has been reported to be approximately 35% (Petersen et al., 1993).

Various psychosocial problems have been demonstrated to be related to depressive symptomatology in adolescents. It has been found that adolescents with depressive symptomatology have a negative attributional style (Curry & Craighead, 1990), negative automatic thoughts (Garber, Weiss, & Shanley, 1993), low social confidence (Marton, Connolly, Kutcher, & Korenblum, 1993), low perceived social acceptance (King et al., 1993), low self-esteem, inadequate self-reinforcement skills, low body image, and ineffective coping and social skills (Hops et al., 1990).

With respect to efficacy, it has been demonstrated that depressed adolescents report inefficacious beliefs concerning several abilities. First, McFarlane et al., (1994) reported a significant negative correlation between social self-efficacy and depression in a high school population of 694 adolescents. After conducting a path analysis on this same data, McFarlane, Bellissimo, and Norman (1995) reported that social self-efficacy had a significant direct negative relationship with depression. Interestingly, peer support did not have a direct influence on depression; however, it had a positive relationship with social self-efficacy. Further, Ehrenberg et al. (1991) found that social, physical, and academic self-efficacy were significant predictors of depression in a sample of 366 high school students. Finally, using a sample of 78 undergraduates enrolled in introductory psychology classes, Kanfer and Zeiss (1983) found that depressed subjects reported significantly less efficacy for performing behaviors related to social functioning than nondepressed subjects. In addition, a significant discrepancy between personal standards (i.e., goals) and judgments of efficacy for attaining those standards occurred for depressed subjects only.

### Models of Depression

Cognitive and behavioral models of depression, while each has distinct characteristics, share common constructs with one another to some degree. Depression has been hypothesized to result from a lack of response-contingent positive reinforcement from the environment (Lewinsohn, 1974), learned helplessness and negative attributional style (Abramson, Seligman, & Teasdale, 1978), negative cognitive schemata (Beck, 1967), and deficits in self-control (Rehm, 1977). Many cognitive-behavioral treatments currently being utilized in the treatment of depression in adolescents include as target variables aspects from both cognitively and behaviorally-based theories. These treatments aimed at the amelioration of depressive symptomatology generally involve increasing engagement in positively reinforcing behaviors, increasing awareness of negative thoughts, attributions, and beliefs, and replacing those negative cognitions with more appropriate cognitions.

### CBT Outcome Data for Adolescents with Depressive Symptomatology

Although not a rich literature, current research involving the cognitive-behavioral treatment of depressed adolescents has shown some promise. For a detailed description of treatment groups, measures, variables assessed, and results in these studies see Table 2. Depressive symptomatology has been demonstrated to significantly decline in adolescents following cognitive-behavioral interventions (Kahn, Kehle, Jenson, & Clark, 1990; Lewinsohn, Clarke, Hops, & Andrews, 1990). Lewinsohn et al. (1990) evaluated a cognitive-behavioral group treatment for clinically depressed adolescents which involved 14 two-hour sessions over a 7-week period. Adolescents were randomly assigned to one of the following groups: a) a cognitive-behavioral group treatment called the Adolescent Coping With Depression Course (CWD-A) (n = 19), b) the same CWD-A course with an adjunctive parent-training component consisting of 7 two-hour sessions (n = 21), or c) a wait-list control group (n = 19). Results indicated that approximately 50% of both treatment groups no longer met criteria for depression as compared to 5% of the wait-list control group at posttest and at 6-month follow-up as assessed by the Children's Schedule for Affective Disorders and Schizophrenia (K-SADS-E), Beck Depression Inventory (BDI), and the Center for Epidemiological Studies - Depression Scale (CES-D). The parent-training component did not facilitate improvement above and

beyond that achieved by the adolescent-only group. In addition to depressive symptomatology being studied as an individual construct, “internalizing” as a factor on the Child Behavior Checklist (CBCL) has been reported to significantly decrease following cognitive-behavioral treatments as reported by parents and teachers (Stark, Reynolds, & Kaslow, 1987).

Self-esteem has been demonstrated to increase following CBT in depressed adolescents (Kahn et al., 1990; Stark et al., 1987), although it has been measured with little frequency. Kahn et al. (1990) randomly assigned depressed adolescents to either CBT (n = 17), relaxation (n = 17), self-modeling (n = 17), or wait-list control (n = 17) groups. Interestingly, while results indicated significant improvement on several measures of depressive symptomatology compared to the wait-list control, individuals who received CBT did not show improvement above that achieved with the other treatments. CBT did emerge, however, as the only treatment in which self-esteem was significantly superior to the control group following treatment. In a similar study using depressed adolescents which compared the effects of CBT (n = 9), relaxation (n = 11), and a wait-list control group (n = 10), Reynolds and Coats (1986) found that while depressive symptomatology significantly decreased for individuals in both CBT and relaxation conditions compared to the wait-list control, no changes were reported at posttest or at 5-week follow-up on the Rosenberg Self-Esteem Scale (RSES). Clearly, this is an area in which more empirical testing is warranted.

Another area in which cognitive-behavioral treatments have shown beneficial effects for depressed adolescents, while still leaving ample room for improvement, is in the social domain. Lewinsohn et al. (1990) reported no changes at posttest on measures of conflict resolution completed by both adolescents and parents. Significant improvement in conflict resolution was reported, however, from posttest to 6-months for both treatment groups.

Cognitive-behavioral treatments have been successful in decreasing negative cognitions. For example, Lewinsohn et al. (1990) reported significant decreases in depressogenic cognitions as measured by the Subjective Probability Questionnaire (SPQ), Personal Beliefs Inventory (PBI), and Dysfunctional Attitudes Scale (DAS) for adolescents in the CWD-A group and the CWD-A group with the adjunctive parent component compared to adolescents in the wait-list condition at posttest. In sum, cognitive-behavioral treatments have demonstrated improvement

with respect to many variables in both cognitive and behavioral domains of functioning, although there remains ample opportunity for enhanced effectiveness.

### Why Target Depressive Symptomatology?

The choice of utilizing individuals with depressive symptomatology was twofold. First, as mentioned previously, in their meta-analysis, Cason and Gillis (1994) reported an effect size of 1.047 (SD = .459) for the outcome measure which they called Clinical Scales. This outcome measure reflected a combination of measurements of depressive and anxious symptomatology. An effect size indicating improvement one standard deviation above the mean for adolescents participating in ABT activities suggests not only that ABT may have utility in the clinical arena, but specifically with respect to internalizing disorders.

The second reason for choosing to target adolescents with depressive symptomatology is related to the number of depressive symptoms and associated psychosocial variables for which the ABT literature has suggested improvement following an ABT experience. That is, many psychosocial variables, which have been demonstrated to be related to depressive symptomatology, are targeted for change in depression treatments (e.g., cognitive-behavioral treatments) and improvement has been suggested for similar variables following ABT (e.g., social skills, ability to handle anxiety-provoking situations, problem-solving confidence/ability, communication/conflict resolution skills). This is not to suggest that ABT would not be effective for other populations (e.g., externalizing), merely that there is sufficient empirical evidence to support the investigation of the effects of ABT on individuals with depressive symptomatology.

### Why Adolescents?

The decision to utilize an adolescent population was not made arbitrarily. The most compelling reason for this decision stemmed from an analysis of the ABT literature. As mentioned previously, of the 48 empirical studies located for review, only 6 involved adult populations. Assuming that this sample is at least somewhat representative of the population of existing ABT studies, and given that exclusion criteria were not utilized when obtaining studies, one conclusion that could be drawn is that ABT is conducted more readily with adolescent populations than with young children or adults. Of course, it is possible that ABT is used as

often with young children and adult populations and that perhaps researchers are simply more interested in the effects of ABT on adolescents. It is more probable, however, that ABT is, in fact, conducted with greater frequency with adolescent populations than with younger or older populations, especially given that the physical demands of adventure-based challenges are likely more readily negotiated by relatively young, agile individuals. In addition, Lewinsohn, Clarke, Rohde, Hops, and Seeley (1996) modified an adult version of a depression treatment course for use with adolescents by creating an increased emphasis on experiential learning, presumably because they felt that adolescents may respond more readily to being involved in performance activities as opposed to therapist-client interaction in the clinical setting. As discussed in detail previously, ABT can be considered to operate using experiential learning principles. Therefore, it could be argued that ABT treatment may be most appropriate and effective when using adolescent populations; of course, however, these are empirical questions.

The specific age at which adolescence ends and adulthood begins is not fixed or agreed upon by researchers. Determination of the upper boundary of adolescence may be more related to accomplishment of certain developmental tasks than specific age. That is, individuals who are experiencing and negotiating changes in physical, social, and cognitive domains generally associated with adolescence may be considered to be adolescents. In their discussion of social adjustment in adolescence, Hansen, Giacoletti, and Nangle (1995) include individuals from age 12 to college. Similarly, the Oregon Adolescent Depression Project, an epidemiologic study, involved assessment of depressive symptomatology in 1,709 14 to 18 year olds (Lewinsohn et al., 1993). In the current study, 18 year olds are considered to be late adolescents. They are therefore considered to still be struggling with change that occurs during adolescence, while they may be closer to resolution of adolescent developmental challenges than their younger peers.

## Chapter 5 : Focusing ABT

As mentioned previously, improvement of self-concept/esteem is by far the most frequently cited goal of ABT (Gilliam, 1993; Schoel et al., 1988). Methods of increasing self-esteem, according to Schoel et al., cofounders of Project Adventure, include trust building, goal setting, providing challenging activities, using humor/fun, and engagement in problem-solving. While many ABT programs exist and are utilized at schools and summer camps as a means of increasing self-esteem, as discussed previously, others have been used in treatment settings. Thus, in treatment settings, the ABT protocols may have been focused, or shaped, toward particular treatment goals. It is difficult to determine by reviewing the available ABT literature, however, exactly how or if protocols were focused toward particular symptomatology.

In the present study, adventure-based therapy was represented by elements, or tasks, of a low ropes course which were tailored to specifically address some therapeutic needs of adolescents reporting depressive symptomatology. ABT was focused to address depressive symptomatology by using two methods. The first involved the selection of elements which were thought to address specific domains of functioning from the larger pool of elements common to low ropes courses. The elements which targeted domains of functioning which are generally associated with depressive symptomatology in adolescents were utilized. The second method of focusing the ABT experience related to “briefing” prior to attempting the ABT elements and to “debriefing” following the experience (i.e., processing). This formal processing of the experience facilitated by the leader, or therapist, was tailored to highlight specific psychosocial issues associated with depressive symptomatology.

As low ropes course elements were chosen for the current study based on their potential to address psychosocial constructs associated with depression in adolescents, a brief description of the organizational scheme from which the elements were chosen will be useful. Schoel et al. (1988), organizers of Project Adventure, have presented a description of low ropes course elements according to overall objective or goal. The goals of activities considered to be icebreakers are acquaintance with fellow group members, disinhibition, and the establishment of group work. The activities are structured to elicit success as group members interact with one another in a non-threatening manner. Another set of activities is designed with the objective of

increasing physical and emotional trust between group members. These ropes course elements require physical and verbal interaction, involve risk taking, and create some level of anxiety. The overall objective of a third set of ABT activities is to increase ability to communicate thoughts and feelings appropriately. These activities require physical activity, listening, and verbal interaction to accomplish the stated goal of solving a given ABT problem. Frustration is generally evidenced as group members attempt to find a solution. A final category of activities involves those with the explicit goal of developing problem-solving skills. Engagement in problem-solving activities generally induces a higher level of frustration and therefore requires greater communication, cooperation, and compromise than is needed to solve ABT problems in previous categories. In general, this progression of activities is designed to require greater skills and cooperation as the group moves from icebreaker and trust building activities to more complex problem-solving activities. Thus, the skills needed for successful completion of activities by the group build on one another. This classification scheme is intended to ease conceptual understanding of basic objectives addressed by the ABT elements and is not meant to infer that these categories address mutually exclusive goals and objectives. The current study borrowed from this classification scheme. Table 3 depicts the classification of the ABT elements utilized in the current study.

A more detailed description of briefing and debriefing processes will help create a better understanding of specific places during the processing of the ABT elements which lend themselves to being focused. Descriptions of components involved in the formal processing of ABT elements are also borrowed from those outlined by the Project Adventure staff (Schoel et al., 1988). Three major tenets of briefing include framing the experience, discussing a full value contract, and goal setting. It is not necessary that each of these components is addressed formally prior to each individual element; however, once the full value contract has been discussed, it can be used as a reminder before engaging in subsequent tasks, or as a discussion tool during debriefing. Framing involves describing in detail the literal goal of the task which is to be attempted, generating discussion about how the goal might be accomplished, presenting the idea of forgiveness and fresh starts with each new element, presenting terms which will need to be understood by each group member, emphasizing the need for communication between members, and emphasizing the necessity of the group to work together in order to complete the

activity successfully. Discussion of each of these issues results from facilitation by the leader and does not occur in a didactic format. The full value contract emphasizes value of both person and group. The contract involves agreement by all group members to the following commitments: 1) “To work together as a group and to work toward individual and group goals,” 2) “To adhere to certain safety and group behavior guidelines”, and 3) “To give and receive feedback, both positive and negative, and to work toward changing behavior when it is appropriate” (p. 95). Individual and group goals for each specific activity are discussed in addition to “spiral goals,” or goals which each individual has for him or herself outside of the ABT setting (i.e., in his or her own environment). Each of these elements of briefing can be used to greater or lesser degrees prior to each ABT activity.

Debriefing occurs following each ABT activity and is facilitated in a manner similar to that which occurs during briefing. Discussion is generally facilitated by asking what happened during the experience (i.e., the “What?”), what difference it made (i.e., the “So what?”), and how to plan for the next activity or generalize from the experience (i.e., the “Now what?”). Several methods can be used to begin discussion about the experience of the activity. For example, sitting in a circle, each member can contribute one sentence describing what happened to each individual and/or to the group during attempts at the ABT element. This descriptive discussion provides an avenue into discussing the meaning that the experience had for each individual. A quick method to transition into this more personal type of discussion is to go around the circle and ask each member to describe their feeling about the experience in one word or ask them to complete a statement such as “I’m glad that I...” During this component of debriefing, evaluation of group, individual, and spiral goals can take place. The final component of debriefing involves discussion concerning how to structure attempts at ABT elements in the future as well as how to apply what each individual learned from the activity to situations outside of the ABT environment.

## Chapter 6 : Hypotheses

As discussed previously, an empirical trend suggesting the probable improvement of several constructs following an ABT experience has been demonstrated. A number of these constructs address aspects of psychosocial disturbances reported to be associated with depression in adolescents. In the current study, some of these variables were tested and were hypothesized to demonstrate improvement following an ABT experience (i.e., low ropes course). As it was suggested in the current presentation that ABT outcomes could potentially be interpreted using self-efficacy theory, it was hypothesized that efficacy for certain psychosocial abilities associated with depressive symptomatology would increase more for individuals in the treatment group compared to those in the control group following ABT (i.e., social self-efficacy, efficacy for interacting socially and working with a group, efficacy for coping with anxiety produced by novel situations, physical self-efficacy, general self-efficacy). General self-efficacy was included as it has been demonstrated that one's general belief in his or her ability to initiate and persist in behavior presented in new situations is associated with personal adjustment (Sherer & Adams, 1983). In the current study, overall depressive symptomatology was also hypothesized to decrease more for individuals in the treatment group than for those in the control group following the ABT experience. Finally, it was hypothesized that state and trait anxiety would decrease, that self-esteem would increase, and that general psychological distress would decrease more for individuals in the treatment group compared to those in the control group. Assessment of self-esteem occurred because low self-esteem has been associated with depression in adolescents and because it has been the most frequently studied variable in ABT studies to date.

## Chapter 7 : Methodology

### Subjects

Subjects were recruited from the Introductory Psychology pool at a large state university located in a rural southeastern community and were compensated in the form of extra credit points for class. Subjects were 16 males and 25 females 18 years of age. The cohort that participated on the first day included 4 males and 6 females in the treatment group and 5 males and 4 females in the treatment group. The cohort that participated on the second day included 4 males and 7 females in both treatment and control groups.

### Measures

Efficacy for coping with anxiety in novel situations. A scale similar to those used in research by Clum (1990) and Ollendick (1995) was created to assess individual belief in ability to cope with anxiety created by novel situations (ECA). As the scale was created specifically for the current study, reliability and validity information was not available. The scale is composed of seven items for which the individuals are asked to rate on a 5-point Likert scale (i.e., 1 = “Not at all sure”; 5 = “Definitely sure”) how sure they are that they can cope with anxiety created by novel situations. Scores on this scale can range from 7 to 35, with higher scores indicating greater efficacy. A complete list of all measures used in the current study is provided in Appendix A.

Social self-efficacy specific to working in a group. A scale was also created to assess an individual’s ability to perform certain social behaviors which specifically pertain to working and solving problems in a group (ESG). As was the case with the scale created to assess efficacy for coping with anxiety, the present scale was modeled after those created and used in research by Clum (1990) and Ollendick (1995). Again, since the scale was created specifically for the current study, reliability and validity information was not available. The scale is composed of five items for which the individuals are asked to rate on a 5-point Likert scale (i.e., 1 = “Impossible to do”; 5 = “Extremely easy to do”) how easy or difficult several social tasks are for

them to do. Scores on this scale can range from 5 to 25, with higher scores indicating greater efficacy.

General self-efficacy. The Self-Efficacy Scale (SSE; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, & Rogers, 1982) is a 23-item self-report scale which assesses general (GSE) and social self-efficacy (SSE). General self-efficacy is defined by the authors as one's ability to initiate and persist in behavior. The GSE scale consists of 17 items, while the SSE scale consists of 6 items. Individuals are asked to rate their degree of agreement with the statements on a 14-point Likert scale (i.e., 1 = "Strongly agree"; 14 = "Strongly disagree").

In a sample of 376 undergraduates, Cronbach's alpha coefficients of .86 and .71 were obtained for the GSE and SSE, respectively. Construct validity has been demonstrated, as scores on the GSE significantly correlated with measures of locus of control ( $r = .29$ ), personal control ( $r = .36$ ), social desirability ( $r = .43$ ), ego strength ( $r = .29$ ), interpersonal competency ( $r = .45$ ), and self-esteem ( $r = .51$ ). Generally smaller, but significant correlations were found between scores on the SSE and the various measures listed above with the exception of ego strength, for which a significant correlation was not found. Further construct validation has occurred using various scales on the MMPI, an assertiveness inventory, and a sex-role inventory. The authors conclude that the GSE may be more useful than the SSE (Sherer & Adams, 1983). The GSE was utilized without the SSE scale in the current study.

Social self-efficacy. The Adolescent Social Self-Efficacy Scale (S-EFF) (Connolly, 1989) is a 25-item Likert scale which assesses efficacy for the following social constructs: social assertiveness, performance in public situations, participation in social groups, aspects of friendship and intimacy, and the tendency to give and/or receive help. Individuals are asked to rate how easy or difficult each task is for them on a 7-point scale ranging from most difficult (i.e., 1 = "Impossible to do") to the easiest (i.e., 7 = "Extremely easy to do"). Total scores range from 25 to 175, with higher scores indicative of greater efficacy.

Reliability and validity were established using three samples of high school students. The first sample consisted of 87 adolescents ages 14-19 from a large suburban high school, the second consisted of 76 adolescents ages 13 to 16 from a small suburban high school, and the third consisted of 79 adolescents ages 12-18 from a residential psychiatric treatment facility serving Caucasian individuals from lower-middle to middle socioeconomic populations. The

identified residential subjects displayed internalizing, externalizing, or mixed internalizing/externalizing symptomatology. To compare responses from emotionally disturbed adolescents to those who were not disturbed, a subgroup of 40 residential patients was matched for age and sex to a subgroup of high school students in the second sample.

