

The Use of Adventure Therapy in Community-Based Mental Health: Decreases in Problem Severity Among Youth Clients

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Published online: 13 October 2012
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Abstract

Background There is an increasing need to identify effective mental health treatment practices for children and adolescents in community-based settings, due to current mixed findings of existing interventions. This study looked at adventure therapy (AT) as a viable option to meet this need.

Objective Using a sample of 1,135 youth from a community-based mental health center, this study addressed the following questions: (1) Is AT an effective treatment modality for youth compared to traditional counseling? (2) How do changes in problem severity associated with participation in AT-based interventions compare with those associated with traditional counseling across gender, age, primary diagnosis, and race? (3) What are the predictors of changes in problem severity in clients?

Methods In this exploratory non-equivalent groups quasi-experimental design study, pre- and post- mean scores of problem severity as reported by youth's primary clinician were compared by type of treatment and client characteristics. Treatment and client characteristics were used as predictors of changes in problem severity.

Findings Participants in AT had significant reported mean decreases in problem severity larger than those of clients not involved in counseling with an adventure component with

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larger decreases in female and African American clients. AT and psychological counseling were found to be significant predictors of decreases in problem severity; however, length of counseling, not length of AT, was a significant predictor.

Discussion These findings suggest that community-based AT may be a viable treatment for youth in community settings; yet these findings should be interpreted with caution due to several study limitations.

Keywords Adventure therapy · Community-based mental health · Problem behaviors · Youth

The mental health needs of children and adolescents, especially in families who struggle with poverty, are not only complex but in many cases not adequately met (Bringewatt and Gershoff 2010). Disadvantaged youth and their families have often turned to community mental health centers for support. Community mental health centers collaborate with community agencies to provide outpatient treatment in an effort to avoid placement in residential care (Substance Abuse and Mental Health Services Administration [SAMHSA] 2007). Although SAMSHA has provided support for community-based mental health treatment of about \$400 million per annum since 2005 (Cooper 2008), with \$413 million allocated for community mental health partnership block grants in FY 2012 (SAMSHA 2011), there is limited evidence supporting the efficacy of these programs. Of the few studies exploring outcomes in community-based treatment, several have reported extremely small effect sizes (Weiss et al. 1995, 1999; Weisz 2004), while Warren et al. (2010) found change trajectories for clients with similar symptomology at intake to be significantly steeper in managed-care settings compared to community-based settings.

While SAMHSA has recognized Assertive Community Treatment (ACT) and several variations of Multi-Systemic Therapy (MST) as evidenced-based approaches to community-based mental health treatment, these interventions are not widespread (SAMHSA 2008), and there is a need to identify other treatment techniques to better meet the needs of youth who engage in community-based treatment (Warren et al. 2010). One such technique gaining attention in the mental health field as a viable treatment option for youth is Adventure Therapy (AT) (Fletcher and Hinkle 2002; Tucker 2009; Voruganti et al. 2006). AT has been used as an alternative to inpatient treatment for youth and adolescents resistant to other treatment options or for those not receptive to traditional counseling options, or as an adjunctive treatment option (Fletcher and Hinkle 2002; Norton and Tucker 2010; Tucker 2009; Voruganti et al. 2006). In this activity-based modality, clinicians intentionally use a variety of adventure experiences to promote client change (Alvarez and Stauffer 2001) by engaging clients in kinesthetic interventions (Gass et al. 2012).

Although the majority of AT outcome studies have been conducted in residential and wilderness-based settings (Gass and Gillis 2010; Harper and Russell 2008; Harper et al. 2007; Jones et al. 2004; Magle-Haberek et al. 2012; Ross 2003; Russell 2006, 2007), the adaptable nature of the technique suggests it may excel as a treatment option in community-based settings. This is the first study to evaluate the outcomes associated with AT interventions in the context of a community-based mental health treatment center. Using a sample of youth from a large community-based mental health center in the Midwest of the United States serving youth and adolescents from urban, suburban, and rural areas, the purpose of this exploratory study was to examine the impact of the variety of clinical services on youth problem severity over the course of treatment. This study was

specifically interested in comparing how AT both as a primary and adjunctive treatment compared to more traditional individual, family, and group clinical interventions.

Adventure Therapy and Community Mental Health

Defining Adventure Therapy

For the purposes of this research, AT was defined as the “the prescriptive use of adventure experiences provided by mental health professionals ... that kinesthetically engage clients on cognitive, affective, and behavioral levels” (Gass et al. 2012, p. 1). AT has been characterized by seven key elements: (1) engagement in action-centered therapy; (2) the use of an unfamiliar environment, situation, or stimulus; (3) creation and maintenance of a climate for change; (4) the application of activities/intervention as continual assessment tools; (5) a focus on small group development and creation of a caring community; (6) a solution-focused approach to therapy; and (7) a shift to therapist as facilitator from therapist as expert to allow for greater flexibility in the therapeutic relationship (Gass 1993; Gass and Gillis 2010; Gass et al. 2012). AT integrates traditional therapeutic practices with experiential activities to create kinesthetic interventions that address clients’ specific therapeutic goals. Activities chosen for therapeutic purposes do not require the use of traditional adventure activities, especially the ropes course and/or outdoor pursuits, to meet treatment goals (Norton and Tucker 2010). Rather, activities are designed to act as kinesthetic metaphors of clients’ therapeutic goal(s), so the successful resolution of the activity requires the same parallel thoughts, emotions, and behaviors as successful resolution of the targeted therapeutic issue (Gass et al. 2012).

AT differs from other forms of therapy due to its focus on the environment and the use of eustress to create a novel experience for change; the client actively participates in therapy, rather than being a spectator to change (Gass 1993; Shanahan et al. 2009). Roberts et al. (1998) found adventure therapy can provide people with psychological disabilities the chance to succeed at something, opportunities for active participation, and reflection on real life experiences rather than passive approaches to rehabilitation, and challenges tailored to their particular ability level. These factors combined create a dynamic for change that is client-focused, solution-oriented, and connected with practical applications for change and awareness.

Community-Based Mental Health

In recent years, community-based interventions have been explored more extensively for children due to the exorbitant cost of institutionalized care and removal from home environments, while advancing and promoting evidence-based practice (Hernandez and Hodges 2003; Kutash and Duchnowski 2004). SAMHSA has identified several community-based mental health interventions as valid evidence-based treatments (EBT) for youth including ACT (SAMHSA 2008); MST with psychiatric supports (National Registry of Evidence-based Programs and Practices [NREPP] 2008); MST for juvenile offenders (SAMHSA’s NREPP 2007a); and MST for youth with problem sexual behaviors (SAMHSA’s NREPP 2009). There has also been some evidence that existing clinical EBTs such as motivational enhancement therapy/cognitive behavioral therapy transfer effectively to community-based settings (Hunter et al. 2011).