The mean S-EFF score for the first high school sample was 122.27 (SD = 18.48) with scores ranging from 83 to 169; the 25th, 50th, and 75th percentiles were 110, 124, and 136, respectively. The second high school sample yielded a mean S-EFF score of 128.76 (SD = 18.48) and scores ranged from 83 to 167; the 25th, 50th, and 75th percentiles were 118, 131, and 141, respectively. The mean S-EFF score for the residential treatment sample was 112.81 (SD = 28.41) with scores ranging from 37 to 162; the 25th, 50th, and 75th percentiles were 97, 114, and 136, respectively.

Internal consistency was calculated using Cronbach's Alpha for each sample, resulting in alpha coefficients of .90, .92., and .95, respectively. Test-retest reliability was calculated for the first sample only by comparing scores obtained on two administrations of the S-EFF, which occurred two weeks apart, resulting in a Pearson correlation coefficient of .94. Test-retest reliability coefficients were also calculated for males and females separately, revealing correlations of .81 and .86, respectively.

Construct validity for the S-EFF has been demonstrated, as scores have correlated significantly with several measures of self-concept and social adjustment. A significant positive correlation was found between social self-efficacy and perceived competence scores, as assessed by the Self-Perception Profile (Harter, 1982), for both high school samples. Pearson correlations between S-EFF scores and competence scores were as follows for each sample respectively: perceived social acceptance ( $r = .49$ ;  $r = .61$ ), self-worth ( $r = .44$ ;  $r = .40$ ), perceived physical competence ( $r = .23$ ;  $r = .28$ ), and perceived cognitive competence ( $r = .35$ ;  $r = .31$ ). S-EFF scores were also reported to significantly correlate with scores on the Self-Esteem Inventory (SEI; Coopersmith, 1981) for the second high school sample ( $r = .47$ ) and the residential sample ( $r = .65$ ). Additionally, S-EFF scores were found to significantly correlate with measures of social adjustment as assessed by the Adjustment Scale for Sociometric Assessment of Secondary School Students (ASSESS: Prinz, Swann, Liebert, Weintraub, & Neale, 1978). Specifically,

S-EFF scores for the second high school sample correlated significantly with the measures of social withdrawal ( $r = -.39$ ) and social competence ( $r = .23$ ), while S-EFF scores for the residential sample correlated significantly with the measure of social withdrawal ( $r = -.25$ ).

Physical self-efficacy. The Physical Self-Efficacy Scale (PSE; Ryckman, Robbins, Thornton, & Cantrell, 1982) is a 22-item self-report scale containing two subscales: the Perceived Physical Ability (PPA) subscale and the Physical Self-Presentation Confidence (PSPC) subscale. The PPA is a 10-item subscale with a possible range of scores from 10 to 60. The PSPC subscale is composed of 12 items with possible scores ranging from 12 to 72. The scores on the two subscales may be added together to provide a measure of overall physical efficacy, with possible scores ranging from 22 to 132. Higher scores on both subscales indicate greater physical efficacy. Individuals are asked to report the degree to which they agree or disagree with the items using a 6-point Likert scale (i.e., 1 = “Strongly agree”; 6 = “Strongly disagree”).

In a study involving 363 undergraduates, Cronbach’s alpha coefficients for the PSE, PPA, and PSPC scales were .81, .84, and .74, respectively. Test-retest reliabilities were established in a study in which 83 undergraduates were tested on two separate occasions six weeks apart; coefficients were .80 for the PSE scale, .85 for the PPA subscale, and .69 for the PSPC subscale. In the same study, Cronbach’s alpha coefficients were .82, .85, and .75 for the PSE, PPA, and PSPC scales, respectively.

Construct validity for the PSE was established using two separate undergraduate samples. In the first sample, a significant correlation of .58 was found between PSE score and another measure of physical self-concept. Similarly, significant correlations were reported between the measure of physical self-concept and the PPA subscale ( $r = .43$ ) and the PSPC subscale ( $r = .52$ ). Further, significant correlations of .32 and .35 were reported between a measure of self-esteem and the PPA and PSPC subscales, respectively. Significant correlations were also found between a measure of self-consciousness and the PSE scale ( $r = -.45$ ), the PPA subscale ( $r = -.20$ ), and the PSPC subscale ( $r = -.57$ ). Assessment of the second undergraduate sample yielded significant correlations between the PSE scale and locus of control ( $r = -.13$ ), sensation-seeking ( $r = .19$ ), and manifest anxiety ( $r = -.26$ ).

Depressive symptomatology. The Beck Depression Inventory (BDI; Beck, 1972) is a 21-item measure of depression with four levels of severity ratings per symptom item; thus, the total score reflects both the number of symptoms endorsed and the severity of each. Scores can range from 0-63, with higher numbers indicating more severe levels of depressive symptomatology. Ranges of scores and their reflection of depression are as follows: 0-9, normal range (i.e., little or no depressive symptoms); 10-15, mild depression; 16-19, mild-moderate depression; 20-29, moderate-severe depression; and 30-63, severe depression (see Appendices F and G for pretest and 2-week follow-up measures).

Using a sample of adolescents in residential treatment, a test of internal reliability yielded a Cronbach's alpha coefficient of .79 (Strober, Green, & Carlson, 1981). Item-total score product-moment correlations ranged from .31 to .68 in Beck's (1972) original study with an adult outpatient population and between .22 and .86 in Strober et al.'s study with residential adolescents. Test-retest reliability was calculated for the sample of adolescent receiving residential treatment by comparing scores obtained on two administrations of the BDI occurring 5 days apart, resulting in a Pearson correlation coefficient of .69.

Validity of the BDI has been established with multiple populations. In Beck's (1972) original adult outpatient population studies, Pearson product-moment correlations of .65 and .67 were reported between BDI scores and ratings of depression made by psychiatrists. Similar comparisons yielded Pearson coefficients of .67 in a study using an adolescent residential treatment population (Strober et al., 1981) and .79 in a study using an undergraduate population (Bumberry, Oliver, & McClure, 1978). In addition, the BDI has demonstrated sensitivity to clinical change as summarized in a meta-analysis involving 19 studies in which an average effect size of .88 was reported, with effect sizes ranging from .09 to 3.90 (Edwards, Lambert, Moran, McCully, Smith, & Ellingson, 1984).

The Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1992) is a 65-item adjective rating scale which is factored into six subscales and a total mood state score. The six factor scores are Tension-Anxiety, Depression-Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment. Individuals are asked to rate the degree to which the adjectives listed describe how they have felt during a specified time period on a five point scale (i.e., 0 = "Not at all"; 4 = "Extremely"). In the present study, the overall mood state score,

the Anxiety-Tension factor, and the Depression-Dejection factor were calculated and utilized in the analyses. The POMS has been normed on several college populations, the largest of which included 340 males and 516 females. Means for the Anxiety subscale were 12.9 (SD = 6.8) for males and 13.9 (SD = 7.4) for females and were 13.1 (SD = 10.5) for males and 14.8 (SD = 11.4) for females for the Depression subscale.

Internal reliabilities of .90 or greater for the Anxiety and Depression subscales, respectively, have been reported for both males and females. Test-retest reliability was demonstrated in a sample of individuals receiving outpatient treatment from preintake to intake (i.e., average of 20 days), that is, scores were correlated for a time period in which no formal therapy was occurring. The coefficient for the Anxiety subscale was .70 and was .74 for the Depression subscale. Coefficients between intake and 6 weeks were also calculated indicating reliability of .51 for the Anxiety subscale and .47 for the Depression subscale (McNair et al., 1992).

Construct validity of the POMS has been demonstrated by various studies. Two studies, which involved pre and posttest POMS measurements during short term psychotherapy, yielded results indicating that the POMS is sensitive to change over time. Specifically, following treatment, scores on the POMS Anxiety and Depression subscales indicated significantly greater improvement for individuals in the treatment groups compared to those in the control groups (Lorr, McNair, & Weinstein, 1964; Lorr, McNair, Weinstein, Michaux, & Raskin, 1961). Concurrent validity of the POMS has been demonstrated with the correlations between POMS subscales and similar subscales on the Hopkins Symptom Distress Scales (HSDS; Parloff, Kelman, & Frank, 1964). Correlations between the POMS Anxiety subscale and the HSDS Anxiety subscale were .77 for males and .74 for females. Correlations for the corresponding Depression subscales were .71 for males and .70 for females.

Anxiety. The State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) is a self-report instrument consisting of two distinct measurements of anxiety: state anxiety (A-State) and trait anxiety (A-Trait). Each scale consists of 20 questions in which the individual is asked to report how accurately the item describes how they generally feel for the A-Trait scale and how they feel at a particular moment for the A-State scale. A 4-point Likert Scale is used for description (i.e., 1 = "Not at all"; 4 = "Very much so"). Scores can range from

20-80 on both the A-State and A-Trait inventories, with a higher score indicating greater anxiety (see Appendices I and J).

The authors conceptualize state anxiety as a subjective emotional state which may fluctuate over time and vary in intensity. It has been demonstrated that the A-State scale is sensitive to change when stressful experimental conditions are induced in undergraduate populations (O'Neil, Spielberger, & Hansen, 1969). Normative data for the A-State scale indicated a mean score of 36.35 (SD = 9.67) for undergraduate males and 35.12 (SD = 9.25) for undergraduate females. Cronbach's alpha correlation for both males and females was .89 and item-remainder correlations averaged .55. Test-retest reliabilities for the A-State scale ranged from .16 to .54 in the same sample; however, low correlations were expected given the theoretical transitory nature of the construct.

Evidence for establishing construct validity for the A-State scale was gathered by using an undergraduate population to test the effects of two different sets of instructions (i.e., creating two separate conditions) for completing the scale. The mean scale score was significantly higher for the predicted condition for both males and females. Additional evidence for construct validity was established in a similar experiment in which the A-State scale was administered to undergraduates who were placed in four conditions designed to vary the amount of anxiety evoked. For all groups, alpha coefficients ranged between .83 and .94, while mean scale scores varied in anticipated directions for males and females (Spielberger et al., 1970).

Trait anxiety is conceptualized by the authors as ones' tendency to interpret and react to perceived threats in an anxious manner. For the A-Trait scale, normative data indicated a mean score of 37.68 (SD = 9.69) for undergraduate males and 38.25 (SD = 9.14) for undergraduate females. Cronbach's alpha correlation coefficients were .90 for males and .89 females. Item-remainder correlations averaged .53 for the normative sample of undergraduates. Test-retest reliabilities for the A-Trait scale ranged from .73 to .86 and were theoretically expected to be higher than those for the A-State scale.

Concurrent validity has been demonstrated for the A-Trait scale. In the population of undergraduates included in the normative sample, scores on the A-Trait scale correlated with scores on the following scales for males and female college students, respectively: IPAT

Anxiety Scale (Cattell & Scheier, 1963) (.76, .75), Taylor Manifest Anxiety Scale (Taylor, 1953) (.79, .80), and Affect Adjective Checklist (Zuckerman, 1960) (.58, .52).

Self-esteem. The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) is a 10-item Guttman scale which assesses self-esteem. Individuals are asked to rate the degree to which the statements are self-descriptive on a 4-point scale (i.e., 1 = “Strongly agree”; 4 = “Strongly disagree”). Five of the items are reverse scored yielding a lower score for individuals with higher self-esteem.

Internal consistency for a Guttman scale is determined by the patterned relationship that each item has with the other items in the scale and is reported in terms of its reproducibility (Rosenberg, 1965). A Guttman scale reproducibility coefficient of .92 was reported in Rosenberg’s original study consisting of 4600 first through twelfth grade students in public high schools in New York City and a coefficient of .90 was reported in a study of 2625 students ages 8 to 18 in Baltimore public schools (Rosenberg & Kaplan, 1982).

The RSE scale may also alternately be scored as a Likert scale. This scoring method has yielded favorable internal consistency estimates. Cronbach’s alpha coefficients of .74 (McCarthy & Hoge, 1982) and .88 (Fleming & Courtney, 1984) have been reported in studies using adolescent populations. Additionally, item-to-total score correlations reportedly ranged from .51 to .79 in a study involving a high school population (Overholser, Adams, Lehnert, & Brinkman, 1995). In a sample of 259 undergraduates who completed the RSE on two occasions 7 days apart, a test-retest reliability coefficient of .82 was reported. Evidence for the validity of the RSE has been established in adolescent populations, as it has significantly correlated with various other measures of self-esteem, such as the Lerner self-esteem measure (.72)(Savin-Williams & Jaquish, 1981), depression ( $r = .31$ ), anxiety ( $r = .34$ ), and perception of how one is viewed by others ( $r = .31$ ) (Rosenberg & Kaplan, 1982).

General psychological functioning. The Brief Symptom Inventory (BSI; Derogatis, 1993) is a 53-item self-report symptom inventory which assesses 9 symptom categories and provides a global measure of psychological distress (see Appendices L and M for pretest and 2-week follow-up instruments, respectively). Symptom categories include: Somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Individuals are asked to rate how distressing each of the

items is for them on a five point scale (i.e., 0 = “Not at all”; 4 = “Extremely”). Normative samples included, but were not limited to, a sample of 974 adult nonpatients and a sample of 2,408 adolescent nonpatients ages 13-19. It is worth noting that Cochran and Hale (1985) administered the BSI to 347 undergraduates and found that both males and females scored significantly higher than the normative adult nonpatient sample on all of the scales except one (i.e., undergraduate females did not score higher on the Somatization scale). Further, scores for undergraduate males differed significantly from those of the adolescent nonpatient normative sample on three scales, while the females in the samples differed on six scales; differences varied in direction.

Internal consistency has been established for the BSI with Cronbach’s alpha correlation coefficients ranging from .71 to .85 for the 9 symptom dimensions in a sample of 719 psychiatric outpatients (Nunnally, 1970). Additionally, test-retest reliability estimates reportedly ranged from .68 to .91 for the same sample. Convergent validity for the BSI has been established, as scores on the BSI have been demonstrated to significantly correlate with the Wiggins content scales of the Minnesota Multiphasic Personality Inventory (MMPI) (Wiggins, 1966) and the Tryon cluster scores (Tryon, 1966). Further, it has been demonstrated that the BSI is sensitive to clinical change in depressive populations (Beutler, Engle, Mohr, Daldrup, Bergan, Meredith, & Merry, 1991).

Treatment integrity. Two approaches to assessing treatment integrity were utilized. First, 28 items were included on a chart divided by 15 minute time periods for the control group and by 3 times periods for each activity (i.e., before, during, and after) for the treatment group (see Appendix B for treatment group and Appendix C for control group). The 28 assessment items were divided into 4 broad categories for ease of assessment and analysis. The first category assessed the occurrence of goal setting exercises, the second examined the occurrence of verbal assessment of exercises, the third assessed whether or not psychosocial topics were discussed, and the fourth assessed the occurrence of both positive and negative verbal participation. The instructions to the observer/recorder were to place a check in the box if that behavior was observed during that specified time period.

A second measure of treatment integrity was designed to assess how closely the proposed treatment and control methods matched subjects’ perceptions of what actually occurred; that is,

to assess the credibility of the treatment. The instrument consisted of 8 “yes” or “no” questions. The first 7 assessed perceptions related to whether or not the group engaged in problem-solving together, worked together, encouraged each other, set group and personal goals, discussed feelings related to the activities, discussed the application of activities to life, and whether or not the group leader encouraged discussion from all group members. The eighth question for the control group was reverse scored and asked whether or not the group hiked around Blacksburg during the day. The eighth question for the treatment group was not reverse scored and asked whether or not the group worked on ropes course activities together. A score of “1” was received for a “yes” answer and a score of “0” was received for a “no” answer for items 1 through 8 with item eight being reverse scored for the control group. The total number of points was converted to a percentage of agreement for each condition in each cohort. The complete measure is provided in Appendix D for the treatment group and Appendix E for the control group.

### Procedure

Screening. One hundred and nine individuals participated in the initial screening process; 30 males (27.5%) and 79 females (72.5%). They were screened for depressive symptomatology using the Beck Depression Inventory (BDI; Beck, 1972) and for additional past or present psychological distress with a short questionnaire (see Appendix F). Potential subjects completed both the BDI and the psychological history questionnaire in a group format (i.e., classroom).

Subjects were considered for further participation in the study if they evidenced BDI scores above 10 (i.e., mild to severe depression). As each subject was contacted and invited to participate in the study, those scoring above a “19” on the BDI (i.e., moderate to severe levels of depressive symptomatology) were given the option of being directly referred for counseling services at that time. None of the potential subjects wanted to be referred at that time. Exclusion criteria included eliminating subjects who: 1) endorsed item number 9 on the BDI (i.e., suicidal ideology) with a rating higher than a “1,” suggesting that they may be currently considering suicide a viable option, 2) indicated that past sexual abuse was currently interfering with their daily functioning, 3) indicated that they were currently experiencing sexual abuse in a

relationship, 4) indicated that they had a current medical condition that would interfere with physical outdoor activity, 5) or were significantly overweight. Subjects who indicated that they were experiencing psychological difficulty related to current or past sexual abuse were excluded, as individuals who experience sexual abuse may have significant difficulty trusting individuals in this type treatment where physical and emotional support are necessary for group success. One potential subject was excluded for indicating past sexual abuse, 10 were excluded for indicating current emotional abuse, 5 were excluded for obesity, and 2 were excluded for indicating current medical conditions which would preclude physical activity.

Fifty-three subjects who met inclusion criteria were obtained for further participation in the study: 16 males (30.2%) and 37 females (69.8%). Of the 53 subjects who agreed to participate, 41 actually participated in the pretest, posttest, and 2-week follow-up assessment periods. The first treatment/control session had to be rescheduled because of unfavorable weather conditions. Four individuals who were scheduled to attend the first treatment/control session could not make arrangements to attend at the adjusted time. Four additional individuals who were scheduled to attend on the same day did not show up for the study. These adjustments brought the total number of participants on the first scheduled weekend of testing to 19: 8 males (42.1%) and 11 females (57.9%). Twenty-six individuals were scheduled to attend the second weekend of testing, and four of those did not show up, thus bringing the total number of participants on the second treatment/control weekend to 22: 8 males (36.4%) and 14 females (63.6%). Combining both cohorts, 21 subjects total were in the treatment condition (8 males, 38.1%; 13 females, 61.9%) and 20 subjects were in the control condition (8 males, 40%; 12 females, 60%).

Testing. The following measures were considered to assess state-like tendencies and were administered at pretest, posttest, 2-week follow-up, and 2-month follow-up: ECA, ESG, PSE, POMS, STAI-A-State, and RSE. In addition, the following trait-like measures were administered at pretest, 2-week follow-up and 2-month follow-up: GSE, S-EFF, BDI, STAI-A-Trait, and BSI. At posttest, subjects also completed this measure of treatment integrity. Individual assessment during pre-, post-, and 2-week follow-up testing for treatment and control conditions occurred in group format, while assessment for 2-month follow-up was conducted

individually (i.e., questionnaires were mailed to permanent addresses). Measures administered and times of testing are outlined in Table 4.

Treatment. Treatment was facilitated by a female doctoral level graduate student. A male certified in ropes course instruction and safety was also present and assisted during several ropes course activities. In addition, an undergraduate male was present during ropes course activities to assess treatment integrity; he did not interact with the group. Subjects were randomly assigned to either the ABT treatment or placebo-control condition. While the experiment occurred on two separate occasions due to the nature of the treatment (i.e., safe capacity on a ropes course is 12 individuals), the time commitment for each individual was approximately 7 hours one day and two additional hours for follow-up assessments at later dates. On the first experimental day, 19 individuals were tested; 10 in the treatment group and 9 in the control group. On the second experimental day, 22 individuals were tested; 11 in both the treatment and control conditions.

On the experimental day, individuals completed questionnaires for approximately 1.25 hours prior to engaging in the treatment activity. Treatment was divided into two sessions of approximately 2 hours and 15 minutes each with a snack break between the sessions. Subjects completed an additional set of questionnaires which took approximately 45 minutes immediately following the second treatment session on the experimental day.

While it was intended that the activities on the treatment days for both of the experimental groups would be exactly the same, some changes were made during the treatment sessions which were deemed necessary for safety reasons. Activities were scheduled such that the degree of trust and necessary reliance on others in the group increased as the treatment period progressed. The activities which occurred on the first treatment day included two activities designed to acquaint group members with one another (i.e., Groupings, Warp Speed), two activities which required group problem-solving (i.e., All Aboard, TP Shuffle), five activities designed to instill trust among group members (i.e., Yurt Circle, Willow in the Wind, Levitation, Two Person Trust Fall, Trust Fall from Height), and two activities designed to require greater trust and problem-solving abilities within the group (i.e., Spider's Web, The Wall). All activities were completed successfully except the final element, the Wall. Because of restrictions regarding daylight, only approximately 30 minutes were dedicated to attempting the

task. Because of this natural interference, the group was stopped before accomplishing the task. Many verbally expressed frustration at their “failed” attempt, but stated that they believed that if they had more time, that they could have accomplished the task. Thus, all activities attempted for this cohort were successfully negotiated. For both treatment cohorts, the activities utilized, the order of presentation, and target variables are presented in tabular form in Tables 5 and 6. For the remainder of the presentation, the day of experimentation which involved the treatment group which successfully completed all ABT activities (i.e., Day 2 cohort) will be referred to as ABT-C (i.e., Complete ABT) and the treatment group which did not successfully complete all ABT activities (i.e., Day 1 cohort) will be referred to as ABT-IC (i.e., Incomplete ABT).

The second treatment group attempted all of the activities listed above with the exception of the Wall. While it was originally planned that both treatment groups would attempt identical activities, the second treatment group was not exhibiting the degree of trust necessary to make an attempt at the Wall a safe venture; therefore, the Wall was not attempted and more time was dedicated to the Spider’s Web. That is, the Spider’s Web was first accomplished successfully within the same guidelines that the group on the first treatment day used and was then accomplished again with more stringent guidelines (i.e., several group members were blindfolded and only three were allowed to speak to solve the task).

During both treatment days, briefing sessions occurred prior to each activity. In general, each briefing session began with discussion concerning lessons/applications from previous activities, discussion of the ABT element to be attempted, review of the full value contract, and individual and group goals surrounding the upcoming attempt. Following the activities, debriefing sessions occurred which included discussion of what behaviorally occurred during the completion of the activity, feelings about the attempt at the activity, the interpreted meaning of the activity, and application to future ABT activities and/or environments outside of the ABT setting.

A detailed description of the focused protocol is provided in Appendix G. The frameworks for briefing and debriefing discussions are presented according to intended target variable. Briefing and debriefing topics were chosen from those outlined according to target variables (see Table 3) and were varied from activity to activity so as to allow time to address each variable.

Placebo-control. The control condition was facilitated by a female doctoral level graduate student. As was the case in the treatment condition, an undergraduate male was present to assess treatment integrity; however, he was not directly involved with the group. Subjects in the control condition completed their tasks at the same time that the treatment group was completing activities. That is, the control group was involved in outdoor activities in a group for the same amount of time that the treatment group was involved in the ABT activities. Activities for the placebo condition included a campus hike prior to a snack break and a hike/tour of historical Blacksburg, Virginia following the break. The involvement of the control group in these activities was intended to control for physical activity, being outdoors, and social interaction within a group over time. As was the case with subjects in the treatment condition, subjects completed measures immediately prior to the first campus hike and immediately following the later hike/tour. The control group protocol is provided in Appendix H.

Follow-up. Two weeks after individuals participated in the treatment or control condition, they were reassessed using the same measures that were used during pretesting. They were compensated for their time in the form of extra credit points for class at this time of testing. Follow-up testing also occurred two months after the treatment was completed. Subjects' permanent addresses were obtained during the initial testing process and questionnaires were mailed to all subjects to complete and return. For their participation in the 2-month follow-up assessment, subjects were monetarily compensated in the form of a \$100 lottery which was randomly awarded to one of the participants who returned her questionnaires in timely manner. Thirty-two of the original 41 subjects returned 2-month follow-up measures.

Debriefing. Phone calls were made to all subjects who participated in the study two to three weeks following the return of their 2-month follow-up questionnaires. During debriefing phone calls, subjects were informed about the purpose and all methods of the study. Again, none desired a referral.

Referrals. Subjects who scored in the moderate-severe depressive range on the BDI during the initial screening process were asked if they would like to receive a referral for counseling services at a local treatment facility to obtain appropriate counseling services. None of the participants chose to be referred. Additionally, all subjects recruited for participation in

the study were offered a referral for counseling services at a local treatment facility following participation.

## Chapter 8 : Results

### Attrition

Forty-one subjects participated in pretest, posttest, and 2-week follow-up assessments. Thirty-two (78%) of the 41 subjects originally involved in the experiment participated in the 2-month follow up (i.e., the final assessment). Multivariate analyses were conducted using only those subjects who completed the pre-, post-, and 2-week follow-up measures. The decision to test hypotheses without subjects who failed to complete the 2-month follow-up assessment was made because losing 22% of the subjects in a sample size that was originally small would have decreased statistical power further. Data for the 2-month follow-up assessment was presented and was given some statistical consideration; however, it was not considered a primary source from which overall conclusions regarding treatment effectiveness were drawn.

### Subjects

In the ABT-IC cohort, the treatment group contained 10 subjects, 4 (40%) males and 6 (60%) females, while the control group contained 9 subjects, 5 (55%) males and 4 (45%) females. In the ABT-C cohort, 11 subjects were in both treatment and control groups. Both groups contained 4 (36%) males and 7 (64%) females.

### Reliability

Reliabilities for each dependent measure were calculated using data for the 41 subjects who completed pre-, post-, and 2-week follow-up assessments. Alpha coefficients were as follows: BDI (.91), BSI (.97), ECA (.81), ESG (.75), GSE (.92), POMS-Anxiety Subscale (.93), POMS - Depression Subscale (.96), POMS - Total Score (.96), PSE (.82), RSE (.93), S-EFF (.94), STAI-A-State (.94), and STAI-A-Trait (.92).

### Treatment Integrity

To determine the integrity of the treatment, that is, how closely the actual treatment resembled the intended treatment, two approaches were utilized. For the first approach, the total number of times a behavior occurred within one of four broad categories was divided by the total number of opportunities for the behavior to occur in that category, thus providing a percentage of behavior occurrence. Percentages for the ABT-C and ABT-IC cohorts are

provided in Tables 7 and 8, respectively. For the ABT-C cohort, a greater occurrence of specified behaviors in each broad category was observed in the treatment group as compared to the control group. The number of times a behavior occurred compared to the number of opportunities for occurrence, followed by the percentage of occurrence, were as follows for treatment and control groups, respectively: Goals (18/36, 50%; 0/48, 0%), verbal assessment (28/72, 39%; 0/96, 0%), psychosocial topics (41/84, 49%; 0/112, 0%), and positive verbal participation (44/108, 41%; 12/144, 8%). ABT-IC cohort data also indicated greater percentages in the treatment group and were as follows for the treatment and control groups, respectively: Goals (23/45, 51%; 0/48, 0%), verbal assessment (34/90, 38%; 0/96, 0%), psychosocial topics (62/105, 59%; 2/112, 2%), positive verbal participation (71/135, 53%; 8/144, 6%), and negative verbal participation (7/15, 47%; 6/48, 13%). For the category of negative verbal participation for the ABT-C cohort, the control group participated in negative verbalizations more than the treatment group (7/48, 15%; 1/36, 3%, respectively). Interestingly, for the cohort that did not succeed in their final attempted element during treatment (i.e., ABT-IC), negative verbal participation was greater for the treatment group than for the control group. The opposite was noted for the ABT-C cohort, during which the final element was successfully completed by the treatment group. In sum, the treatment was determined to have integrity, as behaviors which were thought to describe participation in the ABT treatment did in fact occur more frequently in the treatment group than in the control group.

For the second approach to assessing treatment integrity, at posttest, all subjects in treatment and control groups completed a measure of treatment integrity. The instrument contained 8 questions which were designed to assess whether or not the treatment and control group activities were completed in the manner which was intended. That is, the measure assessed how closely the proposed treatment and control methods were followed. For each question, the percentage of subjects in treatment and control groups who agreed with the statements were calculated and are presented in Table 9. In general, questions on the instrument were written such that a “yes” answer from the subject would indicate interaction among group members. It was anticipated that subjects in the treatment group would “agree” with the statements more than subjects in the control group.

For the ABT-IC and ABT-C cohorts, univariate analyses of variance performed on mean percent agreement indicated that subjects in the treatment group agreed with the statements significantly more than subjects in the control group,  $F(1, 14) = 201.044, p < .0001$  and  $F(1, 14) = 1526.703, p < .0001$ , respectively. In the ABT-C cohort, the mean percent agreement for the treatment and control groups was  $M = .97 (SD = .05)$  and  $M = .06 (SD = .04)$ , respectively. The means and standard deviations for the treatment and control groups for the ABT-IC cohort were  $M = .91 (SD = .164)$  and  $M = .04 (SD = .05)$ , respectively. In general, subjects in the treatment group indicated that they solved problems as a group, encouraged one another, set goals, and discussed feelings about the activities, while subjects in the control group reported that these things did not occur during their activity; thus, the treatment was determined to have credibility.

### Group Comparability

Univariate analyses of variance (ANOVAs) were used to test pretreatment differences between treatment and control groups for each experimental cohort (i.e., ABT-IC and ABT-C) on all pretreatment dependent variables. ANOVAs performed on each cohort revealed significant pretreatment differences between treatment and control groups for the ABT-IC cohort only. Specifically, pretreatment scores for the control group were significantly higher than those for the treatment group for ESG,  $F(1, 17) = 10.110, p < .005$  and S-EFF,  $F(1, 17) = 13.303, p < .002$ .

### Correlations Among Dependent Measures

Correlation matrices for all dependent measures at each assessment point (i.e., pretest, posttest, and 2-week follow-up) for the ABT-C cohort are presented in Tables 10, 11, and 12, respectively. Bonferroni adjustments indicated that a p-value of  $< .0006$  was required for statistical significance for data gathered at pretest and 2-week follow-up, and  $p < .001$  was required for data gathered at posttest (i.e., state measures only). Correlations between process measures (i.e., state-like efficacy measures) and outcome measures (i.e., state and trait measures of depressive symptomatology and anxiety) are worth noting. At pretest, there were no significant correlations (at  $p < .0006$ ) between state measures of efficacy (i.e., ECA and ESG) and measures of depression (i.e., BDI and POMS Depression Subscale) or anxiety (i.e., STAI-A-State and STAI-A-Trait). At posttest, which involved only state measures, significant

correlations ( $p < .002$ ) were found between ECA and STAI-A-State ( $r = -.767$ ), between ECA and the POMS Depression Subscale ( $r = -.717$ ), and between ESG and STAI-A-State ( $r = -.824$ ). At 2-week follow-up, none of the above correlations noted remained significant. In sum, significant correlations between efficacy and outcome measures were indicated relative to proximity of treatment. That is, only at posttest (i.e., immediately following treatment), were significant correlations between efficacy and outcomes measures found.

### Preliminary Analyses for Dependent Measures

Dependent measures were divided into two conceptual categories for analysis. Measures which were thought to capture change occurring “in the moment” or in a state-like manner were analyzed together. Those measures included ECA, ESG, PSE, POMS-Total, POMS-Anxiety Subscale, STAI-A-State, POMS-Depression Subscale, and RSE. Similarly, those measures thought to capture change which occurs over greater time (i.e., trait-like measures) were analyzed together. Those included the GSE, S-EFF, BDI, STAI-A-Trait, and BSI. For the state measures, data gathered at pretest, posttest, and 2-week follow-up were used in the analyses. Data which were gathered at pretest and 2-week follow-up were used in the analyses for the trait measures.

As dependent measures were highly correlated, mixed design multivariate analyses of variance (MANOVAs) were performed using Wilk’s Lambda criterion. Two MANOVAs, which analyzed state- and trait-like measures separately, were initially conducted. A 2 (treatment and control group) X 3 (pretest, posttest, and 2-week follow-up) X 2 (cohort; day of participation) MANOVA performed on all state-like measures revealed a Time effect,  $F(16, 208) = 1.916$ ,  $p < .011$ , and a Group effect,  $F(8, 104) = .4404$ ,  $p < .0001$ , but no Time by Group interaction,  $F(16, 208) = 1.177$ ,  $p < .145$ . Additionally, while there was no Cohort effect,  $F(8, 104) = .351$ ,  $p < .472$ , there was a significant Cohort by Group interaction,  $F(8, 104) = 2.714$ ,  $p < .005$ . Similarly, a 2 (treatment and control group) X 2 (pretest and 2-week follow-up) X 2 (cohort) performed on all trait-like measures revealed a significant Group effect,  $F(5, 70) = 2.644$ ,  $p < .015$ , but no Time effect,  $F(5, 70) = 1.802$ ,  $p < .062$ , or Time by Group interaction,  $F(5, 70) = .914$ ,  $p < .239$ . In addition, while a Cohort effect was not found,  $F(5, 70) = 1.215$ ,  $p < .156$ , a significant Cohort by Group interaction was indicated,  $F(5, 70) = 2.015$ ,  $p < .044$ .

Results from both state and trait MANOVAs indicated that significant interactions only occurred with cohort (i.e., day of participation). That is, differences between groups occurred only when day of participation was considered. Therefore, data from the separate cohorts (i.e., separate days of participation) were analyzed statistically as independent samples. Further justification for this approach follows.

#### Justification for Approach to Analyses

Several findings, in addition to those stated above, led to a change in the anticipated statistical approach to data analysis. To begin with, as mentioned previously, the treatment differed between the two cohorts as a function of safety decisions made by the administrator of the treatments at the time of administration. In addition, differences were noted in apparent level of enjoyment at the time of treatment by the experimenter. That is, members of the ABT-IC cohort attempted the element called “The Wall” as their last element and did not succeed in completing the activity. They appeared upset and made frustrating comments. In the ABT-C cohort, that element was not attempted, the group successfully negotiated all other elements, and appeared to be enjoying themselves. For the ABT-IC cohort, the seemingly most frustrating element was the final element of the day after which they completed posttest questionnaires. Finally, graphic display of the means of dependent measures according to cohorts revealed changes in opposite directions on some measures for the treatment groups. As a result of necessary changes in treatment between the two separate cohorts, in addition to visual evidence (i.e., graphic display of data) that indicated a difference in direction of change on some variables for the two cohorts, the cohorts were analyzed as two separate groups rather than as one.

Further, as will be discussed in detail in the discussion section, as a result of significant procedural differences, adequate ABT processes were not considered to have been in place for the ABT-IC cohort, whereas they were for the ABT-C cohort. Therefore, data only from the ABT-C cohort was utilized to test hypotheses. Results from the ABT-IC cohort are presented only in an exploratory manner and did not contribute to formal hypothesis testing. Means and standard deviations for all dependent measures are presented for the ABT-C and ABT-IC cohorts in Tables 13 through 16. While 2-month follow-up data was not used in hypothesis

testing, the means and standard deviations are also presented in Tables 17 through 20 for visual inspection.

#### Analysis of Dependent Measures Using Separate Cohorts

Comparison of treatment groups. The two treatment groups from the ABT-C and ABT-IC cohorts were compared on all dependent measures using two MANOVAs. Repeated measures ANOVAs with time as the repeated measure in addition to between-subject univariate comparisons followed where appropriate. A 2 (ABT-C and ABT-IC cohorts) X 3 (pretest, posttest, and 2-week follow-up) MANOVA performed on all state-like variables revealed significant effects for Time,  $F(16, 100) = 1.859$ ,  $p < .017$ , and the Time by Cohort interaction,  $F(16, 100) = 1.964$ ,  $p < .012$ , but not for Cohort,  $F(8, 50) = 1.264$ ,  $p < .142$ . Repeated measures ANOVAs revealed significant differences between treatment groups for a measure of mood (i.e., POMS Total Score) and two of its subscales (i.e., POMS Depression Subscale Score and POMS Anxiety Subscale Score). Specifically, for the POMS Total Score, significant effects were found for Time,  $F(2, 18) = 4.471$ ,  $p < .013$ , and the Time by Cohort interaction,  $F(2, 18) = 8.581$ ,  $p < .001$ , but not for Cohort,  $F(1, 19) = 1.441$ ,  $p < .122$ . Between-subject comparisons indicated that individuals in the ABT-C cohort reported significantly less mood distress than those in the ABT-IC cohort at posttest,  $F(1, 19) = 20.101$ ,  $p < .0001$ . Similar results were found for both subscales. That is, individuals in the ABT-C cohort reported less depressive mood and less anxiety than did those in the ABT-IC cohort at posttest,  $F(1, 19) = 15.259$ ,  $p < .0005$ , and  $F(1, 19) = 29.350$ ,  $p < .0001$ , respectively.

A 2 (ABT-C and ABT-IC cohorts) X 2 (pretest and 2-week follow-up) MANOVA performed on trait-like variables revealed a significant effect for Cohort,  $F(5, 34) = 2.680$ ,  $p < .019$ , but not for Time,  $F(5, 34) = .820$ ,  $p < .272$ , or the Cohort by Time interaction,  $F(5, 34) = .681$ ,  $p < .321$ . The lack of a significant interaction led to the conclusion that there were no differences between individuals in the treatment groups in the ABT-C and ABT-IC cohorts on trait-like variables.

Prediction of outcome variables. Multiple regression analyses were used to determine to what degree process variables (i.e., self-efficacy measures) predicted outcomes measures (i.e., depression and anxiety) at each measurement period (i.e., pretest, posttest, 2-week follow-up) for

the separate cohorts. All multiple regression analyses were performed using ECA and ESG as independent variables. Dependent measures included one trait and one state measure of depression (i.e., mean BDI score, mean POMS Depression Subscale score) and one trait and one state measure of anxiety (i.e., mean STAI-A-Trait score, mean STAI-A-State score).

Regression analyses indicated different relationships between process and outcome variables at different time periods (see Tables 21 through 28 for  $R^2$  values and  $\beta$  weights). Regression analyses performed on ABT-C data to determine the predictability of state-like depressive symptomatology (i.e., mean POMS Depression Subscale score) by measures of efficacy resulted in significance for the treatment group at posttest,  $\underline{R}^2 = .523$ ,  $\underline{F}(2, 8) = 4.394$ ,  $p < .05$ , and for the control group at pretest,  $\underline{R}^2 = .614$ ,  $\underline{F}(2, 8) = 6.375$ ,  $p < .022$ , and posttest,  $\underline{R}^2 = .540$ ,  $\underline{F}(2, 8) = 4.700$ ,  $p < .045$ . For the ABT-IC cohort, the state-like measure of depressive symptomatology was significantly predicted by measures of efficacy for the treatment group at pretest,  $\underline{R}^2 = .654$ ,  $\underline{F}(2, 7) = 6.608$ ,  $p < .024$ , and posttest,  $\underline{R}^2 = .720$ ,  $\underline{F}(2, 7) = 8.984$ ,  $p < .012$ .