Despite relatively strong evidence supporting community-based EBTs, such practices are often cost-prohibitive, and actual implementation has been limited in scope (Bickman

2008). Efficacy studies of community-based care-as-usual models have been less conclusive. Morral et al. (2004) found that adolescent probationers in a community-based residential substance abuse treatment program showed lower levels of substance use and increased psychological functioning at 12 months post-admission compared to those in other commonly available residential and community-based treatment options following incarceration with a small to medium effect size. The inpatient format of the treatment intervention and sample population, however, were not representative of the majority of community-based treatment programs in the US. A recent meta-analysis by Weisz et al. (2006) found community-based treatment programs exhibit significant variations in treatment efficacy ($d = -.92$ to $-.83$) compared to clinically established EBTs. Outpatient treatment-as-usual in an urban community-based context has been associated with increased symptom severity in young adults (Van Dorn et al. 2010), and Warren et al. (2010) found that youth in managed care showed significantly greater improvements than those in community-based care when matched on baseline score, total weeks of treatment, number of sessions, and session frequency.

Such variation in the literature suggests that it is imperative to continue to explore cost-effective community-based treatment strategies, such as AT, that better meet the needs of both clients and practitioners. In fact, Tucker and Norton (2012) found approximately 10 % of sampled clinical social workers ($N = 2,500$) to have used AT-based interventions in their practice mostly in a community setting, suggesting it is already seen as a viable option for therapy. While further research is needed, it is possible that AT-based interventions have become increasingly popular because they offer an efficacious, cost-effective alternative to existing community-based treatment options for youth struggling with mental illness.

Adventure therapy has been described as an appropriate intervention for community-based mental health due to the adaptive nature of the therapy (Tucker 2009). Schoel and Maizell (2002) explained that AT considers the cognitive, emotional, and physical influences on individual behavior, integrating the needs of clients into adaptive, flexible, and symptom-specific interventions for individuals and groups. Unlike wilderness therapy programs, which bring youth out into the wilderness on expeditions, community-based models for AT do not require the use of extended trips. Community-based AT employs common and accessible locations, equipment, and adaptive interventions, allowing greater access to a wider variety of clients than those commonly served by private-pay wilderness models. According to Tucker (2009), in comparison to wilderness models, “one of the benefits of adventure-based group therapy is that it is flexible and can be utilized in any setting where traditional group therapy is already occurring” (p. 325).

Although Marx (1988) first described the application of AT in a community-based treatment setting over two decades ago, research exploring the outcomes associated with this practice has been limited. The extant literature is either exclusively descriptive, supporting how and/or why to apply AT in a community setting (Alvarez and Stauffer 2001; Ayers and Shavel 1997; Berman and Davis-Berman 1995; Fletcher and Hinkle 2002; LeCroy 2007), or empirical with weak methodologies. Past research included small sample sizes (Forgan and Jones 2002; Glass and Myers 2001), only adult participants (Herbert 1998; Wolf and Mehl 2011), or focus on short-term interventions (Herbert 1998), as short as single day experiences (Davis et al. 1995; Eagle et al. 2000). As a result, very little is known about the actual effects of AT interventions that are not wilderness based on youth in community-based treatment settings. This study was the first to explore outcomes associated with participation in an ongoing community-based AT treatment program for youth in comparison to traditional intervention strategies.

The purpose of this exploratory study was to examine the impact of a variety of clinical services on youth problem severity over the course of treatment, looking specifically at adventure therapy in comparison to other treatments and variables associated with changes in clients. This study specifically sought to address the following research questions:

1. Is AT an effective treatment modality for youth in a community-based care context compared to traditional individual, family, and group counseling?
2. How do changes in problem severity associated with participation in AT-based interventions compare with those associated with traditional individual, family, and group counseling across gender, age, primary diagnosis, and race?
3. What individual, program, and treatment characteristics are predictors of changes in problem severity in youth clients?

Method

Participants

The data collected was obtained from a community-based mental health center in an urban setting within the Midwest that works primarily with children and adolescents struggling with the full spectrum of emotional and behavioral disorders. Clients are typically referred to the agency by their schools and physicians, as well as case workers, if involved with child services. This study was approved by the Institutional Review Board at the lead author's university, as well as approved through the agency's formal research screening process. As part of the intake process each family in the agency was presented with an informed consent document regarding both the collection of data and use of this data to improve and evaluate outcomes of clients. This research reflects the full population of 1,135 clients that entered and completed services during the timeline of 2005–2007. No family refused participation at intake. The population was more highly populated by male (59 %, $n = 670$) than female (41 %, $n = 466$) clients. Approximately 72 % of these clients identified as White ($n = 816$), 18.8 % as African American ($n = 213$), less than 1 % as Hispanic ($n = 8$) or Native American ($n = 4$) and 8.2 % as Other ($n = 93$). In terms of Other, most clients were of mixed race. Client age ranged from as young as 6 years of age to 21 years ($M = 12.8$, $sd = 3.8$ years) with the largest number of clients between the ages of 13–16 years of age (36.8 %). The majority of the sample presented with a primary diagnosis that was behaviorally based, including disruptive disorders (38.7 %, $n = 440$) and adjustment disorders (21.6 %, $n = 245$), followed by mood disorders (19.1 %, $n = 217$) and anxiety disorders (12.1 %, $n = 138$). It is important to note that although no formal collection of income was reported, approximately 90 % of the participants were on Medicaid, and a similar 90 % of youth qualified for free or reduced lunch, highlighting the low income status of the youth served by the agency.

Procedure

Instrument

The agency utilized the Ohio Mental Health Consumer Outcomes System, in particular, the Ohio Youth Problem Severity Scale, to collect outcome data on youth as reported by the clients' primary workers from 2005 to 2007. The Problem Severity Scale is comprised of

20 questions about common problems reported by youth who receive behavioral health services (i.e. fighting, lying, skipping classes, using drugs/alcohol). The Ohio Scales have been shown to have strong psychometric properties as well as sensitivity to change over time (Ogles et al. 2000, 2001; Turchik et al. 2007). Specifically the Problem Severity Scale for Workers has shown to have strong internal consistency ($\alpha = .84$) and significantly correlate with other well-known youth functioning scales with evidence of convergent validity with the Child and Adolescent Functional Assessment Scales (CAFAS) ($r = .54$) as well as divergent validity with the Children's Global Assessment Scale ($r = -.30$) (Ogles et al. 2001). In addition, studies have shown it to be reliable across different racial groups (Ogles et al. 2000).

Workers were asked both at intake as well as at discharge to report how frequently youth engaged in these behaviors during the last 30 days (0 = not at all, 5 = all the time), and the 20 responses were combined to produce an overall score for problem severity. As normed by the instrument's designers through multiple studies of clinical and community samples of youth, overall scores 25 and above are considered of significant clinical concern, while scores below 25 are considered to fall within a normative range of functioning. In addition, using methods presented by Jacobson and Truax (1991), a reliable change index (RCI) of 10 points was identified by the instrument's creators to reflect reliable levels of clinical change in client functioning (Ogles et al. 1999, 2000). When clients show both a decrease of 10 or more points and also have post treatment levels of problem severity below 25, they are considered "recovered" with clinically significant improvements (Ogles et al. 1999).