For the ABT-C cohort, the prediction of the trait measure of depression (i.e., BDI) by efficacy measures was significant for both treatment and control groups at 2-week follow-up, but not at pretest. At 2-week follow-up, regression equations predicted 53.6%,  $\underline{F}(2, 8) = 4.612$ ,  $p < .047$  and 53.7%,  $\underline{F}(2, 8) = 4.632$ ,  $p < .046$ , of the total variance, respectively. ESG was the only significant variable that was included in the model for the treatment group ( $\underline{\beta} = -1.382$ ,  $p < .022$ ), while ECA was the only significant variable included in the model for the control group ( $\underline{\beta} = -.788$ ,  $p < .05$ ). For the ABT-IC cohort, the only significant prediction of trait-like depressive symptomatology (i.e., BDI) occurred for the treatment group at pretest,  $\underline{R}^2 = .784$ ,  $\underline{F}(2, 8) = 12.731$ ,  $p < .005$ , and included only ECA as a significant predictor ( $\underline{\beta} = -.881$ ,  $p < .029$ ).

For the state-like measure of anxiety (i.e., STAI-A-State), regression analyses indicated significant prediction of anxiety by efficacy measures for the ABT-C cohort only. Specifically, significant prediction occurred for the treatment group at posttest,  $\underline{R}^2 = .775$ ,  $\underline{F}(2, 8) = 13.796$ ,  $p < .003$ , and 2-week follow-up,  $\underline{R}^2 = .642$ ,  $\underline{F}(2, 8) = 6.645$ ,  $p < .02$ , and also for the control group at posttest,  $\underline{R}^2 = .771$ ,  $\underline{F}(2, 8) = 13.485$ ,  $p < .003$ , and 2-week follow-up,  $\underline{R}^2 = .662$ ,  $\underline{F}(2, 8) = 7.824$ ,  $p < .013$ . Regression analyses indicated that trait-like anxiety was significantly predicted by measures of efficacy for the ABT-IC cohort only. Further, significance occurred only for the

treatment group, and only at pretest,  $R^2 = .756$ ,  $F(2, 7) = 10.823$ ,  $p < .007$ , and posttest,  $R^2 = .612$ ,  $F(2, 7) = 5.509$ ,  $p < .037$ .

In sum, for the ABT-C cohort, efficacy scores accounted for a significant amount of variance in the prediction of depressive symptomatology, as measured by state- and trait-like measures, and of anxiety, as measured by a state-like measure, immediately following participation in the experiment for individuals in treatment and control groups. Significant prediction of trait-like anxiety by efficacy measures was not indicated by regression analyses for either group. For the ABT-IC cohort, efficacy measures did not account for a significant amount of variance for treatment or control groups in the prediction of state-like anxiety. However, a significant amount of variance was accounted for in the prediction of trait-like anxiety by efficacy measures at pretest and 2-week follow-up for the treatment group only. For measures of depression, efficacy accounted for a significant amount of variance for the treatment group at pretest for both measures and at posttest for the state-like measure of depressive symptomatology.

Dependent measures for ABT-C cohort. As the ABT-C cohort was deemed to be representative of ABT processes, hypotheses were tested using only this cohort. Two MANOVAs were conducted, analyzing state- and trait-like variables separately. For the state measures, data gathered at pretest, posttest, and 2-week follow-up were used in the analyses. Data which were gathered at pretest and 2-week follow-up were used in the analyses for the trait measures. A 2 (treatment and control group) X 3 (pretest, posttest, and 2-week follow-up) MANOVA was performed on all measures of state-like variables using Wilk's Lambda criterion. The MANOVA revealed a Time effect,  $F(8, 16) = 5.561$ ,  $p < .017$ , but no Group effect,  $F(8, 16) = .876$ ,  $p < .28$  or Time by Group interaction,  $F(8, 16) = 1.195$ ,  $p < .229$ . Similarly, a 2 (treatment and control group) X 2 (pretest and 2-week follow-up) MANOVA was performed on the trait-like measures using Wilk's Lambda criterion. The MANOVA did not reveal a significant Time effect,  $F(5, 5) = 1.825$ ,  $p < .098$ , Group effect,  $F(5, 5) = 1.685$ ,  $p < .083$  or Time by Group interaction,  $F(5, 5) = .981$ ,  $p < .230$ . From these analyses it must be concluded that ABT does not effect change on the outcome variables studied. Further exploration of the data was conducted for the purpose of shaping future research with ABT.

### Power

Statistical power, the probability of detecting differences between groups when they truly occur in the population, varied in the present study. A power of .80 is commonly considered to be large enough to demonstrate statistical differences, if in fact, they do exist in the population (Cohen, 1988). Since data from the ABT-C cohort was used to test hypotheses, observed power for the state and trait MANOVAs is presented. For the MANOVA performed on state measures, power for the Time main effect was .932, for the Group main effect it was .667, and for the Time by Group interaction it was .685. For the MANOVA performed on the trait measures, observed power was generally lower. Specifically, power for the Time main effect was .172, for the Group main effect it was .566, and for the Time by Group interaction it was .177. Observed power for the exploratory repeated measures ANOVAs performed on dependent measures, specifically with regard to the Time by Group interactions, also varied. For state measures, power ranged from .194 (i.e., STAI-A-State) to .822 (i.e., POMS Anxiety Subscale) and averaged .404. For trait measures, power ranged from .16 (i.e., BDI) to .557 (i.e., BSI) and averaged .306.

### Exploratory Analyses

MANOVAs performed on state and trait variables from the ABT-C cohort did not yield significant interactions; therefore, it must be suggested that ABT may not significantly decrease depressive and anxious symptomatology in late adolescents with depressive symptomatology. However, data were further analyzed for exploration in light of the generally low power in statistical analyses and group differences suggested by graphic displays of data. Univariate repeated measures analyses were performed on each of the dependent variables. In addition, while data from the ABT-IC cohort was not used in formal hypothesis testing, it is presented as it offers useful information about ABT protocol and procedure.

ABT-C cohort. *State measures.* Eight 2 (group) X 3 (time) ANOVAs using time as the repeated measure were conducted on the state-like dependent measures to determine which measures accounted for the differences. Within-subject analyses followed by Tukey's HSD in addition to between-subject analyses were conducted to determine where differences occurred. A Bonferroni correction was applied to control for Type I Error, yielding a necessary  $p < .01$  to

indicate significance. Polynomial contrasts were also conducted as a separate approach to examining within-and between-group differences.

A repeated measures ANOVA conducted on the measure of efficacy for coping with anxiety created by novel situations (ECA) revealed a significant effect for Time,  $F(2, 19) = 12.571, p < .0001$ , Group,  $F(1, 20) = 3.154, p < .046$ , and the Time by Group interaction,  $F(2, 19) = 3.520, p < .025$ . Within-subject comparisons revealed a significant increase in efficacy for the treatment group only,  $F(2, 30) = 8.696, p < .0005$ , between pre- and posttest ( $p < .002$ ) and between pretest and 2-week follow-up ( $p < .002$ ). Between-subject comparisons revealed that efficacy was higher for the treatment group than the control group at 2-week follow-up,  $F(1, 20) = 9.379, p < .003$ , but not at pretest,  $F(1, 20) = .031, p < .431$ , or posttest,  $F(1, 20) = 3.601, p < .036$ . Polynomial contrasts indicated that the rate of increase in efficacy was greater for the treatment group than the control group,  $F(1, 20) = 7.171, p < .015$  (see Figure 2 for graphic display).

Repeated measures univariate analyses conducted on the measure of efficacy for ability to perform certain social behaviors specifically pertaining to working and solving problems in a group (ESG) revealed a Time effect,  $F(2, 19) = 10.053, p < .0005$ , and a Time by Group interaction,  $F(2, 19) = 3.91, p < .019$ , but no Group effect,  $F(1, 20) = .633, p < .218$ . Significant increases in efficacy were not indicated by within-subject comparisons for the treatment or control groups,  $F(2, 30) = 1.674, p < .103$  and  $F(2, 30) = .130, p < .440$ , respectively. Between-subject comparisons indicated no differences between treatment and control groups at pretest,  $F(1, 20) = .005, p < .473$ , posttest,  $F(1, 20) = .363, p < .277$ , or 2-week follow-up,  $F(1, 20) = .716, p < .204$ . Polynomial contrasts revealed a quadratic effect over time for both groups,  $F(1, 20) = 7.061, p < .015$ , indicating that efficacy scores increased from pretest to posttest and decreased from posttest to 2-week follow-up (see Figure 3 for graphic display).

The univariate analysis conducted on physical self-efficacy (PSE) yielded a significant effect for Time,  $F(2, 29) = 5.875, p < .05$ , but not for Group,  $F(1, 20) = 1.321, p < .132$  or the Time by Group interaction,  $F(2, 19) = 1.146, p < .170$ . Significant changes were not revealed by within-subject comparisons for either treatment,  $F(2, 30) = 1.684, p < .102$ , or control groups,  $F(1, 30) = .106, p < .45$ . Between-subject differences were not found at any time point,  $F(1, 20) = .409, p < .265$ ,  $F(1, 20) = 1.919, p < .091$ , and  $F(1, 20) = 1.458, p < .121$ , respectively.

Polynomial contrasts indicated a significant quadratic effect over time,  $F(1, 20) = 7.293, p < .014$ . Specifically, both groups increased in efficacy between pretest and posttest and decreased between posttest and 2-week follow-up (see Figure 4 for graphic display).

A repeated measures univariate analysis conducted on the total score of a measure of mood disturbance (POMS) revealed a significant effect for Time,  $F(2, 19) = 22.243, p < .0001$ . Neither a group effect,  $F(1, 20) = .827, p < .187$ , nor a significant Time by Group interaction,  $F(2, 19) = 2.411, p < .059$ , were found. Within-subject differences were not indicated for either treatment or control groups,  $F(2, 30) = 3.793, p < .017$  and  $F(2, 30) = 1.995, p < .077$ , respectively. Groups were not found to be different at any time point as indicated by one-way univariate analyses,  $F(1, 20) = .001, p < .486$ ,  $F(1, 20) = .834, p < .186$ , and  $F(1, 20) = 2.006, p < .086$ , respectively. However, polynomial contrasts indicated a quadratic effect over time,  $F(1, 20) = 28.258, p < .0001$ , and a difference in the rate of change between groups over time,  $F(1, 20) = 4.402, p < .049$ . Specifically, the treatment group decreased at a greater rate than the control group between pretest and posttest and increased at a slower rate than did the control group between posttest and 2-week follow-up (see Figure 5 for graphic display).

A repeated measures ANOVA performed on the POMS Depression Subscale revealed a significant Time effect,  $F(2, 19) = 19.275, p < .0001$ . Significant effects were not found for Group,  $F(1, 20) = 1.466, p < .12$  or for the Time by Group interaction,  $F(2, 19) = 1.274, p < .152$ . Within-subject comparisons did not indicate significant change for either the treatment,  $F(2, 30) = 2.339, p < .057$ , or control group,  $F(2, 30) = 2.646, p < .044$ . Between-subject comparisons did not yield differences between groups at any time point,  $F(1, 20) = .455, p < .254$ ,  $F(1, 20) = .482, p < .248$ , and  $F(1, 20) = 2.66, p < .06$ , respectively. Polynomial contrasts indicated a quadratic effect over time,  $F(1, 20) = 22.508, p < .0001$ . Specifically, both groups decreased between pretest and posttest and increased between posttest and 2-week follow-up on the measure of depressive mood (see Figure 6 for graphic display).

For the POMS Anxiety Subscale, a repeated measures univariate analysis yielded significant effects for Time,  $F(2, 19) = 14.365, p < .0001$ , and the Time by Group interaction,  $F(2, 19) = 5.982, p < .05$ , but not for Group,  $F(2, 19) = .014, p < .454$ . A significant within-subject effect was revealed for the treatment group,  $F(2, 30) = 6.539, p < .002$ , but not for the control group,  $F(2, 30) = 2.727, p < .041$ . For the treatment group, Tukey's HSD revealed a

significant decrease between pretest and posttest ( $p < .005$ ) and between pretest and 2-week follow-up ( $p < .027$ ). Between-subject comparisons did not yield significant effects at any time point,  $F(1, 20) = 2.204$ ,  $p < .077$ ,  $F(1, 20) = .05$ ,  $p < .413$ , and  $F(1, 20) = 1.835$ ,  $p < .096$ , respectively. Polynomial contrasts, however, revealed a quadratic effect over time,  $F(1, 20) = 21.953$ ,  $p < .0001$ , and a significant difference in the rate of change between the treatment and control groups,  $F(1, 20) = 11.766$ ,  $p < .003$ . Specifically, the treatment group decreased at a greater rate than the control group between pretest and posttest and increased at a slower rate than did the control group between posttest and 2-week follow-up (see Figure 7 for graphic display).

A repeated measures univariate analysis performed on a state anxiety measure (STAI-A-State) yielded a significant Time effect,  $F(2, 19) = 8.883$ ,  $p < .001$ , but no effect for Group,  $F(1, 20) = .689$ ,  $p < .208$ , and no Time by Group interaction,  $F(2, 19) = .973$ ,  $p < .198$ . Within-subject comparisons did not yield significant effects for treatment or control groups,  $F(2, 30) = 3.033$ ,  $p < .032$  and  $F(2, 30) = 1.884$ ,  $p < .085$ , respectively. Between-subject differences were not found at any time point,  $F(1, 20) = .017$ ,  $p < .449$ ,  $F(1, 20) = .082$ ,  $p < .389$ , and  $F(1, 20) = 1.970$ ,  $p < .088$ , respectively. Polynomial contrasts yielded a quadratic effect over time,  $F(1, 20) = 14.962$ ,  $p < .001$ . Specifically, both groups decreased in anxiety between pretest and posttest and increased between posttest and 2-week follow-up (see Figure 8 for graphic display).

A repeated measures ANOVA conducted on the measure of self-esteem (RSE) revealed a significant Time effect,  $F(2, 19) = 4.309$ ,  $p < .015$ , but no Group effect,  $F(1, 20) = .396$ ,  $p < .268$  or Time by Group interaction,  $F(2, 19) = 1.877$ ,  $p < .09$ . Within-subject comparisons did not indicate significant change over time for treatment or control groups,  $F(2, 30) = 1.274$ ,  $p < .147$  and  $F(2, 30) = .335$ ,  $p < .360$ , respectively. Differences between groups were not indicated at any time point,  $F(1, 20) = .145$ ,  $p < .354$ ,  $F(1, 20) = .011$ ,  $p < .460$ , and  $F(1, 20) = 2.14$ ,  $p < .08$ , respectively. Polynomial contrasts indicated a significant change over time, independent of group,  $F(1, 20) = 7.435$ ,  $p < .013$  (see Figure 9 for graphic display).

*Trait measures.* Five 2 (group) X 2 (time) ANOVAs, using time as the repeated measure, were conducted on the trait-like dependent measures to determine which measures accounted for the differences. Within- and between-subject analyses were conducted to determine where differences occurred. A Bonferroni correction was applied to control for Type I

Error indicating a necessary  $p < .0125$  to indicate significance. Linear contrasts were also conducted as a separate approach to examining within-and between-group differences.

A repeated measures ANOVA performed on the measure of general self-efficacy (GSE) yielded a significant Group effect,  $F(1, 20) = 2.892$ ,  $p < .05$ , but no significant Time effect,  $F(1, 20) = .807$ ,  $p < .190$  or Time by Group interaction,  $F(1, 20) = 1.788$ ,  $p < .098$ . Further univariate analyses did not yield significant pretest to 2-week follow-up differences for treatment or controls groups,  $F(1, 20) = 1.73$ ,  $p < .102$  and  $F(1, 20) = .081$ ,  $p < .389$ , respectively. Between-group comparisons did not yield significant differences between groups at any time point,  $F(1, 20) = 4.168$ ,  $p < .055$  and  $F(1, 20) = .401$ ,  $p < .267$ , respectively. Linear contrasts did not indicate significant change over time or differences between groups,  $F(1, 20) = .807$ ,  $p < .380$  and  $F(1, 20) = 1.788$ ,  $p < .196$ , respectively (see Figure 10 for graphic display).

For the measure of general social self-efficacy (S-EFF), a repeated measures ANOVA revealed a significant Time effect,  $F(1, 20) = 3.092$ ,  $p < .047$ , but no Group effect,  $F(1, 20) = .130$ ,  $p < .361$ , or Time by Group interaction,  $F(1, 20) = 1.508$ ,  $p < .117$ . Within-subject comparisons did not indicate significant differences between pretest and 2-week follow-up for either treatment or control groups,  $F(1, 20) = 1.357$ ,  $p < .129$  and  $F(1, 20) = .024$ ,  $p < .44$ , respectively. Between-subject comparisons did not indicate significant differences between groups at any time point,  $F(1, 20) = .001$ ,  $p < .491$  and  $F(1, 20) = .531$ ,  $p < .238$ , respectively. Linear contrasts did not yield significant differences over time or differences between groups,  $F(1, 20) = 3.092$ ,  $p < .094$  and  $F(1, 20) = 1.508$ ,  $p < .234$ , respectively (see Figure 11 for graphic display).

For a measure of depressive symptomatology (BDI), significant effects were found for Time,  $F(1, 20) = 5.288$ ,  $p < .016$ , but not for Group,  $F(1, 20) = 1.055$ ,  $p < .159$  or the Time by Group interaction,  $F(1, 20) = 1.012$ ,  $p < .163$ . Within-subject comparisons did not demonstrate significant effects for either treatment or control groups,  $F(1, 20) = 2.317$ ,  $p < .072$  and  $F(1, 20) = .296$ ,  $p < .297$ , respectively. Between-subject comparisons did not yield significant differences at any time point,  $F(1, 20) = .303$ ,  $p < .294$ , and  $F(1, 20) = 1.551$ ,  $p < .114$ , respectively. Linear contrasts indicated a significant change between pretest and 2-week follow-up, independent of group,  $F(1, 20) = 5.288$ ,  $p < .032$  (see Figure 12 for graphic display).

A repeated measures ANOVA performed on the measure of trait anxiety (STAI-A-Trait) yielded a significant effect for Time,  $F(1, 20) = 2.918, p < .05$ , but not for Group,  $F(1, 20) = .309, p < .292$  or the Time by Group interaction,  $F(1, 20) = 2.714, p < .058$ . Within-subject comparisons did not yield significant effects for either treatment or control groups,  $F(1, 20) = 1.469, p < .12$  and  $F(1, 20) = .0001, p < .493$ , respectively. Similarly, significant differences were not found between groups at any time,  $F(1, 20) = .0001, p < .5$  and  $F(1, 20) = 1.012, p < .164$ , respectively. Additionally, linear contrasts did not yield significant differences over time or differences between groups,  $F(1, 20) = 2.918, p < .103$  and  $F(1, 20) = 2.714, p < .115$ , respectively (see Figure 13 for graphic display).

Univariate analyses performed on the measure of general psychological distress (BSI) did not reveal significant effects for Time,  $F(1, 20) = 1.490, p < .118$ , or Group,  $F(1, 20) = .497, p < .245$ ; however, effects were found for the Time by Group interaction,  $F(1, 20) = 4.884, p < .020$ . Within-subject analyses did not yield significant differences for treatment or control groups,  $F(1, 20) = 2.465, p < .066$  and  $F(1, 20) = .186, p < .336$ , respectively. Similarly, significant differences between groups were not found for any time period,  $F(1, 20) = .138, p < .357$  and  $F(1, 20) = 2.616, p < .061$ , respectively. Linear contrasts indicated a significant difference in the rate of change over time between the treatment and control groups, with the treatment group changing at a greater rate,  $F(1, 20) = 4.884, p < .039$  (see Figure 14 for graphic display).

ABT-IC cohort. State measures. A 2 (treatment and control group) X 3 (pretest, posttest, and 2-week follow-up) MANOVA was performed using Wilk's Lambda criterion. The MANOVA revealed a Group effect,  $F(8, 16) = 5.905, p < .003$ , but no Time effect,  $F(8, 16) = 6.621, p < .07$  or Time by Group interaction,  $F(8, 16) = 3.080, p < .137$ .

A repeated measures ANOVA conducted on the measure of efficacy for coping with anxiety created by novel situations (ECA) revealed a significant effect for Time,  $F(2, 16) = 6.639, p < .004$ , but not for Group,  $F(1, 17) = .156, p < .349$  or the Time by Group interaction,  $F(2, 16) = .503, p < .307$ . Within-subject comparisons did not yield significant differences over time for treatment or control groups,  $F(2, 27) = 1.886, p < .086$  and  $F(2, 24) = .609, p < .276$ , respectively. Similarly, between-subject comparisons did not yield significant differences between groups at pretest, posttest, or 2-week follow-up,  $F(1, 17) = .003, p < .479$ ,  $F(1, 17) = .145, p < .354$ , and  $F(1, 17) = .521, p < .240$ , respectively. Polynomial contrasts indicated a

significant change over time, independent of group,  $F(1, 17) = 13.028, p < .002$  (see Figure 15 for graphic display).

A repeated measures univariate analysis conducted on the measure of efficacy for ability to perform certain social behaviors specifically pertaining to working and solving problems in a group (ESG) revealed a Group effect,  $F(1, 17) = 4.349, p < .026$ , but no Time effect,  $F(2, 16) = 2.015, p < .083$  or Time by Group interaction,  $F(2, 16) = 1.450, p < .132$ . Within-subject comparisons did not yield significant differences over time for treatment or control groups,  $F(1, 27) = 2.710, p < .043$  and  $F(2, 24) = .228, p < .399$ , respectively. Between-subject analyses indicated that the control group was significantly higher than the treatment group in ratings of efficacy at pretest,  $F(1, 17) = 10.110, p < .0025$ , but not at posttest,  $F(1, 17) = 1.143, p < .150$  or 2-week follow-up,  $F(1, 17) = .493, p < .246$ . Polynomial contrasts did not indicate significant change over time or differences between groups,  $F(1, 17) = .823, p < .377$  and  $F(1, 17) = 2.983, p < .102$ , respectively (see Figure 16 for graphic display).

The repeated measures univariate analysis conducted on physical self-efficacy (PSE) did not yield significant effects for Group,  $F(1, 17) = 2.574, p < .064$ , Time,  $F(2, 16) = 2.230, p < .07$ , or the Time by Group interaction,  $F(2, 16) = .059, p < .472$ . Accordingly, within-subject analyses did not yield significant effects for the treatment or control group,  $F(2, 27) = .176, p < .420$  and  $F(2, 24) = .173, p < .421$ , respectively. No significant differences between groups were indicated at any time point,  $F(1, 17) = 2.496, p < .067$ ,  $F(1, 17) = 2.810, p < .056$ , and  $F(1, 17) = 1.867, p < .095$ , respectively. Polynomial contrasts did not indicate significant change over time or differences between groups,  $F(1, 17) = 3.454, p < .081$  and  $F(1, 17) = .012, p < .914$ , respectively (see Figure 17 for graphic display).

A repeated measures univariate analysis conducted on the total score of measure of mood disturbance (POMS) revealed a significant effect for Time,  $F(2, 16) = 7.208, p < .003$  and a significant Time by Group interaction,  $F(2, 16) = 3.588, p < .026$ . A significant Group effect was not found,  $F(1, 17) = 2.232, p < .076$ . Within-subject comparisons did not yield significant change over time for treatment or control groups,  $F(2, 27) = .483, p < .311$  and  $F(2, 24) = 2.552, p < .025$ , respectively. Between-subject comparisons yielded a significant difference between groups at posttest,  $F(1, 17) = 9.967, p < .003$ . Specifically, the POMS score for the treatment group was higher than that of the control group at posttest, indicating that mood disturbance

became worse for the treatment group immediately following treatment. Significant differences between groups were not found at pretest,  $F(1, 17) = .127, p < .363$ , or 2-week follow-up,  $F(1, 17) = 1.946, p < .091$ . Polynomial contrasts indicated a significant difference in the rate of change over time between groups,  $F(1, 17) = 5.447, p < .032$ , indicating that the control group decreased, or improved, more than the treatment group over time (see Figure 18 for graphic display).

A repeated measures ANOVA performed on the POMS Depression Subscale revealed a significant Time effect,  $F(2, 26) = 8.093, p < .002$ . Significant effects were not found for Group,  $F(1, 17) = 2.552, p < .065$  or for the Time by Group interaction,  $F(2, 26) = 2.413, p < .061$ . Within-subject comparisons did not yield significant differences over time for either treatment or control groups,  $F(2, 27) = .288, p < .376$  and  $F(2, 24) = 2.552, p < .05$ , respectively. Between-subject analyses revealed a significant difference between groups at posttest,  $F(1, 17) = 9.259, p < .0035$ , and not at pretest,  $F(1, 17) = .377, p < .274$ , or 2-week follow-up,  $F(1, 17) = 2.107, p < .083$ . At posttest, scores on the depression subscale of the POMS indicated that the treatment group was more depressed at posttest than the control group. Polynomial contrasts indicated a significant change over time, independent of group,  $F(1, 17) = 15.502, p < .001$  (see Figure 19 for graphic display).

For the POMS Anxiety Subscale, a repeated measures univariate analysis yielded significant effects for Group,  $F(1, 17) = 3.921, p < .032$ , Time,  $F(2, 16) = 3.129, p < .035$ , and the Time by Group interaction,  $F(2, 16) = 8.621, p < .0015$ . Within-subject univariate analyses indicated a significant change over time for the control group,  $F(2, 24) = 5.115, p < .007$ , but not for the treatment group,  $F(2, 27) = 1.019, p < .188$ . Tukey's HSD revealed a significant decrease in anxiety between pretest and posttest for the control group ( $p < .013$ ). Between-subject comparisons yielded a significant difference between groups at posttest,  $F(1, 17) = 38.645, p < .0001$ , and not at pretest,  $F(1, 17) = .164, p < .345$ , or 2-week follow-up,  $F(1, 17) = 1.302, p < .135$ . Specifically, at posttest, the treatment group was more anxious than the control group. Polynomial contrasts indicated a quadratic effect for both groups,  $F(1, 17) = 8.559, p < .009$ , although the effect for the treatment group was inverted. That is, anxiety increased for the treatment group and decreased for the control group at posttest and then moved back toward

baseline for both groups. A significant difference in the rate of change between groups over time was also indicated,  $F(1, 17) = 4.444, p < .05$  (see Figure 20 for graphic display).

A repeated measures univariate analysis performed on the state anxiety measure (STAI-A-State) yielded a significant Time effect,  $F(2, 26) = 6.391, p < .0045$ , but no effect for Group,  $F(1, 17) = .513, p < .242$  and no Time by Group interaction,  $F(2, 26) = 1.438, p < .133$ . Within-subject comparisons did not yield significant differences over time for either treatment or control groups,  $F(2, 27) = .342, p < .357$  and  $F(2, 24) = 2.807, p < .04$ , respectively. Between-subject comparisons did not indicate significant differences between groups at pretest,  $F(1, 17) = .113, p < .371$ , posttest,  $F(1, 17) = .269, p < .306$ , or 2-week follow-up,  $F(1, 17) = 1.156, p < .149$ . Polynomial contrasts indicated significant increase of anxiety over time, independent of group,  $F(1, 17) = 13.243, p < .002$  (see Figure 21 for graphic display).

A repeated measures ANOVA conducted on self-esteem (RSE) produced a significant Time effect,  $F(2, 16) = 4.913, p < .011$ , but no Group effect,  $F(1, 17) = 2.364, p < .072$  or Time by Group interaction,  $F(2, 16) = .545, p < .295$ . Within-subject comparisons did not indicate significant differences over time for treatment or control groups,  $F(2, 27) = .218, p < .420$  and  $F(2, 24) = 1.263, p < .151$ , respectively. Similarly, between-subject comparisons did not yield significant differences between groups at any time point,  $F(1, 17) = 1.879, p < .094$ ,  $F(1, 17) = 1.585, p < .113$ , and  $F(1, 17) = 3.025, p < .05$ , respectively. Polynomial contrasts indicated a significant increase in self-esteem over time, independent of group,  $F(1, 17) = 9.204, p < .007$  (see Figure 22 for graphic display).

*Trait measures.* A 2 (group: treatment and control) X 2 (time: pretest and 2-week follow-up) MANOVA was performed on the trait-like measures using Wilk's Lambda criterion. The MANOVA revealed a significant Time effect,  $F(5, 5) = 16.827, p < .0001$  and Time by Group interaction,  $F(5, 5) = 7.676, p < .0005$ , but no Group effect,  $F(5, 5) = 1.668, p < .106$ .

Five 2 (group) X 2 (time) ANOVAs using time as the repeated measure were conducted on the trait-like dependent measures to determine which measures accounted for the differences. Within- and between-subject analyses were conducted to determine where differences occurred. A Bonferroni correction was applied to control for Type I Error indicating a necessary  $p < .0125$  to indicate significance. Linear contrasts were also conducted as a separate approach to examining within-and between-group differences.

A repeated measures ANOVA performed on the measure of general self-efficacy (GSE) yielded a significant Time effect,  $F(1, 17) = 4.728, p < .022$ , but no Group effect,  $F(1, 17) = 1.691, p < .106$  or Time by Group interaction,  $F(1, 17) = .474, p < .250$ . Within-subject comparisons did not yield significant change over time for treatment or control groups,  $F(1, 18) = .323, p < .289$  and  $F(1, 16) = 1.701, p < .106$ , respectively. Between-group comparisons did not indicate significant differences between groups at either time point,  $F(1, 17) = .776, p < .196$  and  $F(1, 17) = 2.281, p < .075$ , respectively. Linear contrasts indicated an increase in general self-efficacy over time, independent of group,  $F(1, 17) = 4.728, p < .044$  (see Figure 23 for graphic display).

On the measure of general social self-efficacy (S-EFF), a repeated measures ANOVA revealed a significant Group effect,  $F(1, 17) = 7.265, p < .0075$ , but no Time effect,  $F(1, 17) = 2.057, p < .085$ , or Time by Group interaction,  $F(1, 17) = 2.619, p < .062$ . Within-subject analyses did not reveal significant change over time for treatment or control groups,  $F(1, 18) = 1.542, p < .115$  and  $F(1, 16) = .008, p < .465$ , respectively. Between-subject analyses indicated that general social self-efficacy was higher for the control group than for the treatment group at pretest,  $F(1, 17) = 13.303, p < .001$ . A significant difference between groups was not indicated at 2-week follow-up,  $F(1, 17) = 2.336, p < .073$ . Linear contrasts did not indicate significant change over time or differences between groups,  $F(1, 17) = 2.057, p < .17$  and  $F(1, 17) = 2.619, p < .124$ , respectively (see Figure 24 for graphic display).

On a measure of depressive symptomatology (BDI), significant effects were found for Time,  $F(1, 17) = 17.880, p < .0005$  and the Time by Group interaction,  $F(1, 17) = 4.293, p < .027$ , but not for Group,  $F(1, 17) = .319, p < .29$ . Further univariate analyses yielded significant differences over time for the control group,  $F(1, 16) = 6.467, p < .011$ , but not for the treatment group,  $F(1, 18) = .24, p < .315$ . Between-subject differences were not found at pretest or 2-week follow-up upon univariate analyses,  $F(1, 17) = .0001, p < .493$  and  $F(1, 17) = 1.187, p < .146$ . Linear contrasts indicated a significant decrease in depressive symptomatology over time, independent of group,  $F(1, 17) = 17.880, p < .001$  (see Figure 25 for graphic display).

A repeated measures ANOVA performed on the measure of trait anxiety (STAI-A-Trait) yielded a significant effect for Time,  $F(1, 17) = 30.558, p < .0001$  and a significant Time by Group interaction,  $F(1, 17) = 5.133, p < .019$ . A significant Group effect was not found,  $F(1,$

17) = .331,  $p < .287$ . Within-subject comparisons yielded a significant decrease in anxiety between pretest and 2-week follow-up for the control group,  $F(1, 16) = 11.552$ ,  $p < .002$ , but not for the treatment group,  $F(1, 18) = .373$ ,  $p < .275$ . Between-subject differences were not indicated at either time point,  $F(1, 17) = .001$ ,  $p < .487$  and  $F(1, 17) = 1.0$ ,  $p < .166$ , respectively. Linear contrasts indicated a significant difference in the rate of change over time between groups,  $F(1, 17) = 5.133$ ,  $p < .037$ , with the control group decreasing at a greater rate than the treatment group (see Figure 26 for graphic display).

Univariate analyses performed on the measure of general psychological distress (BSI) did not reveal significant effects for Group,  $F(1, 17) = .309$ ,  $p < .293$ , Time,  $F(1, 17) = 1.040$ ,  $p < .161$ , or the Time by Group interaction,  $F(1, 17) = 1.744$ ,  $p < .102$ . Accordingly, within-subject analyses did not yield significant effects over time for treatment or control groups,  $F(1, 18) = .004$ ,  $p < .476$  and  $F(1, 16) = .966$ ,  $p < .17$ , respectively. Between-subject analyses did not yield differences at pretest or 2-week follow-up,  $F(1, 17) = .06$ ,  $p < .405$  and  $F(1, 17) = .586$ ,  $p < .227$ , respectively. Linear contrasts did not indicate significant change over time or differences between groups,  $F(1, 17) = 1.04$ ,  $p < .322$  and  $F(1, 17) = 1.744$ ,  $p < .204$ , respectively (see Figure 27 for graphic display).

2-month follow-up data. Formal conclusions were not drawn from the data set in which subjects completed all four assessments (i.e., pretest, posttest, 2-week follow-up, 2-month follow-up), as the original sample size decreased by 22% at 2-month follow-up; however, some statistical attention will be given to the data. Univariate within- and between-subject comparisons were conducted on all dependent measures for treatment and controls groups from each cohort (i.e., ABT-C and ABT-IC). Tables 29 and 30 provide means and standard deviations for the smaller sample for pretest, posttest (i.e., for state measures only), 2-week follow-up, and 2-month follow-up assessments. Means and standard deviations are also presented in graphic form in Figures 28 through 53.

*ABT-C cohort: State measures.* For the treatment group, within-subject comparisons performed on all state-like measures revealed significant change over time for ECA,  $F(2, 21) = 5.297$ ,  $p < .007$ , POMS,  $F(2, 21) = 6.17$ ,  $p < .004$ , and the POMS Anxiety Subscale,  $F(2, 21) = 7.597$ ,  $p < .0015$ . The POMS Depression Subscale neared significance,  $F(2, 21) = 4.529$ ,  $p < .012$ . Tukey's HSD performed on ECA revealed a significant increase in efficacy between

pretest and posttest ( $p < .02$ ) and between pretest and 2-month follow-up ( $p < .036$ ), indicating that treatment gains were maintained over a 2 month period. For the POMS, Tukey's HSD yielded a significant reduction in mood disturbance between pretest and posttest ( $p < .006$ ). Similarly, Tukey's HSD performed on scores on the POMS Anxiety Subscale scores revealed a significant decrease in anxiety between pretest and posttest ( $p < .003$ ). Univariate analyses did not reveal significant change over time for state-like dependent measures for the control group.

Between-subject comparisons performed on state-like measures revealed no significant differences between treatment and control groups at pretest, posttest, or 2-month follow-up; however, two variables approached significance. Individuals in the treatment group reported more efficacy (ECA) and less mood disturbance (POMS) than individuals in the control group at posttest,  $F(1, 15) = 5.153$ ,  $p < .019$  and  $F(1, 15) = 3.483$ ,  $p < .041$ , respectively.

*ABT-C Cohort: Trait measures.* For the treatment group, significant change over time was not indicated for any measures conceptualized as measuring trait-like variables. Within-subject comparisons yielded significant change over time on the BDI for the control group,  $F(2, 24) = 4.917$ ,  $p < .008$ . Tukey's HSD revealed a significant decrease in depressive symptomatology between pretest and 2-month follow-up ( $p < .008$ ).

Between-subject comparisons did not yield significant differences between treatment and control groups at pretest, 2-week follow-up, or 2-month follow-up for any trait-like dependent measure.

*ABT-IC cohort: State measures.* Within-subject comparisons for all state measures were conducted on data from pretest, posttest, and 2-month follow-up to assess changes which may have occurred over time. For within- and between-subject comparisons, a Bonferroni correction indicated a necessary  $p < .01$  for statistical significance.

For the treatment group, within-subject ANOVAs performed on all state-like measures yielded three significant effects over time. Specifically, subjects reported an increased belief in their ability to perform certain social behaviors pertaining to working and solving problems in a group (ESG),  $F(2, 21) = 6.76$ ,  $p < .0025$  from pretest to posttest ( $p < .004$ ). Tukey's HSD indicated that treatment gains were not maintained at 2-month follow-up ( $p < .28$ ). On a measure of mood disturbance (POMS), a univariate analysis revealed a time effect,  $F(2, 21) = 5.798$ ,  $p < .005$ . Tukey's HSD further specified a significant decrease in mood disturbance from

posttest to 2-month follow-up ( $p < .008$ ). Finally, a significant time effect was revealed for the POMS Anxiety Subscale,  $F(2, 21) = 6.03$ ,  $p < .0045$ . Tukey's HSD revealed a significant increase in anxiety between pretest and posttest ( $p < .011$ ) and a significant decrease between posttest and 2-month follow-up ( $p < .03$ ). For the control group, univariate analyses performed on all state-like measures did not reveal significant time effects.

Between-subject comparisons revealed significant differences between treatment and control groups on several measures. A significant difference was found for the POMS at posttest,  $F(1, 13) = 14.86$ ,  $p < .001$ ; specifically, subjects in the control group reported less mood disturbance than did those in the treatment group. Relatedly, subjects in the control group reported less depressed mood on the POMS Depression Subscale at posttest than those in the treatment group,  $F(1, 13) = 18.467$ ,  $p < .0005$ . Additionally, subjects in the control group reported less anxiety, as measured by the POMS Anxiety Subscale, than subjects in the control group at posttest,  $F(1, 13) = 29.524$ ,  $p < .0001$ .

*ABT-IC cohort: Trait measures.* Within-subject comparisons for all trait measures were conducted on data collected at pretest, 2-week follow-up, and 2-month follow-up to assess changes which may have occurred over time. For within- and between-subject comparisons, a Bonferroni correction indicated a necessary  $p < .01$  for statistical significance.