Research Design

This was an exploratory non-equivalent groups quasi-experimental pre-post study. Workers across different treatment types were asked both at intake as well as at discharge to complete the problem severity assessment for their youth client. Although at the outset, the agency attempted to collect youth, parent, and worker forms, cooperation and completion of youth and parent forms were very inconsistent, as is the nature of community outpatient work. The only consistent data points that could be used for comparison were the worker forms. The lead therapist who completed the diagnostic assessment for the youth also completed both the pre- and post- problem severity forms, although occasional staff turnover would occur. To ensure accurate reporting, all staff were trained on the outcome tool administration. Therapists used parent and youth forms, if available, as well as teacher reports and their own observations to complete the assessment forms. Once forms were completed by clinicians they were entered into excel by the agency's data management staff responsible for this task, and this data was subsequently de-identified by the agency and sent to the authors who converted it into a SPSS dataset for data analysis by the lead authors, who both have considerable experience in data analysis, including teaching statistics at a graduate level.

Intervention

Referral

All clients receive a comprehensive diagnostic assessment complete with recommendations for both counseling as well as support services, as indicated by presenting problems and symptoms. In addition, outcome scores were used to rate severity of problems, which could also lead the agency to offer additional services. Table 1 describes the types of

Table 1 Types of additional support services for clients

Service	Reason for recommendation	Description
Case management	Assistance with multi-system involvement; skill-building in the natural environment; build/increase support systems	Individual &/or Family support and interventions
Medical services	Symptom reduction with appropriate medication	Nursing & Psychiatric evaluation, prescription and medication monitoring
Parent/peer support	Emotional support; psycho-education; build/increase support systems; decrease stigma & increase service engagement	Match the client/parent with someone who has experienced MH treatment successfully
Consultation	Symptoms do not merit MH treatment; parents/guardians can be empowered to advocate for their own children; psycho-education	Work with the parents to access appropriate services and strategies to prevent unnecessary penetration into the MH system

non-counseling additional support services offered to clients. Counseling services included psychological (individual and/or family) and/or group counseling, as well as adventure therapy group counseling (AT). For example, clients with scores under 30 (Clinical cut off + 5) would be offered limited services since they had minor severity, perhaps only individual or group therapy, not additional support services. Clients with scores above 30 would be offered more services. Clients with behavioral disorders and/or social skill deficits would typically be offered AT, but families could accept or decline any recommendation for any or all of the services. Hence, participants were not randomly assigned to any treatment group.

In some instances, clients were referred to both psychological (individual/family) counseling as well as group or AT. Overall, 9.2 % ($n = 104$) of the clients received both AT and psychological counseling, and 4.7 % ($n = 53$) received psychological counseling and group counseling (not AT). Most clients engaged in psychological counseling without group or AT (57.4 %, $n = 652$), and 27.1 % ($n = 308$) did not engage in counseling but received a variety of support services instead. It is interesting to note that 18 clients (1.6 %) received only AT services without psychological counseling services. It is unclear why these clients did not receive additional counseling services since they were usually referred for both. It may be that they were referred for psychological counseling but choose not to participate, or they were receiving counseling at another agency and came to the program just for AT.

Length of Treatment and Hours of Counseling

Length of involvement with the agency (intake to discharge) ranged from less than one month to over 24 months, with a mean of 9.59 months, $sd = 6.49$. The most frequently used service was psychological counseling ($n = 809$) (individual and/or family) (71.2 %) for an average of 15 h ($sd = 15.8$), followed by psychiatric medical services (23.0 %, $n = 261$) for medication assessment and management ($M = 2.5$ h, $sd = 1.1$), and 20 % of clients ($n = 235$) utilized case management services ($M = 26.2$ h, $sd = 34.3$). Approximately 11 % ($n = 122$) of the clients participated in AT groups for an average of 42 h ($sd = 47.2$), and 4.7 % ($n = 53$) participated in group therapy ($M = 31.5$ h, $sd = 44.3$). Less than 7 % of clients used consultation ($n = 68$) or parent/peer support services ($n = 60$).

Since clients could be referred to multiple services, Table 2 describes the hours of services across treatment groups as well as overall length of treatment for clients across

Table 2 Hours of counseling and length of treatment across treatment groups ($N = 827$)

Treatment group	Hours of AT	Hours of psychological counseling	Hours of group therapy	Length of treatment (in months)
<i>Adventure therapy (AT) (n = 18)</i>				
Mean (sd)	43.0 (48.2)	–	–	14.4 (7.6)
Median	19.7			15.5
Range	4–177			5–27
<i>AT & psychological counseling (n = 104)</i>				
Mean (sd)	41.1 (48.4)	23.2 (20.7)	–	14.9 (7.4)
Median	24.8	17		14
Range	1–260	1–109		3–32
<i>Psychological counseling (n = 652)</i>				
Mean (sd)	–	13.0 (12.8)	–	10.4 (5.6)
Median		9		9
Range		1–92		1–32
<i>Psych counseling & group therapy (n = 53)</i>				
Mean (sd)		27.1 (25.8)	39.4 (53.7)	14.5 (8.2)
Median		20	19	15
Range		1–105	1–252	1–32

treatment groups. In terms of hours of counseling, participants who had a group component to their treatment (AT or Group Therapy) had on average more hours of counseling, which is not surprising, since each individual group meeting typically is more than one hour with typical adventure groups lasting at least 2 h, compared to a typical clinical session of one hour. However, it does appear that individuals who had a group component were in treatment longer than those who had psychological counseling without group therapy or AT.

Non-AT Counseling

At the time of the study, this community-based agency employed over 50 clinicians who provided a wide variety of individual, family, and group therapy, in multiple locations, including three outpatient office sites, over 20 school-based sites, and home-based services. Due to the size of the agency, the number of clinicians, and the amount of customers served annually (over 2,000 at the time of this study), the type of individual, family, and group counseling interventions offered to clients varied greatly. However, all clinicians received training and supervision around some common interventions, including trauma informed practices such as Trauma Focused Cognitive Behavioral Therapy (Child Welfare Gateway 2007; de Arellano et al. 2008) and trauma informed behavior management strategies (de Arellano et al. 2008). In addition, clinicians were trained to provide services as needed on other evidence based practices, including Dialectic Behavior Therapy (SAMSHA's NREPP 2006), Motivational Interviewing (SAMSHA's NREPP 2007b), Incredible Years Parenting and Child Programs (Promising Practices Network 2006), and Parent–Child Interaction Therapy (Zisser and Eyberg 2010). These practices were provided in individual, family, and group contexts across the agency in addition to AT groups.