For the treatment group, univariate analyses performed on all trait-like dependent measures did not reveal significant main effects for time on any measure. Similar analyses performed for the control group revealed significant time effects for the BDI,  $F(2, 18) = 4.838$ ,  $p < .01$  and the STAI-A-Trait,  $F(2, 18) = 7.144$ ,  $p < .0025$ . For the BDI, a significant decrease in depressive symptomatology between pretest and 2-month follow-up was revealed using Tukey's HSD ( $p < .023$ ). For the STAI-A-Trait, Tukey's HSD revealed significant decreases in trait anxiety between pretest and 2-week follow-up ( $p < .046$ ) and between pretest and 2-month follow-up ( $p < .005$ ). No differences were found between the 2-week follow-up and 2-month follow-up assessments.

Between-subject comparisons performed on all trait-like measures did not yield significant differences between treatment and control groups at pretest, 2-week follow-up, or 2-month follow-up. One variable worth noting, however, approached significance. Individuals in

the control group reported more social self-efficacy (S-EFF) than individuals in the treatment group at 2-month follow-up,  $F(1, 13) = 4.744, p < .024$ .

## Chapter 9 : Discussion

### Comparison of ABT-C and ABT-IC

“Success” in ABT. ABT treatment protocols differed for the two cohorts, and therefore, a brief discussion of the comparability of each ABT experience to ABT procedure as it is found in the greater body of literature will occur. One primary component of ABT protocols believed to provide therapeutic change is that which involves “successes” in the ABT environment. Literal successes, or achievement of problem-solving goals by the group, are considered to have the most therapeutic potential, and for some, are considered to be necessary for positive change (Priest, 1993; Stich, 1983). Success in ABT may alternately be defined as an individual or group of individuals overcoming some fear or obstacle, even if the stated goal of the ABT activity is not realized (Gass & McPhee, 1990). In this scenario, a perceived “failure” may be reconceptualized as a success when the activity is processed in such a way that the individuals in the group are led to perceive their achievement on the task (Schoel et al., 1988). It is the general tenet in the body of ABT literature, however, that although perceived “failures” can be processed as “successes” in some instances, that the ideal ABT protocol does not have as its last group experience, an activity in which the group does not meet the challenge of the task and is therefore forced to end the ABT experience without having a chance to apply what they learned on the attempt to a new activity or to a second attempt at the same activity (Gass, 1993).

While these ideas concerning the definitions of “success” and “failure” in ABT have been proposed, discussed, and likely implemented by multiple facilitators in practice, the available body of *experimental* research does not provide specific information about particular protocols. That is, it does not provide information about whether or not groups completed ABT tasks or how the leader processed attempts in which the group did not meet the challenge of the ABT task. As a result, the information provided in the ABT literature concerning outcomes must be qualified, as nothing is reported with regard to specific ABT protocol (i.e., activities, briefing, debriefing topics), whether or not “failures” occurred, or how failures were processed by the group leader.

Procedural differences. One significant difference in ABT procedures in the current study involved completion of tasks. In the ABT-C cohort, all activities were successfully

completed. That is, the group as a whole completed all attempted activities and individuals expressed verbal satisfaction with the progress and accomplishments of the group. In the ABT-IC cohort, the group completed all activities successfully with the exception of the last attempted element. Traditionally, the final ABT element in a protocol is the most challenging and requires greater trust and problem-solving skills to successfully negotiate the group task, as was the case in the planned ABT treatment. Because of restrictions regarding daylight, however, the ABT-IC group was stopped before accomplishing the task. Many group members verbally expressed frustration at their “failed” attempt, but stated that they believed if they had had more time, that they could have accomplished the task.

Implications. Based on the notion that change can be elicited best when success on ABT elements occurs, adequate ABT processes were considered to have been in place for the ABT-C cohort, whereas they were not for the ABT-IC cohort. Therefore, data from the ABT-C cohort was utilized to test and discuss results in relation to specific ABT hypotheses presented, whereas data from the ABT-IC cohort was not used to test hypotheses. Results from the ABT-IC cohort are not discussed in detail; however, results for that cohort are briefly presented for the purpose of comparing the two ABT treatment protocols and discussing the potential implications of those differences for distinguishing necessary ABT components instrumental in eliciting change for specific variables.

### Summary of Results and Hypotheses

Summary remarks refer to results computed from the data set (N = 41) which did not include the 2-month follow-up assessment data. To begin with, multivariate tests did not yield significant interactions between time and group for state or trait variables. Therefore, the overall conclusion from the study must be that ABT may not effect change in depressive and anxious symptomatology in late adolescents reporting depressive symptomatology. That said, comments will be made below which refer to results from exploratory analyses conducted on the primary data set (N = 41) and from the data set which included 2-month follow-up data (N = 32). Variables will be discussed in light of trends observed which may have produced significance had statistical power been greater. Summary results from exploratory analyses from ABT-C and ABT-IC cohorts are provided in Tables 31 through 34.

For the ABT-C cohort, results from exploratory analyses indicated that it may be appropriate to speculate about four dependent variables regarding potential differences between groups had overall statistical power been greater. Specifically, the measure for coping with anxiety in novel situations (i.e., ECA), the measure of efficacy for working and solving problems in a group (i.e., ESG), a measure of state anxiety (i.e., POMS Anxiety Subscale), and the measure of general psychological functioning (i.e., BSI) each demonstrated a statistically significant interaction. According to graphic display of the data, it appeared that efficacy for coping with anxiety, efficacy for solving problems in a group, and general psychological functioning increased more for individuals in the treatment group compared to those in the control group following participation. For the measure of state anxiety, it appeared that individuals in the treatment group experienced a greater decrease in anxiety following participation than those in the control group. For the additional dependent measures, exploratory statistical analyses did not indicate significant interactions, therefore, speculations about differences between groups is not appropriate.

For the ABT-IC cohort, the cohort in which the treatment group did not successfully complete the final and most difficult element, results are briefly summarized for later use in the discussion of ABT treatment comparisons. Exploratory analyses indicated an interaction for four dependent measures (i.e., POMS, POMS Anxiety Subscale, BDI, STAI-A-Trait); therefore, speculation about the potential meaning of observed group differences which may have occurred if statistical power had been greater is appropriate. According to graphic display of measures of mood distress (i.e., POMS) and state anxiety (i.e., POMS Anxiety Subscale), it appeared that individuals in the treatment group experienced an increase in mood distress and anxiety from pre- to posttest, while individuals in the control group experienced a decrease. For the trait measure of depression (i.e., BDI) and the measure of trait anxiety (i.e., STAI-A-Trait), while slight decreases appeared to occur between pretest and 2-week follow-up for individuals in the treatment group, it is unlikely that the decreases are suggestive of actual decreases that may have occurred had statistical power been higher. Rather, the decreases likely represent expected test-retest effects. However, decreases which appeared to occur for individuals in the control group for both measures may be more suggestive of decreases which truly existed following

participation. Exploratory analyses were not indicative of significant interactions for the remaining dependent measures.

### ABT and Self-Efficacy Theory

One hypothesis proposed in the current study included assessment of self-efficacy as a means of testing the proposed notion that self-efficacy theory may prove to be a useful framework from which to conceptualize changes that occur as a result of ABT. For the ABT-C cohort, MANOVAs performed on state and trait variables did not reveal statistically significant interactions, thus resulting in the conclusion that self-efficacy theory may not be a useful framework within which to conceptualize changes that occur as a result of ABT. That is, the components of ABT may not have served as strong enough influences, or sources, of self-efficacy to create a change. Of course, it is possible that the components of ABT did not serve as sources of efficacy at all; however, this is an unlikely possibility given information gathered through treatment integrity measures.

By way of review, self-efficacy is an individual's judgment of his or her own ability to successfully execute behaviors required to obtain a desired outcome (Bandura, 1977, 1986). According to self-efficacy theory, the primary sources of information which influence self-efficacy include performance accomplishments, vicarious experiences, verbal persuasion, and emotional and physiological arousal (Bandura, 1977). As discussed in detail previously, it was suggested that components and procedures of ABT could be conceptualized as possible sources of efficacy information. In the present study, it was thought that each of these influences of self-efficacy was present in the ABT procedure. Treatment integrity measures, in addition to leader observation, established the presence of successful completion of tasks by the group for the ABT-C cohort (i.e., performance accomplishments), modeling by peers (i.e., vicarious experience), encouragement by peers and group leader (i.e., verbal persuasion), and involvement in novel, problem-solving situations (i.e., presumably elicited emotional and physiological arousal) in the treatment context and not in the placebo-control condition.

Given the small sample size and relatively low power of statistical analyses, it is appropriate to speculate about changes in efficacy identified by exploratory analyses in light of future research efforts. That is, while results from the current study were not statistically

significant, results from exploratory analyses do not rule out the possibility that self-efficacy theory may be a useful theoretical framework within which to conceptualize changes that occur as a result of ABT. Results from exploratory analyses indicated greater increases in efficacy for individuals in the treatment group compared to those in the control group following participation. Specifically, efficacy for coping with anxiety created by novel situations (i.e., ECA) and efficacy for working and problem-solving in a group (i.e., ESG) appeared to increase more for individuals in the treatment group than for those in the control group. In the ABT literature, only two studies were identified which assessed self-efficacy and both reported significant improvement for the treatment group. One study involved a one day ropes course for special education students (N = 20). Results indicated significant improvement of self-efficacy for individuals in the treatment group compared to those in the control group at posttest (Burney, 1992). The other study was not controlled, but yielded a pre- posttest increase in self-efficacy following a 2-week backpacking trip which reportedly incorporated ABT principles and strategies (Davis-Berman & Berman, 1989).

It has been demonstrated that social self-efficacy correlates negatively with depression in adolescents (McFarlane et al., 1994, 1995). This is further supported by a study which found that depressed college freshmen reported significantly less efficacy for performing behaviors related to social functioning than nondepressed college freshmen (Kanfer and Zeiss, 1983). In the current study, individuals in both treatment and control conditions reported depressive symptomatology, and therefore, may not have had the desire or perceived skills necessary to interact successfully with a group of people that they did not know prior to the study. However, results suggested that something provided by the ABT experience with regard to social interaction was not provided by the placebo-control experience. Specifically, individuals in the ABT group were encouraged to interact and work together to solve problems as a group to reach a common goal, whereas individuals in the control group were not encouraged to interact, although they were free to casually interact, and there were no group problem-solving activities presented. Additionally, as individuals in the treatment group worked toward common goals, they experienced group success, while those in the control group were not presented with that opportunity, and therefore, did not experience group success. In other words, perhaps the social experience in the treatment group served as an influence of efficacy (i.e., performance

accomplishment) sufficient to elicit a change in belief in ability to work and problem-solve in a group, while interaction in the control group was not sufficient to elicit change in efficacy.

Similarly, with regard to efficacy for coping with anxiety created by novel situations, the possible group difference suggests that the ABT condition affected efficacy in some way that the control condition did not. Perhaps placement of the individuals in the treatment group in novel, problem-solving situations which at first glance appeared insurmountable and presumably increased anxiety, and their subsequent successful negotiation of the tasks, may have instilled confidence in their ability to negotiate novel, anxiety-inducing situations in the future. By comparison, the individuals in the control group presumably did not experience an increase in belief in ability to cope with anxiety created by novel situations because they were not exposed to novel problem-solving situations which they successfully negotiated as a group.

In sum, while multivariate analyses did not yield significant results, results from exploratory analyses suggested that self-efficacy theory should not be ruled out in future research as a plausible framework from which to conceptualize changes that occur in ABT. Results from the current study provide evidence of possible effects of ABT on efficacy which warrant further empirical consideration.

Implications for ABT protocol. For the purpose of providing information about components which may be necessary in order for ABT to produce increased efficacy, it is useful to compare results from exploratory analyses for both cohorts. According to self-efficacy theory, the primary source of efficacy information, or the greatest influence on self-efficacy, is performance accomplishment because it provides immediate feedback about whether or not a person, or group of people, can succeed at a particular task (Bandura & Adams, 1977). Specifically, performance which results in the successful achievement of goals (i.e., task completion) is thought to increase efficacy, while performance which does not result in the achievement of a goal can decrease efficacy.

In the current study, exploratory analyses indicated between-group differences in efficacy for the ABT-C cohort, the cohort in which individuals in the treatment group successfully completed each task, and not for the ABT-IC cohort, the cohort in which individuals in the treatment group did not successfully complete the final and most difficult ABT task. While efficacy did not decrease for individuals in the treatment group in the ABT-IC cohort, it did not

increase significantly or beyond that which occurred for individuals in the control group. Therefore, one interpretation of these suggested differences is that success, or performance accomplishments, may be necessary in order for ABT to increase in a group of individuals with depressive symptomatology.

To conclude, it may be the case that efficacy does not change at all following ABT, as suggested by multivariate analyses, or, as indicated by exploratory analyses, it could be that efficacy increases following successful or unsuccessful performances in a depressed population if previous successes have occurred. Of course, additional study is necessary to further examine the role of ABT successes in increasing efficacy for late adolescents with depressive symptomatology.

#### ABT and Depressive Symptomatology

Another primary hypothesis in the current study involved testing the effects of ABT on depressive symptomatology. Neither multivariate analyses nor exploratory ANOVAs yielded significant interactions with respect to dependent measures that assessed depressive symptomatology. A time effect, however, resulted from exploratory ANOVAs, indicating significant change in state and trait measures of depressive symptomatology. Specifically, both measures indicated a decrease in depressive symptomatology between pretest and posttest, with no differences between groups. While primary analyses did not indicate significant change over time or between groups, it is useful to discuss main effects indicated by exploratory analyses as they may have produced significance had statistical power been greater.

The lack of significance indicated by the MANOVAs will be addressed first, as it is possible that even if power had been higher, significance may not have occurred. Certainly one possible explanation is that ABT simply does not decrease depressive symptomatology in late adolescents. However, given evidence in the ABT literature, albeit quite limited, that ABT can have an effect on depressive symptomatology, it may be useful to determine possible differences between the ABT protocols followed in those studies and ABT in the current study. Of the two studies in the ABT literature which have tested depressive symptomatology per se, both reported an decrease for individuals in the treatment group following participation. One study involved participation by adjudicated youth in a 24-day wilderness experience and included a short

course control group (Sakofs, 1991). The second involved a 2-week backpacking trip by adolescents in outpatient treatment. A reduction in depressive symptomatology was reported, although the study did not contain a control group (Davis-Berman & Berman, 1989). These two studies differed from the current study in duration of treatment. That is, in one cited study, treatment lasted 2 weeks and in the other it last almost one month, whereas treatment in the current study lasted a matter of hours. It can be concluded from the current study that ABT, when conducted in a 5-hour time frame, does not significantly decrease depressive symptomatology. In sum, although significance was not reached in the current study, information about a possible condition under which ABT may *not* produce a decrease in depressive symptomatology was gleaned (i.e., treatment length).

Attention will now be turned to the time effect yielded from exploratory analyses for both the state and trait measures of depressive symptomatology. Analyses indicated that a significant reduction in depressive symptomatology occurred over time (i.e., between pretest and posttest for the state measure and between pretest and 2-week follow-up for the trait measure); however, there was no distinction between treatment and control groups. Two explanations for finding no differences between groups will be discussed; one is more theoretically-based and the other addresses differences in methodology between the current study and past studies involving treatment of depression.

Several models of depression include as a causal or maintaining factor of depressive symptomatology, a lack of positively reinforcing experiences or feedback from the environment which serve to maintain negative attributions about self (Abramson et al., 1978; Lewinsohn, 1974). For these cognitive-behavioral models of depression, a portion of treatment includes increasing the number of positive interactions or positively reinforcing experiences (i.e., positive feedback) in the environment. The lack of differences between groups in the current study may have occurred because in the control group, casual social interaction may have been perceived or experienced as positively reinforcing and therefore, may have decreased negative beliefs about self. That is, individuals in the control group may have interpreted their participation in the half-day walk with a small group of people as an accomplishment. However, it was thought that individuals in the treatment group would have experienced greater positive reinforcement for their individual and group participation in ABT activities because group goals were set and

greater interaction and social skill were required to accomplish the tasks. Specifically, it was thought that the positive feedback received from the environment for those individuals in the treatment group would have been experienced as qualitatively and quantitatively different than that for those in the control group, as individuals in the treatment group experienced more socially and physically demanding tasks than those in the control group. It would then stand to reason that individuals in the treatment group would have, as a result of experiencing greater quality and quantity of positive feedback from the environment, experienced a greater reduction in negative beliefs about self. However, even if statistical power had been greater, it does not appear that depressive symptomatology would have decrease more for individuals in the treatment group than for those in the control group. That is, the treatment in the current study may not have been powerful enough to elicit a reduction in depressive symptomatology beyond that which occurred in the placebo-control condition using the methodology that was used in the present study. As mentioned above, perhaps an ABT treatment protocol which was extended over a greater amount of time would have elicited significant and differential change between groups.

Another possible explanation for the lack of significant differences between groups involves methodology. The current study did not employ a wait-list control group; however, significant differences between ABT and the wait-list control may have been found had one been used. The information that would have been gained from using a wait-list control group for comparison, however, would not have been as useful with regard to interpretation. Thus, a placebo-control condition which shared several properties with the ABT treatment condition seemed more appropriate. Several studies involving the cognitive-behavioral treatment of adolescent depression partially illustrate this potential outcome. Reynolds and Coats (1986) compared CBT and relaxation treatment to a wait-list control in the treatment of depression in adolescents. They found that CBT and relaxation treatments reduced depressive symptomatology more than the control group condition; however, the two treatments did not differ from one another. In a similar study, Kahn et al., (1990) compared CBT, relaxation, and self-modeling treatments to a wait-list control in the treatment of depressed adolescents. Results indicated a significant reduction in depressive symptomatology for individuals in CBT, relaxation, and self-modeling groups as compared to those in the wait-list control, while

differences between treatment groups were not found. The placebo-control condition utilized in the current study may have been more similar to the alternative treatment methods used for comparison in the above examples than to the wait-list control groups utilized in those studies because the placebo-control condition and alternative treatment methods shared some general therapeutic properties with each other (e.g., interaction between therapist and individual) and not with the wait-list control group. In the above studies, it was hypothesized that the comparison treatment would not be as effective as the cognitive-behavioral treatment, however, no differences between treatment groups were found. This can be compared to the absence of significance found between treatment and placebo-control groups in the current study.

Implications for ABT protocol. While significant results were not found for the primary analyses, exploratory analyses from both cohorts offered some useful results with regard to future research questions. In the current study, exploratory analyses for the ABT-C cohort did not indicate that a significant difference between treatment and control groups occurred following ABT with respect to depressive symptomatology; however, a main effect was found, indicating a significant pre-post decrease independent of group. Therefore, while results from the current study did not indicate that ABT decreased depressive symptomatology beyond that which occurred for the control group, exploratory analyses indicated that depressive symptomatology did decrease, as opposed to not changing or increasing. It is useful, then, to compare data from the ABT-IC cohort to help narrow future research questions regarding ABT protocol and its effects on depressive symptomatology.

For the ABT-IC cohort, the cohort in which all elements of the ABT protocol were not successfully negotiated, exploratory analyses indicated an interaction between time and group for the trait measure of depression (i.e., BDI) and a main effect for time on the state measure of depression (i.e., POMS Depression Subscale). On the trait measure of depression, exploratory analyses indicated that individuals in the control group reported significantly less depressive symptomatology at 2-week follow-up than did those in the treatment group. In addition, pre-posttest differences on the state measure of depression indicated an increase in depressive symptomatology for the treatment group at posttest and a decrease for the control group. Results from exploratory analyses from both cohorts suggests that differences in ABT protocol affected

differences in change in reported depressive symptomatology; therefore, it is useful to compare protocols as information may be gained which helps to direct future research efforts.