Adventure Therapy (AT)

The Adventure Therapy (AT) groups were designed to use interactive interventions (ice-breakers, team challenges, cooperative games, and creative projects) to activate desired behaviors (improved skills and increased self-regulation). Most AT groups were open-ended, had a broad age range of clients, and typically consisted of seven clients maintaining a 1:4 adult-client ratio. At the time of this study, AT groups did not involve families, but only were with youth clients. The AT groups followed a structured 2-h format once a week, although special topic groups had a set number of sessions to work on targeted skills, like strategies to manage anxiety. The youth clients who participated in AT were more likely to have a primary diagnosis of disruptive disorder (46.3 %) and anxiety disorders (17.1 %) compared to youth who did not participate in AT (37.6 % Disruptive Disorders; 11.5 % Anxiety), while those who did not participate in AT were more likely to have an Adjustment (22.4 %) and Mood Disorder (19.6 %) compared to AT participants (14.6 % Adjustment and Mood Disorders), $\chi^2 = 9.52$, $df = 4$, $p = .04$, $\phi = .09$.

AT groups were led by a team of adults modeling cooperation, respect, and teamwork: a master's level therapist, responsible for clinical oversight, documentation and leading the processing/debriefing; a group facilitator, responsible for equipment and supplies, physical safety issues and leading the activities; and community mentors, responsible to assist with engagement, behavior interventions, and modeling participation. AT groups all began with an engagement activity to welcome clients, invite/encourage participation, and allow for late-comers. This was followed by a group check-in during snack, reviewing the prior week's theme, and homework. The therapist then introduced the current theme, often using metaphor or visual story telling techniques to maintain attention. The facilitator presented a team challenge or activity, and the therapist lead the debriefing when it was finished. These activities ranged from group problem solving initiatives to low ropes course activities. Depending on the amount of time remaining in the session, a second, reinforcing activity was implemented. Finally, the clients were given a "Challenge to Go" as a homework assignment to be completed before the next session as a way to increase generalization of new skills.

Fidelity

In order to support treatment fidelity for AT, every therapist and facilitator followed a developed curriculum each week, so clients were getting the same program regardless of group location or leader. In addition, weekly AT meetings were held to discuss any issues or concerns of the providers and used to review the next set of curriculum. Therapists also participated in a monthly group supervision and training session to monitor progress and work to improve the program. Unfortunately, fidelity was not monitored by the providers of the non-AT interventions, except when required by certain EBPs, but not all therapists used these models.

Data Analysis

To address the first research question a series of paired samples t-tests were conducted comparing pre- and post- scores across a variety of service types while controlling for length of treatment. Effect sizes for all analysis were conducted. Effect sizes measure the strength of a relationship across groups and are used to make numeric comparisons between different findings and their overall treatment effects. Effects sizes are considered to be small when .20 or less, medium at .50, and large when greater than .80 (Cohen 1987). Due to the use of

multiple comparisons through paired samples *t*-tests, Bonferroni corrections were utilized and *p* values corrected. In addition, in order to investigate in more depth the clinical significance of the changes reported by the participants, each participant was identified for one of the following groups: “recovered” (post score below 25 and a 10 point decrease in problem severity); “improved” (1–9 point decrease in problem severity, or 10 point decrease, but not below 25); and “no change or deterioration.” Additional Chi-square analyses were completed to see if treatment group was related to the likelihood of recovery.

To address research question two, change scores (from discharge to intake) were calculated and ANOVA analyses were conducted to see if changes were significantly different based on treatment type as well as by gender, age, race, and primary diagnosis. In cases where variances were unequal, Welch’s statistics were used, and appropriate post hoc analyses were conducted. Since there was a lack of racial diversity, for purposes of this study, race was collapsed into three categories (White, African American, and Other) from the five original categories. Finally, to address research question three, four models were run using ordinary least squares regression. Because it was important to see the effects of types of independent variables, groups of similar variables were entered in order, one group at a time, first by demographic data and length of treatment, then by primary diagnosis, then service participation (Yes/No), and finally hours of treatment for each type of counseling condition.

Findings

Effectiveness of Adventure Therapy Groups

Pre- and Post-test Differences

The average problem severity scores of clients reported at intake and at discharge, as well as the mean overall change and the effect size (*d*) for this change by different types of services are presented in Table 3. The means decreased in problem severity from pre- to post- test for all four groups of clients who received counseling services and were statistically significant, even after Bonferroni corrections ($p_b < .001$), as well as below the clinical cut-off of 25 points, with strong effect sizes around 2 or greater (See Table 3). For clients who received other support services without counseling, their average levels of problem severity were still of concern at discharge (above 25), with small mean changes and a moderate effect size.

Controlling for Length of Treatment

Since the length of treatment for participants varied greatly, additional *t*-tests were conducting controlling for different lengths of treatment with Bonferroni corrected *p* values as shown in Table 4. Due to the low sample size of the Adventure Therapy only group, this group was removed from this analysis. Based on these comparisons, it seemed that for the AT and psychological counseling group, 7–24 months appeared to be the lengths of treatment associated with significant mean decreases in problem severity, while less than 6 months and greater than 24 did not show similar findings. Small sample sizes for the short and long treatment lengths could have impacted the accuracy of the statistical analysis. For the counseling only group, there were significant differences at post-test, regardless of treatment length; however, only individuals in treatment for greater than

Table 3 Comparison of pre and post problem severity scores by counseling type ($N = 1,135$)

Types of therapy	<i>n</i>	M_{pre} (sd)	M_{post} (sd)	<i>t</i>	Effect size (d) CI (lowest–highest)
Adventure therapy	18	36.4 (18.0)	19.1 (15.4)	4.3***	2.1 (–6.0–9.4)
Adventure therapy and psychological counseling	104	34.5 (12.4)	20.5 (14.7)	10.5***	2.3 (–.07–5.1)
Psychological counseling only (Individual or Family)	652	30.6 (11.9)	19.9 (12.8)	24.6***	1.9 (1.0–2.9)
Psychological counseling and group therapy	53	25.6 (11.2)	15.7 (11.2)	7.5***	2.0 (–1.1–5.0)
Support services only (No counseling services)	308	28.9 (13.7)	26.3 (14.1)	5.4***	.42 (–1.1–.4)

Bold scores reflect scores below the clinical cut off of 25

*** $p_b < .001$ (Bonferroni corrected)

24 months had similar changes to the AT and counseling group. For individuals participating in group therapy and psychological counseling, significant mean decreases in problem severity were found for 0–6, 13–18 and 19–24 months. Small sample sizes could have impacted the ability to find differences in these groups, similar to the AT and counseling findings. In terms of the group that only received support services, significant differences were only detected for clients involved 12 months or less, yet none of these differences were large decreases in problem severity.

Clinically Significant Changes

Due to the large variation in changes in problem severity reported for youth, the participants were further delineated into categories reflecting recovery, improvement, and no change/deterioration in order to understand the clinical significance of these changes (see Table 5). Chi-square analyses (5×3) revealed that participants who engaged in adventure therapy were significantly more likely to be considered “recovered” at the close of treatment than those who did not have AT, $\chi^2 = 297.41$, $df = 8$, $p < .001$, *Cramer's V* = .36. Fifty percent of clients in AT only and 55.8 % of clients who had AT and psychological counseling recovered, compared to 42.4 % who had psychological counseling only, 43.4 % who had psychological counseling and group therapy, and 9.7 % who received support services without counseling. Since it was unclear if the significance in this model was due to receiving counseling services or not, an additional Chi-square analysis was conducted removing the support services group (4×3). This additional analysis was also significant, $\chi^2 = 10.40$, $df = 6$, $p = .03$, *Cramer's V* = .20, supporting the findings that participants in AT groups were significantly more likely to be considered recovered compared to those without an AT component. Due to cell count issues, it was not possible to further investigate length of treatment or other demographic variables with recovery status.