To review, the most prominent difference between ABT treatment conditions is that individuals in the ABT-C cohort successfully negotiated all ABT elements, while those in the ABT-IC cohort did not complete the final and most difficult challenge. When results from exploratory analyses were compared, it appeared that failure on the final ABT element had a somewhat negative impact on depressive symptomatology, as the state measure implies an increase in depressive symptomatology at posttest and the trait measure implies no change. Although the comparison is not ideal, it is worth noting that individuals in both treatment and control groups in the ABT-C cohort reported a significant decrease in depressive symptomatology between pretest and posttest. That is, while no differences were indicated between treatment and control groups in the ABT-C cohort, a decrease was indicated and not an increase or no change as was found in the ABT-IC cohort. Therefore, these results suggest that while successes on ABT elements do not necessarily result in decreases in depressive symptomatology compared to those obtained by the control group, they appear to produce change in the desired direction. In contrast, it appears that failure on the final ABT element may have a deleterious effect on depressive symptomatology in late adolescents already reporting depressive symptomatology.

With regard to cognitive-behavioral theories of depression, one interpretation of the difference between cohorts is that perceived accomplishment or success would have theoretically occurred for individuals who successfully met ABT challenges and would not have occurred for those who did not accomplish each task, thereby resulting in an increase in negative attributions or feelings about self for those who did not meet all ABT challenges. However, another potentially critical aspect of the ABT-IC experience was that the “failure” occurred on the very last and most difficult ABT element. Had “failure” occurred earlier in the ABT protocol and been followed by several group successes, the increase in depressive symptomatology may not have occurred. In the later scenario, an overall interpretation of success may have occurred, whereas in the former scenario, the most salient source of information (i.e., “failure” on the last and most difficult element) may have influenced the

interpretation of the overall experience negatively. These hypotheses, of course, warrant empirical investigation.

#### ABT, Efficacy, and Depressive Symptomatology

While preliminary analyses did not yield significant interactions, it is appropriate to give some attention to the relationships between ABT, efficacy, and depressive symptomatology suggested by exploratory analyses. In each of the following statements regarding exploratory analyses, it should be understood that these results are discussed as potential findings had statistical power been higher. In the current study, exploratory analyses suggested that ABT may increase efficacy for coping with anxiety created by novel situations as well as efficacy for working and problem-solving in a group. Regression analyses indicated that efficacy was a reasonably good predictor of depressive symptomatology, particularly at posttest. The link that was not made in the current study was between ABT and depressive symptomatology. It would stand to reason that if ABT has a positive effect on efficacy, and if efficacy predicts depressive symptomatology, that ABT would also positively effect depressive symptomatology. The results of the current study did not contradict this relationship (i.e., depressive symptomatology did decrease for those in the treatment group according to exploratory analyses); however, they did not entirely support it either. Further study of this relationship in ABT is warranted. Perhaps a treatment protocol that took place over a longer period of time (i.e., as in past studies in which ABT has decreased depressive symptomatology) would elicit significant change in efficacy and depressive symptomatology.

#### ABT and Psychosocial Variables

The final hypothesis in the current study involved testing the effects of ABT on several specified psychosocial variables related to depression. Measures of anxiety, self-esteem, and general psychological distress are considered in this section. While results from multivariate analyses were not significant, it is useful to discuss significant results from the exploratory analyses, as they may have reached significance had statistical power been higher. In the ABT-C cohort, two exploratory ANOVAs yielded significant interactions. Individuals in the treatment group reported a greater decrease in state anxiety as measured by the POMS Anxiety Subscale compared to those in the control group following ABT. Similarly, individuals in the

treatment group reported less general psychological distress (i.e., BSI) following treatment than did those in the control group.

Anxiety. As has been the case with all other dependent measures, multivariate analyses did not yield statistically significant interactions for any anxiety measures, thus this suggests that ABT did not have an effect on anxiety. It is, however, useful to note significant changes which were revealed during exploratory analyses, as they may offer information regarding plausible results had power been greater. Although anxiety has not been frequently studied in ABT studies, some have suggested that ABT may decrease anxiety. One study involved special education students participating in adventure-based counseling. Individuals in the treatment group were found to report less anxiety following participation than those in the control group (Cuff & Radcliffe, 1988). Additionally, situational fear was assessed in an uncontrolled study in which participants in Outward Bound were found to report significantly less anxiety following participation with regard to several social-based situational fears (Young & Ewert, 1992).

In the current study, had statistical power been greater, state anxiety for individuals in the treatment group may have significantly decreased over time as indicated by exploratory analyses. This reduction in state anxiety for individuals in the treatment group may have occurred as a direct result of the ABT process. One of the components of ABT thought to effect change is involvement in a novel, problem-solving situation designed to create a motivating amount of emotional and physiological anxiety. That is, in ABT, situations or tasks may first appear insurmountable to the group and thus, induce anxiety; however, when these tasks are successfully negotiated by the group, individuals may feel that they will be able to successfully negotiate problem-solving tasks in the future which first appear overwhelming. After participation, individuals in the treatment group may have experienced a reduction in anxiety as a result of feeling an increased ability to successfully cope with anxiety in the future. This possible explanation is further corroborated by the fact that exploratory analyses also suggested a significant increase for individuals in the treatment group only on the measure of belief in ability to cope with anxiety produced by novel situations (i.e., ECA).

The reduction in state anxiety for individuals in the treatment group could have also occurred because they may have experienced a greater reduction in state anxiety than those in the control group as a result of the sense of relief following treatment being greater for the

treatment group. That is, although both groups were told that they were going to be participating in outdoor activities, anxiety may have actually increased during the car trip to the ABT destination for individuals in the treatment group, and as a result, would have been reflected at posttest as a greater sense of relief once the activities were completed.

Implications for ABT protocol with respect to anxiety. With regard to anxiety, the most important potential implication of results on ABT protocol is highlighted when data from both cohorts is considered. According to exploratory analyses, for individuals in the treatment group in the ABT-IC cohort, state anxiety increased following treatment, whereas it decreased for individuals in the treatment group in the ABT-C cohort. This increase in state anxiety for individuals in the ABT-IC cohort may have occurred as a result of the final and most difficult ABT element not being successfully negotiated. This possibility, in addition to the observed decrease in state anxiety for individuals in the treatment group in the ABT-C cohort, suggests that in order for ABT to decrease state anxiety in a depressive population, ABT elements must be successfully completed. Another possibility, similar to that suggested for depressive symptomatology, is that perhaps at least the final ABT element must be successfully completed in order to decrease state anxiety. Of course, this is purely speculation, as these possibilities are based on exploratory data. Further empirical investigation is warranted in order to test these emergent hypotheses regarding state anxiety.

Self-esteem. Multivariate and exploratory univariate analyses did not yield significant Time by Group interactions. Therefore, it must be concluded that self-esteem may not change as a result of ABT. A significant time effect, however, occurred in the exploratory univariate repeated measures analysis indicating an increase in self-esteem over time, independent of group. That is, it is possible that if power had been higher, self-esteem may have increased for individuals in treatment and control groups following participation. While the majority of controlled (Bertolami, 1981; Kolb, 1988) and uncontrolled (Marsh et al., 1987, 1988) ABT studies have reported significant differences at posttest, some have not. Similar to the current study, some studies that did not report a significant increase in self-esteem had small sample sizes and did reveal an increase in mean scores for individuals in the treatment groups upon closer inspection of the data. For example, Langsner and Anderson (1987) did not report significant differences at posttest in a study which involved participation in ABT by 31

adolescents with externalizing behavioral difficulties; however, an increase in self-esteem was indicated by mean scores for individuals in the treatment group at posttest. Follow-up assessments were not made in the study, therefore, long term change, if it occurred, is not known.

Although ABT has not been studied expressly with a depressive population, it is possible that increases in self-esteem suggested in the present study through exploratory analyses may have been attributed to an increase in positive feedback from the environment for individuals in both treatment and control groups which, in turn, could have resulted in increased feelings of worth over time. Further, it is possible that just being outdoors and doing physical activity could have increased self-esteem in individuals experiencing depressive symptomatology.

Implication for ABT protocol with regard to self-esteem. As multivariate analyses did not indicate significant interactions for the ABT-C or ABT-IC cohort, it is not appropriate to make definitive statements with regard to ABT protocol and its effects on ABT. According to exploratory analyses, univariate analyses revealed a time effect for both cohorts; therefore, it must be suggested that differences in ABT protocol (i.e., with regard to successes) and differences in treatment and control conditions may not differentially affect self-esteem in individuals with depressive symptomatology.

General psychological distress. As multivariate analyses did not yield significant interactions, it must be concluded that ABT may not decrease general psychological distress (i.e., BSI). Exploratory analyses conducted for the purpose of informing future research efforts, however, yielded a significant interaction. That is, individuals in the treatment group in the ABT-C cohort reported less psychological distress than those in the control group at 2-week follow-up. Similar results have been reported in two controlled studies which assessed general adjustment. Overall adjustment was found to increase for individuals in the treatment group as compared to that of individuals in the control group in an externalizing population (Ritter & Mock, 1980) and in a special education population (Cuff & Radcliffe, 1988) following participation in some type of ABT.

In the present study, treatment and control groups did not differ at pretest with regard to depressive symptomatology, indicating that individuals were equally depressed in both groups. Exploratory analyses conducted on each dependent measure indicated that an increase in

efficacy and decrease in anxiety may have occurred had statistical power been higher. The cumulative effect of these changes for individuals in the treatment group compared to those in the control group may have contributed to a decrease in perceived or felt overall psychological distress. The plausible positive effects from participation in ABT may have resulted in decreased psychological distress because of the impact of potential social, personal, and group successes on negative attributes or beliefs about self in depressed individuals. ABT may have provided an environment which allowed an enhanced experience of those aspects of social functioning compared to the environment in the control group condition.

Implication for ABT protocol with respect to general psychological distress. As neither planned nor exploratory analyses yielded significant interactions for the measure of general psychological distress, it can be suggested that general distress did not change for individuals in the treatment or control group in the ABT-IC cohort. That is, it is likely that individuals in the ABT-IC cohort would not have reported significant change on general distress had power been higher since this possibility is not even suggested with exploratory analyses. Given that general distress may have decreased for individuals in the treatment group in the ABT-C cohort and did not change for those in the treatment group in the ABT-IC cohort, the implication for ABT may be that perhaps successes are necessary in order to facilitate a reduction in general psychological distress. To elicit a decrease in general distress, it may be the case that it is not sufficient for ABT to provide an environment rich in opportunity for personal and group social successes, but that successes must occur consistently, or at a minimum, failure must not occur on the final element. Further empirical investigation is warranted to determine specific implications of success in ABT on general psychological distress.

## Chapter 10 : Summary

In sum, the three primary objectives of the current study were as follows: 1) To test the effects of ABT on self-efficacy and draw conclusions about the potential utility of using self-efficacy theory to interpret changes that occur as a result of ABT, 2) to test the effects of ABT on depressive symptomatology, and 3) to test the effects of ABT on several related psychosocial variables in a late adolescent population reporting depressive symptomatology. Primary analyses performed on dependent measures did not yield statistically significant interactions; therefore, the overall conclusion must be that ABT may not significantly decrease depressive and anxious symptomatology in late adolescents with depressive symptomatology. In addition, it must be stated that self-efficacy theory may not be a useful framework within which to conceptualize changes that occur as a result of ABT. However, evidence from exploratory analyses suggested that future study is warranted with regard to ABT and self-efficacy theory and the potential effects of ABT on depressive and anxious symptomatology.

Data were further analyzed in light of the generally low statistical power and group differences suggested by graphic displays of data. Exploratory analyses suggested that ABT may increase efficacy for coping with anxiety created by novel situations and efficacy for working and problem-solving in a group. This study provided the first test of self-efficacy theory as a useful framework for conceptualizing changes that occur as a result of ABT. It was determined that self-efficacy theory may warrant further consideration as a means of interpreting ABT effects and conceptualizing processes that elicit change during ABT. It was also determined that ABT may effect positive change in anxiety and general psychological distress. Further, depressive symptomatology was found to decrease for individuals in the ABT treatment group and the placebo-control group according to exploratory analyses; however, there were no differences between groups. Further study is warranted with regard to the potential effects of ABT on depressive symptomatology.

When results from exploratory analyses were compared for ABT-C and ABT-IC cohorts, implications for ABT were made more apparent. Specifically, with most variables that elicited statistical significance, it appeared that the occurrence of successful performance (i.e., performance accomplishments) by the individual was likely a necessary component of the ABT

experience which contributed to positive change. For some variables, however, failure on an ABT element may not have had a negative impact had it not been the final and most difficult ABT task attempted. It is impossible to know which of these possibilities was operating without further investigation.

## Chapter 11 : Limitations

The interpretation of results must be considered within the limitations of the experiment. That is, threats to statistical conclusion validity, as it is referred to by Kazdin (1992), should be identified and discussed. Statistical power, standard deviation, their relationship, and their effects on statistical results and interpretation are discussed presently.

As mentioned previously, statistical power can be defined as the probability of detecting differences between groups when they truly occur in the population (Pedhazur & Pedhazur-Schmelkin, 1991). In other words, power is the probability that the null hypothesis will be rejected when it is false. That is, the lower the power, the higher the probability that a true difference that exists between groups in the population will not be detected by statistical testing. Thus, higher power is preferred in scientific research. As statistical power was predominantly low in the present study, several factors which likely contributed to the lack of power are discussed in addition to the implications of low power in the interpretation of the results in the present study.

Statistical power is a function of alpha level, sample size, and effect size (Pedhazur & Schmelkin-Pedhazur, 1991). In the present study, as in most psychological research, the alpha level was set at .05 and was constant for all analyses; therefore, it was not considered be a significant contributor to low power. Sample size in the current study, however, affected power. With regard to the relation between sample size and power, the more subjects involved in the study, the greater the power. As stated previously, primary analyses in the present study were conducted with sample sizes of 22 and 19 for the ABT-C and ABT-IC cohorts, respectively. Exploratory analyses were conducted with a smaller sample size (  $N = 32$  ) due to attrition at 2-month follow-up. Originally, it was thought that the data from the cohorts would be combined into a larger sample size (  $N = 41$  ) for the analyses. Because of necessary differences in the procedures for the treatment groups for the two cohorts, however, the data was divided into two separate samples. This division reduced sample size, and thus, affected power. As a result, the probability of finding significance between groups if, in fact, it did occur, was reduced.

As mentioned above, statistical power is also in part a function of effect size. The formula used to determine effect size includes variability, or standard deviation, in the

denominator. Thus, the less variability, the greater the effect size. In the present study, several dependent measures yielded sizable standard deviations. By definition, this variability had a deleterious impact on effect size, which, in turn, contributed to a reduction in the power of statistical tests.

These limitations affected the overall approach to drawing conclusions. That is, as statistical power was low in the present study, significant effects which might have occurred had power been higher were suggested. Of course, it was not implied that low power was the only reason that significance was not found for some variables. That is, hypothesized changes in variables may not have occurred because ABT, in fact, did not affect those constructs in a positive manner.

Additional limitations of the current study also warrant attention. Several threats to external validity were identified. First, the population used in the study was homogeneous in several respects which affects generalizability of the results to other populations. Subjects were college freshmen at a large rural university whose reported depressive symptomatology did not reach clinical levels. Therefore, the population was probably not representative of the larger population of clinically depressed adolescents. Second, the subjects volunteered for the study and received extra credit in class for their participation. Because the subjects volunteered and received extrinsic rewards for doing so, the possibility that their motivation to participate was intrinsic is reduced and therefore, they may not be representative of depressed adolescents who would seek or receive treatment in the general population. Third, subjects were selected for inclusion in the study based on reported depressive symptomatology in addition to the absence of several exclusion criteria. For example, subjects were not invited to participate in the study if they had experienced past trauma (e.g., sexual or physical abuse) or if subjects appeared obese. These exclusion criteria likely omitted subjects more representative of adolescents with depression in the population, as it is plausible that they could have been depressed as a result of past or present trauma.

Threats to internal validity were also identified. First, for both cohorts, the 2-week follow-up assessment occurred the week prior to exams. This coincidental occurrence could have influenced student's experience and report of efficacy, depression, and/or anxiety. That is, the timing of the 2-week follow-up may have exaggerated depressive and anxious

symptomatology and decreased efficacy. Second, while the same experimenter conducted treatment sessions for both cohorts and adhered to a detailed protocol, small variances in presentation may have occurred which could have changed the experience of the treatment for the different cohorts. For example, the frustration that was observed for individuals in the ABT-IC cohort may have affected the experimenter's affect as well, which, in turn, may have served to increase depressive mood and anxiety, and decreased efficacy in the individuals in the treatment group. Third, due to the necessary rescheduling of the first cohort because of inclement weather, the rescheduled session occurred at a later time during the day than did the session for the second cohort, which was executed on the originally scheduled day at the planned time. This difference in time of day could have affected results, as energy level may have been different for the two cohorts.

## **Chapter 12 : Future Directions**

To further test the notion that self-efficacy theory could be a useful framework from which to conceptualize changes that occur as a result of ABT, several alterations of the current study are suggested. First, the number of subjects limited statistical power, therefore, increasing subject size is warranted. Second, the duration of the treatment was relatively short. It may enhance ABT effectiveness to develop an ABT treatment protocol which includes several three hour activity periods conducted over several weeks. Individuals may then be able to better apply skills acquired during ABT if they “practice” their new found skills in between treatment sessions in their own environments. These attempts could then be shared, processed, and applied to the ABT activities planned for the next treatment session. In short, generalizability from the treatment setting to the individual’s environment may be enhanced, thus, resulting in greater reported effects. Third, it may be useful to compare two ABT treatment groups with a placebo-control such that one ABT group is conducted in a manner similar to the protocol in the current study and the other attempts to alter one of the sources of efficacy information such that the importance of the source of information in creating effects for ABT could be assessed. Fourth, as successes on ABT activities appeared to be necessary for change on some variables, it may not have been for others. Therefore, an experimental situation in which a “failure” could be planned as part of the group ABT protocol followed by several “successes” may provide important information about the role of group successes in eliciting change as a result of ABT.

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# Appendix A

## List of Measures

### **State Measures**

ECA: Efficacy for Coping with Anxiety Created by Novel Situations

ESG: Efficacy for Working and Problem-Solving in a Group

PSE: Physical Self-Efficacy

POMS: Profile of Mood States (Total score, Depression Subscale, Anxiety Subscale)

RSE: Rosenberg Self-Esteem Scale

STAI-A-State: State-Trait Anxiety Inventory

### **Trait Measures**

BDI: Beck Depression Inventory

BSI: Brief Symptom Inventory

GSE: General Self-Efficacy

S-EFF: Social Self-Efficacy

STAI-A-Trait: State-Trait Anxiety Inventory

# Appendix B

## TI-I

Place a check in the appropriate box when the following discussion or events are observed.