Controlling for Additional Support Services

Considering that clients had access to more than counseling services, analyses were completed to control for the impact of support services combined with counseling types on

Table 4 Comparisons of pre and post mean problem severity scores across treatment group and length of treatment

Treatment group	Length of treatment (months)	<i>n</i>	<i>M</i> _{pre} (sd)	<i>M</i> _{post} (sd)	<i>t</i>	<i>M</i> _{diff}	Effect size (<i>d</i>) (<i>CI</i>)
Adventure therapy and psychological counseling	0–6	16	36.13 (14.02)	27.38 (17.54)	2.43	–8.75	1.24 (–5.63–9.83)
	7–12	26	36.35 (13.42)	20.42 (11.59)	5.61***	–15.92	2.85 (–2.31–7.30)
	13–18	30	32.87 (10.75)	17.93 (12.81)	6.81***	–14.93	2.82 (–1.02–7.41)
	19–24	21	32.19 (13.13)	17.19 (12.63)	5.79***	–15.00	2.60 (–3.01–8.01)
	25 or more	11	37.00 (10.46)	23.91 (22.33)	2.48	–13.09	1.79 (–4.40–14.98)
Psychological counseling only	0–6	187	30.39 (11.62)	21.97 (12.99)	11.05***	–8.42	1.53 (–0.14–3.39)
	7–12	283	30.73 (12.51)	20.07 (12.93)	16.43***	–10.67	1.87 (0.42–3.38)
	13–18	113	31.19 (12.10)	18.28 (12.63)	12.28***	–12.90	2.33 (0.10–4.66)
	19–24	51	28.96 (9.66)	16.25 (11.74)	7.12***	–12.71	2.66 (0–5.88)
	25 or more	18	30.56 (11.80)	16.28 (8.66)	6.87***	–14.27	3.12 (–2.33–7.12)
Psychological counseling and group therapy	0–6	12	27.42 (13.53)	19.50 (11.57)	3.46*	–7.92	1.41 (–6.24–7.96)
	7–12	10	28.60 (7.40)	17.60 (10.01)	3.70*	–11.00	2.83 (–1.76–9.03)
	13–18	13	22.46 (10.59)	15.54 (11.89)	2.91	–6.93	1.39 (–4.38–7.84)
	19–24	10	26.70 (10.24)	12.00 (12.47)	4.28*	–14.70	2.89 (–3.45–10.62)
	25 or more	8	25.00 (15.21)	14.13 (9.89)	2.77	–10.87	1.94 (–8.60–8.79)
Support services only (No counseling)	0–6	243	28.70 (14.07)	27.10 (3.71)	3.44**	–1.60	0.40 (–1.37–0.87)
	7–12	49	29.67 (13.06)	25.31 (15.60)	3.34*	–4.37	0.66 (–3.28–5.03)
	13–18	10	31.20 (8.28)	19.80 (13.42)	2.73	–11.40	2.35 (–2.78–10.67)
	19–24	4	23.75 (16.19)	14.50 (11.36)	2.99	–9.25	1.50 (–14.36–12.63)
	25 or more	2	25.50 (7.78)	19.00 (16.97)	1.00	–6.50	1.17 (–9.61–24.69)

* $p < .05$, ** $p < .01$, *** $p < .001$ (Bonferroni corrected)

Table 5 Clinically significant levels of change by treatment type ($N = 1,135$)

Type of services	No change or deterioration (%)	Improvement (%)	Recovered (Clinical Sign.) (%)
Adventure therapy ($n = 18$)	11.1	38.9	50.0
Adventure therapy and psychological counseling (Ind. and/or Family) ($n = 104$)	20.2	24.0	55.8
Psychological counseling ($n = 652$)	18.7	38.8	42.5
Psychological counseling and group counseling ($n = 53$)	13.2	43.4	43.4
Support services only (No counseling) ($n = 308$)	70.5	19.8	9.7
Total	32.5	32.5	35.0

decreases in problem severity. Specifically, independent samples t-tests of mean changes in problem severity within each type of the four counseling groups were completed between those clients who did and did not utilize psychiatric medical services, consultation services, case management, and peer/parent support services. Due to multiple comparisons, Bonferroni corrected p values were computed, and based on these findings, there were no significant differences in decreases in problem severity for clients who had any type of counseling in addition to support services compared to those who had counseling without any additional support services. Put simply, the addition of support services did not appear to add to the potential for decreases in problem severity.

Changes in Problem Severity

It is important to point out that due to the small sample of 18 youth who participated in AT only, as well as the high variance in changes reported for this group, it was difficult to accurately detect significant differences between the groups, despite the high mean decreases in problem severity. Hence, participants who received AT only were not included in the ANOVA analyses. Table 6 provides a complete breakdown of mean changes in problem severity between counseling types across gender, age groups, race, and primary diagnosis. Overall, it appeared that type of counseling was significantly related to decreases in problem severity, *Welch's F* (2, 110.8) = 3.17, $p = .04$, $\eta^2 = .020$. According to Tamhane post hoc pairwise comparisons (for unequal variances), participants in AT combined with psychological counseling had significantly higher decreases in problem severity than participants who received psychological counseling only. No other significant pairwise relationships were found (see Table 6). This suggests that AT augmented decreases in problem severity for clients at discharge.

Comparisons across gender, age, race, and presenting diagnosis revealed several factors related to changes in problem severity. While there were no differences in decreases in problem severity for males across treatment types, there were significant differences in decreases in problem severity among females by counseling type, $F = 5.56$, $df_b = 2$, $df_w = 334$, $p = .004$. Tukey post hoc pairwise comparisons (for equal variances) found that females who participated in AT combined with psychological counseling had significantly larger decreases compared to those who only received psychological counseling or those who participated in group counseling combined with psychological counseling (see Table 6). It seems that adding an adventure component to counseling was related to increased positive outcomes for girls in this study.

In terms of age and primary diagnosis, no significant differences were found in overall mean decreases in problem severity across treatment types. The same is not true when looking across races. White clients did not have significantly different decreases in problem severity across treatments, nor did the group of minority clients who were not African American (Other); however, there were significant differences in mean decreases in problem severity for African American clients between treatment types, *Welch's F*(2, 27.8) = 5.49, $p = .01$. As highlighted by Tamhane post hoc pairwise comparisons (for unequal variances), African American clients who participated in group therapy combined with psychological counseling had significantly lower mean decreases in problem severity compared to those who participated in AT combined with individual and/or family counseling or psychological counseling only. This finding suggests that group work with African American clients was more effective as an adventure model than a traditional group therapy model.