	Before, During, and After ABT Element														
	Acquaint.			Problem-Solving			Trust			Spider's Web			Wall		
Full Value Contract	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individual Goals Set	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group Goals Set	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What happened?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feelings about it?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individual Goals Reviewed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group Goals Reviewed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Application To Next ABT Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Application To Life Outside ABT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Team-Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Goal Setting Skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Interaction (Skills)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Problem-Solving Skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative Thoughts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feelings About Self (esteem)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive Feedback From Peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative Feedback From Peers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive Feedback From Leader	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Negative Feedback From Leader	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leader Initiated Discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group Member Initiated Discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All Group Members in Discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group Member Complaining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group Members Initiated Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group Members Discouraged Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leader Initiated Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leader Discouraged Activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Appendix C

## TI-I

Place a check in the appropriate box when the following discussion or events are observed.  
Record in 15-minute intervals.

		L U N C H					
Full Value Contract							
Individual Goals Set							
Group Goals Set							
What happened?							
Feelings about it?							
Individual Goals Reviewed							
Group Goals Reviewed							
Application To Next ABT Activity							
Application To Life Outside ABT							
Team-Building							
Goal Setting Skills							
Social Interaction (Skills)							
Problem-Solving Skills							
Negative Thoughts							
Feelings About Self (esteem)							
Physical Ability							
Positive Feedback From Peers							
Negative Feedback From Peers							
Positive Feedback From Leader							
Negative Feedback From Leader							
Leader Initiated Discussion							
Group Member Initiated Discussion							
All Group Members in Discussion							
Group Member Complaining							
Group Members Initiated Activity							
Group Members Discouraged Activity							
Leader Initiated Activity							
Leader Discouraged Activity							

# Appendix D

## TI-II

Answer each question by placing a check in the appropriate box.

YES \_\_\_ NO \_\_\_ 1. Did you engage in problem-solving activities in your group?

YES \_\_\_ NO \_\_\_ 2. Did all group members work together to reach a group goal?

YES \_\_\_ NO \_\_\_ 3. Did group members encourage one another to work toward individual goals?

YES \_\_\_ NO \_\_\_ 4. Did the leader of the group encourage group discussion?

YES \_\_\_ NO \_\_\_ 5. In your group, did you discuss ways in which things learned from today's activities might be applied to your own lives?

YES \_\_\_ NO \_\_\_ 6. Did your group leader encourage you to set personal or group goals today?

YES \_\_\_ NO \_\_\_ 7. At any time during the day did your leader spend time discussing your feelings about any activity?

YES \_\_\_ NO \_\_\_ 8. Did you work on several ropes course activities today as a group?

Put a check next to each topic which your leader encouraged you to discuss today as a group:

\_\_\_ Team building

\_\_\_ Goal setting

\_\_\_ Improving social skills

\_\_\_ Dealing with negative thoughts

\_\_\_ Feelings about yourself

\_\_\_ Physical ability

# Appendix E

## TI-II

Answer each question by placing a check in the appropriate box.

YES \_\_\_ NO \_\_\_ 1. Did you engage in problem-solving activities in your group?

YES \_\_\_ NO \_\_\_ 2. Did all group members work together to reach a group goal?

YES \_\_\_ NO \_\_\_ 3. Did group members encourage one another to work toward individual goals?

YES \_\_\_ NO \_\_\_ 4. Did the leader of the group encourage group discussion?

YES \_\_\_ NO \_\_\_ 5. In your group, did you discuss ways in which things learned from today's activities might be applied to your own lives?

YES \_\_\_ NO \_\_\_ 6. Did your group leader encourage you to set personal or group goals today?

YES \_\_\_ NO \_\_\_ 7. At any time during the day did your leader spend time discussing your feelings about any activity?

YES \_\_\_ NO \_\_\_ 8. Did you spend your day walking around the Virginia Tech campus and Blacksburg as a group?

Put a check next to each topic which your leader encouraged you to discuss today as a group:

\_\_\_ Team building

\_\_\_ Goal setting

\_\_\_ Improving social skills

\_\_\_ Dealing with negative thoughts

\_\_\_ Feelings about yourself

\_\_\_ Physical ability

## Appendix F

### HS

Please check “Yes” if you have ever experienced any of the following and indicate whether or not these are current problems for you:

	<b>Experienced in Past</b>	<b>Current Problem</b>
1. Alcohol or drug abuse	YES ___ NO ___	YES ___ NO ___
2. Inpatient hospitalization in a psychiatric facility	YES ___ NO ___	YES ___ NO ___
3. Sexual abuse	YES ___ NO ___	YES ___ NO ___
4. Emotional abuse	YES ___ NO ___	YES ___ NO ___
5. Diabetes	YES ___ NO ___	YES ___ NO ___
If currently managing diabetes, is it under control? YES ___ NO ___		
6. Significantly overweight	YES ___ NO ___	YES ___ NO ___
7. Physical impairment	YES ___ NO ___	YES ___ NO ___
If physically impaired, does it affect outdoor activities? YES ___ NO ___		
8. Parental divorce	YES ___ NO ___	YES ___ NO ___
9. Traumatic event (e.g., house burned )	YES ___ NO ___	YES ___ NO ___
10. Psychological difficulties	YES ___ NO ___	YES ___ NO ___
11. Received psychological counseling	YES ___ NO ___	YES ___ NO ___
12. Other physical, psychological, or medical conditions: _____	YES ___ NO ___	YES ___ NO ___
_____	YES ___ NO ___	YES ___ NO ___

# Appendix G

## Treatment Protocol

### Acquaintance Activities

**Activities:** Groupings  
Warp Speed

**Goals:** Acquaintance  
Disinhibition  
Establish group identity/cohesiveness

**Briefing:**

- I. Framing
  - A. Getting to know one another
  - B. Have fun!
- II. Full Value Contract
  - A. “We agree to work together as a group and to work toward individual and group goals.”
  - B. “We agree to adhere to certain safety and group behavior guidelines.”
  - C. “We agree to give and receive feedback, both positive and negative, and to work toward changing behavior when it is appropriate.”
- III. Creating a team
  - A. What are characteristics of an ideal team?
    1. Physical/emotional support
    2. Physical/emotional trust
    3. Positive environment
    4. Work together effectively
  - B. How can we create this kind of team?
    1. Communication/Listening
    2. Cooperation
    3. Compromise
- IV. Review verbal contract and get everyone to agree to follow it and hold one another accountable to it
- V. Individual/group goals
  - A. What is one personal goal that you are going to set for this activity?
  - B. Let’s decide on a group goal for the activity

**Debriefing:**

- I. What?
  - A. Give one sentence that describes what happened during the activity
- II. So what?
  - A. Give one word that describes how you felt about the activity
  - B. Refer to full value contract to emphasize team building issues
  - C. Did we accomplish the group and individual goals we discussed (why or why not/ what can we change?)
- III. Now what?
  - A. How could you apply what you learned from these activities to your own social interactions with others outside of this group (e.g., what is different/similar)?
  - B. Moving into activities in which trust between group members is necessary
  - C. How can we use what we just learned about each other and our group to complete this type of activity?

# Appendix G (continued)

## Simple Group Problem-Solving Activities

**Activities:** All Aboard  
TP Shuffle

**Goals:** Increase interpersonal trust  
Decrease anxiety  
Increase efficacy for coping with anxiety  
Increase social self-efficacy  
Increase physical self-efficacy  
Increase self-esteem  
Increase general self-efficacy

**Briefing:**

(The three components of briefing, framing, full value contract, and individual/group goals, are included in the dialogues below which are designed to address specific variables):

- I. Generally addresses social skills
  - A. Think about a time in your life when you didn't want to interact with other people very much. Some of you might be experiencing this type of feeling right now in school.
    1. How did you (or do you) feel during that time?
      - a) Is that different from how you feel in this group?
      - b) Has it been easier to interact and trust people in this group?
      - c) Why or why not?
    2. What kept you (or keeps you) from interacting with others (e.g., making friends, working with others)?
  - B. What are some things you could do to increase your positive interaction with other people?
    1. Be approachable
    2. Listen
    3. Take some risks
    4. Communication
      - a) How well do you think we have been communicating?
      - b) Let's go around the circle and try to define communication.
      - c) What are some ways to communicate effectively?
      - d) How do we know we're communicating effectively?
  - C. Today we're going to experience challenges which will require trust and close communication in order to find solutions to problems that will be presented to the group.
  - D. Remember that one agreement that we all made in the Full Value Contract was to give and receive feedback from one another. As you are completing the next activity pay attention to the ways that you are communicating with each other

and the things that are helping you to engage in interaction within the group. Afterwards, we'll give and receive feedback from each other.

- II. Generally addresses problem-solving skills
  - A. In your daily life when you are faced with a problem, how do you go about finding a solution?
  - B. Let's give each other feedback on our problem-solving ideas. What ideas do we agree on and which ones could be changed for effective problem-solving?
  - C. Does it take different techniques to solve a problem in a group situation like this one?
  - D. What are some things that you have done in the past to solve problems in a group?
  - E. Today we're going to experience challenges which will require finding solutions to problems as a group.
  - F. Remember that one agreement that we all made in the Full Value Contract was to give and receive feedback from one another. Pay attention to the techniques you are using to find a solution for the next activity. Afterwards, we'll give and receive feedback from each other on good techniques that were used and discuss what could be different during the next activity.

**Debriefing:**

- I. What?
  - A. Give one sentence that describes what happened during the activity
- II. So what?
  - A. Give one word that describes how you felt during the activity and one that describes how you feel now
    - 1. Why do you think you were (e.g., nervous/anxious, excited)?
    - 2. What do you think made you feel that way?
  - B. Did we accomplish the group and individual goals we discussed (why or why not/ what can we change?)
  - C. Let's go around the circle and say one positive thing (*refer here to particular variable discussed in briefing*) that we saw our original partner doing during the activity
  - D. Now let's go around the circle again and give each other helpful ideas about how we might improve (*refer here to particular variable discussed in briefing*) during the next activity.
  - E. How has this activity increased your belief in your ability to (*refer here to particular variable discussed in briefing*)?

- III. Now what?
- A. Let's go around the circle and tell each other the positive things that we see in their attempt and then provide helpful suggestions.
  - B. How can we use what we learned about each other and our group today to be more effective as a group in the next activity?

# Appendix G (continued)

## Trust-Building Activities

**Activities:** Yurt Circle  
Willow in the Wind  
Levitation  
Two-Person Trust Fall  
Trust Fall from Height

**Goals:** Increase interpersonal trust  
Decrease anxiety  
Increase efficacy for coping with anxiety  
Increase social self-efficacy

### **Briefing:**

- I. Framing
  - A. Is it important to trust and be trusted?
  - B. Why is it important?
  - C. How might communication help increase trust?
- II. Full Value Contract
  - A. Who remembers one of the agreements of the Full Value Contract (who remembers another...)?
  - B. Why is it important?
  - C. Reminder that everyone agreed to follow it and hold each other accountable to it
- III. Individual/group goals
  - A. Why do we set personal goals?
  - B. Think of a recent time when you have set a goal that you have had trouble reaching or haven't reached yet.
    1. Why do you think you had difficulty (or are having difficulty) reaching the goal?
      - a) Is the goal realistic?
      - b) Why does it matter whether a goal is realistic or not?
      - c) What makes a goal realistic or not realistic?
      - d) What are some things we can do to make sure that we set realistic goals?
  - C. Let's go around the circle and state one personal goal and agree on one or more group goals.
  - D. Remember that one agreement that we all made in the Full Value Contract was to give and receive feedback from one another. Pay attention to the criteria that you are using to set your personal and group goals. After the activity, we'll give and receive feedback from each other on good criteria that were used and discuss how we might change some criteria.

## **Debriefing:**

- I. What?
  - A. Give one sentence that describes what happened during the activity
- II. So what?
  - A. Give one word that describes how you felt during the activity and one that describes how you feel now
    - 1. Why do you think you were (e.g., nervous/anxious, excited)?
    - 2. What do you think made you feel that way?
  - B. Did we accomplish the group and individual goals we discussed (why or why not/ what can we change?)
  - C. How important was it for you to be able to trust each another during this activity?
  - D. What were some indications that you could trust other people in the group (what made you feel that you could trust them)?
- III. Now what?
  - A. Remember that part of the Full Value Contract was to give and receive positive and negative feedback in order to help each other. Let's go around the circle and tell each other the positive things that we saw in their attempts during the activities and then provide helpful suggestions.
  - B. How could you apply what you learned from this activity to situations outside of this setting (e.g., ability to trust people in your lives and why is it important)?
  - C. Think of one person outside of this group who you would like to build more trust with.
    - 1. What action could you take which might lead to this outcome?
  - D. How can we use what we learned about each other and our group during these activities to create more trust in one another for the next activity?

# Appendix G (continued)

## Complex Group Problem-Solving Activities

**Activities:** Spider's Web  
The Wall

**Goals:** Increase interpersonal trust  
Decrease depressogenic cognitions  
Decrease anxiety  
Increase efficacy for coping with anxiety  
Increase social self-efficacy  
Increase physical self-efficacy  
Increase self-esteem  
Increase general self-efficacy

**Briefing:**

(The three components of briefing, framing, full value contract, and individual/group goals, are included in the dialogues below which are designed to address specific variables):

- I. Generally addresses social skills
  - A. Think about a time in your life when you didn't want to interact with other people very much. Some of you might be experiencing this type of feeling right now in school.
  - B. How did you (or do you) feel during that time?
    - 1. Is that different from how you feel in this group?
    - 2. Has it been easier to interact and trust people in this group?
    - 3. Why or why not?
  - C. What kept you (or keeps you) from interacting with others (e.g., making friends, working with others)?
  - D. What are some things you could do to increase your positive interaction with other people?
    - 1. Be approachable
    - 2. Listen
    - 3. Take some risks
    - 4. Communication
      - a) How well do you think we have been communicating?
      - b) Let's go around the circle and try to define communication.
      - c) What are some ways to communicate effectively?
      - d) How do we know we're communicating effectively?
  - E. Today we're going to experience challenges which will require trust and close communication in order to find solutions to problems that will be presented to the group.

- F. Remember that one agreement that we all made in the Full Value Contract was to give and receive feedback from one another. As you are completing the next activity pay attention to the ways that you are communicating with each other and the things that are helping you to engage in interaction within the group. Afterwards, we'll give and receive feedback from each other.
- II. Generally addresses problem-solving skills
- A. What are some things that we did this morning as a group to solve problems?
  - B. What are some things that we can do to improve our group problem-solving ability?
  - C. Remember that one agreement that we all made in the Full Value Contract was to give and receive feedback from one another. Pay attention to the techniques you are using to find a solution for the next activity. Afterwards, we'll give and receive feedback from each other on good techniques that were used and discuss what could be different during the next activity.
- III. Generally addresses depressogenic cognitions
- A. This afternoon we're going to experience challenges which will require finding solutions to more difficult problems as a group.
  - B. We all doubt ourselves from time to time. What are some thoughts that you have when you are doubting yourself and your abilities?
    - 1. Are they specific/global?
  - C. How have you combated those negative thoughts in the past?
  - D. How do you feel when you can't control or stop your negative thoughts about yourself?
  - E. What impact might that have on your daily functioning?
  - F. Everyone think about a negative thought that you have had during the time you have spent on the ropes course concerning your abilities - keep it to yourself. After the next activity, we'll share these negative thoughts and discuss how they might have changed since we started ropes course activities and why you think they changed.
  - G. Let's go around the circle and state one personal goal and agree on one or more group goals.
- IV. Generally addressing self-esteem
- A. This afternoon we're going to experience challenges which will require finding solutions to more difficult problems as a group.
  - B. Think about how you felt about yourself before we started working on the low ropes course as a team. Let's go around the circle and give one word that describes that feeling.
  - C. Let's go around the circle again and give a one or two word phrase to describe how you are feeling about yourself now.
  - D. What do you think has contributed to the difference?
  - E. Let's go around the circle and state one personal goal and agree on one or more group goals for the next activity. When making your goals, think about people's thoughts on what has created a difference in your general feeling about yourself.

### **Debriefing:**

- I. What?
  - A. Give one sentence that describes what happened during the activity
- II. So what?
  - A. Give one word that describes how you felt during the activity and one that describes how you feel now
    - 1. Why do you think you were (e.g., nervous/anxious, excited)?
    - 2. What do you think made you feel that way?
  - B. Did we accomplish the group and individual goals we discussed (why or why not/ what can we change?)
  - C. Let's go around the circle and say one positive thing (*refer here to particular variable discussed in briefing*) that we saw our original partner doing during the activity
  - D. Now let's go around the circle again and give each other helpful ideas about how we might improve (*refer here to particular variable discussed in briefing*) during the next activity.
  - E. How has this activity increased your belief in your ability to (*refer here to particular variable discussed in briefing*)?
- III. Now what?
  - A. How can we use what we learned about each other and our group today to be more effective as a group in the next activity?

### **FINAL SESSION (in circle format):**

- I. How has your belief in your abilities changed?
- II. How have your feelings about yourself changed?
- III. How do you think this experience will affect your lives outside of this group?
- IV. Spiral goals are goals that you make for ways that you plan to apply what you have learned in this group to your regular lives. Think about goals that you might have for yourself that relate to what you learned about your social, physical, problem-solving, and general abilities. Let's go around the circle and have everyone talk about one spiral goal they have for themselves and how attaining that goal might change things for them.

# Appendix H

## Control Protocol

- 9:00:** Meet in Room 1076 Derring to help with questionnaires
- I will take attendance and hand out and review the consent form for the second part of the study
  - Participants will then be given 2 questionnaire booklets to complete
  - When they are finished, they will be asked to transfer their answers to the opscan forms (one for each booklet)

- 10:00:** Participants will be divided into two groups
- Half (approximately 12-14) will go with you and half will go with me

**10:00 - 12:00: Walking tour of VT campus**

Read the following statement to your group:

*My name is \_\_\_\_\_ and this is \_\_\_\_\_. We are going to take a leisurely tour around the Virginia Tech campus this morning. At noon we will stop for lunch. After lunch, we will go on a walking tour of historical Blacksburg and then return here to complete a shorter set of questionnaires. As we walk around today, you are welcome to carry on conversation among yourselves, but me and Dave will not be able to instigate conversation with you. If anyone needs to stop for any reason (e.g., to rest, go to the bathroom, get water), please let me know. Relax and enjoy being outside today!*

Begin walking according to the outlined VT tour. The walk is to be leisurely; you can ask the group from time to time if they would like to stop for 5-10 minutes. The idea is not to wear anyone out, but to keep them together and outside. The leader is to refrain from as much conversation as possible - let the group members interact with one another. If anyone suggests a group activity (e.g., football, frisbee, etc.), tell them that the group needs to continue walking. If they ask you why they are doing this or what the other group is doing, tell them that you do not know - that this is your assignment.

**12:00 - 12:30: Lunch Break**

End your VT tour at Sub Station II. I will call ahead and have subs and drinks ready for everyone (including you).

**12:30 - 2:30: Walking tour of historical Blacksburg**

Walk as much of the tour as you can - keep an eye on the time and turn around halfway so that you can end up at Derring at or a little before 2:30.

**2:30: Return to 1076 Derring**

Have everyone sit down again and read the following statement to them before you give them the questionnaires:

*You are about to fill out a shorter set of questionnaires. After you have completed the opscan you may leave. Thank you all for your participation today. As Beth told each of you, in 2 weeks she will reserve a room in Derring at 7:00pm on a Monday and Tuesday night. Each of you will need to choose one of those nights to complete more questionnaires for approximately one hour. At that time, you will also complete opscans which will give you the 8 additional extra credit points that you have earned. You MUST come to the follow-up session to obtain your 8 extra credit points. Beth will be e-mailing each of you to let you know which rooms to go to on those evenings.*

Have everyone fill out the questionnaires marked “Post test” in the exact same way that they filled out the earlier ones (test first, then opscans).