Table 6 Mean decreases in problem severity by gender, age, presenting diagnosis, race and counseling type

	AT & psych. counseling (<i>N</i> = 106)		Psych. counseling (<i>N</i> = 651)		Psych. counseling & group therapy (<i>N</i> = 52)		<i>Eta</i> ²
	<i>M</i> (sd)	<i>n</i>	<i>M</i> (sd)	<i>n</i>	<i>M</i> (sd)	<i>n</i>	
All counseling	14.1 (13.6) ^a	104	10.7 (11.0) ^a	652	9.9 (9.5)	53	.020
Gender							
Male	13.0 (14.1)	70	11.1 (11.3)	371	11.4 (11.0)	31	.004
Female	16.2 (12.3) ^{b,c}	34	10.2 (10.7) ^b	281	8.1 (6.9) ^c	22	.032
Age (years)							
6–8	15.7 (13.9)	20	11.9 (11.7)	79	10.9 (9.5)	13	.017
9–12	13.9 (15.7)	38	12.6 (10.4)	146	9.4 (7.6)	17	.009
13–16	13.7 (11.7)	36	9.5 (10.6)	260	8.8 (12.5)	14	.015
17–21	12.8 (12.1)	10	10.2 (11.6)	167	11.8 (8.7)	9	.003
Primary diagnosis							
Disruptive disorder	15.2 (15.6)	49	10.2 (11.2)	230	11.9 (11.2)	18	.024
Adjustment disorder	14.4 (14.3)	17	9.9 (9.3)	140	8.4 (7.3)	17	.023
Mood disorder	12.8 (12.8)	17	11.8 (12.8)	150	12.3 (10.0)	3	.001
Anxiety disorder	11.5 (12.1)	15	11.0 (9.6)	79	4.4 (9.6)	9	.034
Other	13.3 (10.6)	3	11.0 (11.3)	53	16.0 (5.3)	3	.020
Race							
Caucasian	14.0 (11.9)	66	11.2 (10.9)	484	11.6 (10.0)	41	.007
African American	13.8 (16.1) ^d	27	9.6 (11.6) ^e	109	4.1 (4.9) ^{d,e}	9	.098
Other	15.0 (17.7)	11	8.6 (11.0)	59	5.3 (7.6)	3	.041

Bold scores represent decreases in problem severity considered “reliable” (>10 points)

Post hoc pair wise comparisons: ^a $p = .04$, ^b $p = .006$, ^c $p = .01$, ^d $p = .03$, ^e $p = .04$

Predictors of Changes in Problem Severity

The bivariate correlations for all the study variables are presented in Table 7. Small, significant positive correlations between changes in problem severity and medical services ($r = .171$, $p < .001$), case management ($r = .131$, $p < .001$), parent/peer support ($r = .068$, $p < .05$), psychological counseling ($r = .309$, $p < .001$), group therapy ($r = .076$, $p < .05$), AT ($r = .174$, $p < .001$), hours of individual/family counseling ($r = .294$, $p < .001$), hours of AT ($r = .103$, $p < .001$), and overall time in treatment ($r = .306$, $p < .001$) suggested these variables may function as significant predictors of change in problem severity. Although no significant relationships were found between age, gender, ethnicity, disorder category, consultation/education services, or hours of group therapy and changes in problem severity, controlling for these variables was considered clinically relevant, and they were included in the prediction model.

Table 8 shows the multiple regression models for variables examined as predictors of changes in problem severity. Across all analyses, clients who were White were more likely to have greater decreases in problem severity compared to clients in the “Other” category. Similarly, age was found to be a predictor of overall change in problem severity, with younger clients more likely to have larger decreases in problem severity than older clients. In terms of counseling services, participation in psychological counseling (individual and/or family) as well as participation in AT groups were significant predictors of decreases in

Table 7 Correlation matrix for predictors of change in problem severity ($N = 1,135$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Age	1										
(2) Gender	.111***	1									
(3) Black	-.058*	-.017	1								
(4) White	.096**	.019	-.764***	1							
(5) Other	.070	.006	-.156***	-.518***	1						
(6) Disruptive disorder	-.148***	-.198***	.065*	-.061*	.007	1					
(7) Adjustment disorder	-.165***	.052	-.009	-.008	.025	-.421***	1				
(8) Mood disorder	.316***	.138***	-.084**	.106***	-.052	-.381***	-.256***	1			
(9) Anxiety disorder	.032	.025	-.016	.005	.013	-.295***	.198***	-.179***	1		
(10) Medical services	.082**	-.096**	-.001	-.039	.062*	.049	-.158***	.098**	.019	1	
(11) Case management	-.093**	-.079**	.069*	-.083**	.035	.051	-.042	-.025	.010	.315***	1
(12) Consultation/education	-.117***	-.081**	-.020	-.018	.053	-.030	.031	-.020	-.028	.122	.199***
(13) Parent/peer/counselling	.025	-.001	.051	-.044	.000	-.018	-.017	.060*	-.008	.188***	.251***
(14) Psychological counselling	.156***	.024	.035	.042	-.018	-.064	.000	.079**	.028	.192***	.029
(15) Group therapy	-.100**	.002	-.025	.012	.014	-.034	.070*	-.075*	.039	.087**	.189***
(16) Adventure therapy	-.102**	-.047	.056	-.068*	.030	.053	-.056	-.038	.051	.172***	.200***
(17) Units of group therapy	-.004	-.055	.017	-.014	.000	-.035	-.007	-.060*	.104***	.092**	.035
(18) Units of Ind/Fam counselling	.031	-.029	.006	.031	-.056	-.052	-.002	.033	.038	.308***	-.146***
(19) Units of adventure therapy	-.062	-.048	.087**	-.085**	.015	.056	-.052	-.022	.033	.143***	.130***
(20) Time in treatment (months)	.033	-.054	.042	-.028	-.013	.067*	-.023	-.039	-.002	.387***	.346***
(21) Changes in Prob. severity	-.044	-.033	-.010	.045	-.055	-.003	-.047	.034	.017	.171***	.131***

Table 7 continued

	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) Age										
(2) Gender										
(3) Black										
(4) white										
(5) Other										
(6) Disruptive disorder										
(7) adjustment disorder										
(8) Mood disorder										
(9) Anxiety disorder										
(10) Medical services										
(11) Case management										
(12) Consultation/education	1									
(13) Parent/peer/counselling	.051	1								
(14) Psychological counselling	-.077**	.086**	1							
(15) Group therapy	.141***	.071*	.088**	1						
(16) Adventure therapy	.147***	.028	.110***	.158***	1					
(17) Units of group therapy	.138***	.002	.062*	.565***	.032	1				
(18) Units of Ind/Fam counselling	.038	.096**	.459***	.280***	.207***	.303***	1			
(19) Units of adventure therapy	.099**	.034	.068*	.086**	.639***	.012	.155***	1		
(20) Time in treatment (months)	.128***	.170***	.394***	.221***	.272***	.136***	.655***	.269***	1	
(21) Changes in Prob. severity	.052	.068*	.309***	.076*	.174***	-.001	.294***	.103***	.306***	1

Table 8 Predictors of change in problem severity ($N = 1,135$)

Independent variables	Model 1 β	Model 2 β	Model 3 β	Model 4 β
Length of treatment	.535***	.542***	.294***	.205**
Age	-.188*	-.268**	-.327***	-.303**
Gender (Male = 0)	-.386	-.615	-.500	-.608
Race (White-Reference)				
African American	-1.190	-1.061	-.978	-.786
Other	-2.287*	-2.179	-2.409*	-2.190*
Primary diagnosis (Other-Ref.)				
Disruptive disorder		-1.515	-1.410	-1.477
Adjustment disorder		-1.803	-1.756	-1.961
Mood disorder		.857	.278	.093
Anxiety disorder		-.220	-.645	-.573
Medical services (0 = No)			.959	.866
Consulting/education (0 = No)			.852	1.374
Peer/parent support (0 = No)			.471	.441
Case management (0 = No)			.770	.750
Group therapy (0 = No)			-.455	1.014
Psychological counseling (0 = No)			6.024***	5.383***
Adventure therapy (0 = No)			2.941**	3.451*
Hours of group therapy (Not AT)				-.068*
Hours of counseling (Ind/Family)				.082**
Hours of adventure therapy				-.021
R^2	.101	.108	.164	.173
F	25.334***	15.123***	13.677***	12.288***

* $p < .05$, ** $p < .01$, *** $p < .001$

problem severity in both Model 3 and Model 4, while involvement in other support services or group counseling were not significant predictors. It is interesting to note that from Model 3 to Model 4, the strength of participation in psychological counseling as a predictor decreased when length of psychological counseling was added to the analysis. This was not true for participation in AT, nor was length of AT a significant predictor of changes in problem severity. According to these findings, clients had to participate longer in psychological counseling to increase the likelihood of decreases in problem severity; however, participation in AT was a significant predictor of decreases in problem severity regardless of length of treatment.

Discussion

The purpose of this study was to address the following research questions:

1. Is AT an effective treatment modality for youth in a community-based care context compared to traditional individual, family, and group counseling?
2. How do changes in problem severity associated with participation in AT-based interventions compare with those associated with traditional individual, family, and group counseling across gender, age, primary diagnosis, and race?

3. What individual, program and treatment characteristics are predictors of changes in problem severity in youth clients?

Effectiveness of Adventure Therapy Groups

In the study, all clients who participated in any type of counseling presented on average with high levels of problem severity, which decreased to normative levels of functioning (less than 25) at discharge; while clients who were given no counseling services, but a variety of support services, did not make any significant improvements from intake to discharge. In addition, clients who participated in AT presented at intake with significantly higher levels of problem severity compared to clients who participated in other types of counseling, suggesting they were more acute at intake. This is not surprising since clinicians often referred challenging clients to AT in addition to counseling. These youth also showed the largest mean decreases in problem severity and a higher likelihood to be considered “recovered” at discharge. Between 50 and 55.8 % of the youth who engaged in AT could be considered recovered at discharge, compared to 42.5 and 43.4 % of youth who did not have AT as part of their treatment (see Table 5). These findings are especially impressive considering that close to 50 % of youth who engaged in AT had Disruptive Behavior Disorders which are known to be some of the most difficult clients to engage and treat in counseling (Bernstein 2012). It is not uncommon, however, for youth with oppositional and conduct issues and those involved in the justice system to be considered good candidates for AT; adventure therapy has shown to be effective in reducing recidivism (Gillis et al. 2008; Wilson and Lipsey 2000) and problem behaviors (Magle-Haberek et al. 2012; Tucker et al. 2011). These findings, however, have been limited to residential and wilderness settings, so this study is the first to find similar outcomes in a community-based sample of youth.

It is unclear why AT seems to be a good fit with this specific group of youth. It may be due to its kinesthetic components. Exercise has been found to effectively reduce symptoms of PTSD, depression, and anxiety and improve behavior in adolescent girls (Newman 2007), as well as decrease symptoms of ADHD in children (Chang et al. 2012). Furthermore, high levels of exercise were significantly related to low anxiety and depression and increased self-esteem in large sample of 10 year old children (Parfitt and Eston 2005). Not only is exercise important, but the structure of that exercise is as important. Lagerberg (2005) stresses that it is the context of the exercise, not necessarily only the exercise itself, that impacts its mental health benefits in children. Compulsory activities which involve competition and skills that may be beyond those of children can be counterproductive, while exercise that is enjoyable and conducted in small group settings (as opposed to a large physical education class), can maximize mental health benefits for children (Lagerberg 2005). AT focuses on offering fun, engaging activities to participants that slowly increase in difficulty, building up participants’ success; hence, the active nature of AT may provide the right context in which to encourage exercise that positively impacts functioning. To date, no known research has investigated the link between AT and activity level in a community sample of youth; however, future research would benefit from further exploration of this topic.

It is interesting to note that length of treatment appeared to be related to likelihood of showing significant decreases in problem severity across treatment groups. Because only 18 clients engaged only in AT without additional psychological counseling at this agency, it was difficult to make solid conclusions regarding length of treatment from this sample

due to its small size, but comparisons between the other groups were noteworthy. It seemed that for all youth involved in psychological counseling without additional group components, significant decreases in problem behaviors were reported. This is not true for the clients who engaged in AT and psychological counseling less than six months or 25 or more months or clients engaged in group therapy and psychological counseling for 13–18 months or more than 25 or more months (See Table 4). The nature of these findings is unclear; it may be that counseling alone was effective regardless of length of treatment, where AT may be needed for longer periods due to more difficult clients. When looking at the overall mean decreases in problem severity between treatment lengths and groups, however, it appears that clients in psychological counseling did not approach the same magnitude of decreases in problems that clients in the AT group had as early as 7 months into treatment. These decreases were not reported until clients in the psychological counseling group were engaged for more than 24 months in treatment. This analysis was also limited due to small samples sizes of youth in certain groups, which can impact the power the ability of the statistics to detect true differences. Hence, it is clear that more research is needed with larger samples in order to truly understand the relationship between length of treatment and outcomes between adventure groups and more traditional therapy.

Changes in Problem Severity

As discussed previously, because only 18 clients engaged in AT without additional psychological counseling at this agency, it was difficult to make solid conclusions from this sample due to its small size. Participants in AT groups and individual and/or family counseling, however, had larger reported mean decreases in problem severity than individual, family, or group counseling without adventure components (see Table 6). These findings suggest that group work in an adventure format may be a more effective adjunctive treatment to individual and/or family counseling than traditional group work. Interestingly, these findings were similar to those in wilderness therapy and residential settings (Gillis et al. 2008; Wilson and Lipsey 2000). In their meta-analysis of 22 outcomes studies on wilderness therapy programs, Wilson and Lipsey (2000) found that effect sizes significantly increased when programs included distinct therapeutic components beyond the activities themselves. Gillis et al. (2008) found that residential youth who participated in an AT program that focused specifically on the intentional selection and facilitation of activities to meet therapeutic goals and the therapeutic processing of those goals, within a larger context of a therapeutic setting, had lower, sustained rates of recidivism than youth who participated in an outdoor, base camp program or boot camp program. Hence, the findings from the current study not only concur with previous research on youth with more acute problems, they suggest that AT and counseling combined may be related to reducing problem behaviors in a youth with a variety of presenting issues.

This study also found that both African American as well as female youth seemed to particularly benefit from the inclusion of AT in their treatment (see Table 6). It is well documented that African American youth show lower rates of entry into care, higher rates of drop out, and greater rates of unmet need for mental health services than their White counterparts in the United States (Alegria et al. 2010). On average, African American youth in the sample who received psychological counseling only made smaller gains than White participants and did not achieve clinically significant decreases in problem severity, supporting this previous research on African American youth. Yet, this pattern did not hold for clients receiving AT and psychological counseling. In fact, African American youth who participated in AT and counseling showed average decreases in problem severity

equal to White youth in the sample. Although the number of African American youth in each of these categories was too low to allow for generalizations, these findings suggest that AT could be a promising modality for African American youth struggling with mental health issues and should be evaluated on a larger scale.

Similar to African American youth, female participants had significantly higher reported mean decreases in problem severity when their treatment included AT. While the male participants on average had reliable decreases in problem severity (>10 points decrease) regardless of treatment type, females who participated in AT with psychological counseling had higher decreases than females in counseling, with or without group therapy. These findings are similar to research on the impact of AT in residential and wilderness settings, which also found females to improve at significantly higher rates than their male counterparts (Tucker et al. 2011). It is unclear why females engaged in AT did better than those not involved in adventure; however, it may be due to the structure and focus of AT groups. Adventure therapy aims to empower participants by providing them with real obstacles, which, although appearing impossible to overcome, are not only plausible to overcome but attainable (Kimball and Bacon 1993). In addition, activities are sequenced for success in order to provide participants with a sense of self-efficacy and mastery. This focus may be particularly powerful for girls, who have a tendency to internalize their problems (Leadbeater et al. 1999) which can leave them feeling powerless. In fact, adventure based activities have been shown to increase self-efficacy and perceived competence in adolescent girls (Caulkins et al. 2006). In addition, the group format of adventure therapy may be a good fit for girls and young women due the importance they place on socialization and personal relationships (Rueger et al. 2008), which can be promoted in adventure therapy (Mitten 1994). This importance of the group format is highlighted by recent research which found that time spent engaging in adventure therapy in groups compared to in an individual setting was a significant predictor of client recovery (Magle-Haberek et al. 2012). Future research is needed to explore in more depth why or in fact if this modality truly impacts youth differently based on gender and its relationship to the group format.

Predictors of Changes in Problem Severity

When predictors of changes in problem severity were explored, several interesting findings were reported. Overall, being younger and White was associated with larger decreases in problem severity for the entire population. The finding in terms of ethnicity was not surprising based on previous analyses, yet the findings regarding age were contradictory to previous findings of no difference across treatment types and age groups (see Table 6). It is unclear the nature of these findings; perhaps when the population was considered as a whole ($N = 1,135$), younger clients did better throughout the organization. Yet, these findings may be related to the fact that in the group of 18 clients who received AT as the only type of counseling at the agency, most ($n = 14$) were younger clients (12 or younger) with mean decreases in problem severity around 17 points which could have influenced the regression findings, since this group was not part of the ANOVA analysis due to small sample sizes. In fact, the ANOVA analysis found that clients from 8 to 21 years of age who participated in AT and psychological counseling all had mean decreases in problem severity from 12 to 15 points, with no significant differences between the age groups. Clearly, future research is needed to differentiate if indeed AT is a more effective intervention for younger children than adolescents, or equally effective across age groups.

In terms of services, participation in psychological counseling and AT were significant predictors of changes in problem severity, as were length of group therapy, length of counseling, and length of treatment overall. Unlike psychological counseling and other treatment options, length of AT treatment was not a significant predictor of change, suggesting that length of AT was not as important as participation in adventure. Participation in psychosocial counseling was important, yet it seemed that clients needed to be engaged in treatment longer to see as large decreases in problem severity as clients who had AT as a component of their treatment. As previously discussed, the issue of treatment length is unclear. It may be that AT as an adjunct to treatment provides added benefits, hence is associated with larger decreases in problems in a shorter amount of time, or that participants in AT begin treatment with more acute levels of problems, hence there was the possibility for larger improvements in short periods of time.

Limitations

Overall, these findings must be interpreted with caution. Since clients were not randomly assigned to treatment groups but referred by clinicians, it is not possible to know if AT was truly effective for all youth at the program, or that certain youth were drawn to participating in AT. In addition, due to self-selection, it is unclear if these changes are actually due to the intervention or other threats to internal validity. Youth in this study who did not receive counseling but other support services, had significantly lower levels of problem severity at intake than those who did receive clinical services, and youth who received AT services had the highest levels of problem severity. Additionally, not all youth improved even in treatment, and although there were significant mean decreases in problem severity with high effect sizes, there were large variances in the means changes and large confidence intervals for the effect sizes. Hence, it is unclear if changes (positive or negative), were specifically due to the intervention, or that there were perhaps certain client characteristics or severity of symptoms making the youth more or less amenable or ready for change. In the future, one way to limit threats to internal validity in quasi-experimental studies, such as this study, is to have comparison groups which are matched to those groups receiving the intervention being evaluated. In addition, to increase our confidence in the regression findings, propensity scores can be used to investigate the impact of self-selection and pre-treatment variables (Morral et al. 2004); however, due to limits in available demographic data and sample sizes across treatment groups, these analyses were not possible in this study.

In addition to a lack of comparable comparison groups, it is unclear if these changes remained over time, since problem severity was not measured after clients were discharged from the agency. Subsequently, research is needed that follows clients after discharge over the long term to see if these changes are sustainable for youth, or if, in fact, these youth regress or end up back in treatment again. The final limitation in this study which warrants attention is the primary reliance on clinicians as reporters on youths' problem severity. Parents and youth may focus on different aspects of dysfunctional behaviors (Cole et al. 2000), and youth may present differently in different situations, potentially skewing the results of staff assessments (Thuppal et al. 2002). As a result, data collected across these three informant types can vary considerably. Future research needs to incorporate more than one informant or type of measure to increase confidence in the reliability and validity of the findings. Although research in community settings is challenging due to limits in

random assignment, these techniques in addition to increasing sample sizes are essential to improve future research in this area.

Conclusion

This study was successful because its aim was to explore the impact of an AT program without a wilderness component in a community mental health setting and was the first of its kind to do so. In the future continuing to document the effectiveness of community-based adventure therapy is especially important and timely, considering the recently highlighted ethical concerns of wilderness treatment (Becker 2010; Scott and Duerson 2010). Although recent research does support wilderness therapy as an effective intervention for youth (Magle-Haberek et al. 2012; Tucker et al. 2011), is not an option to many youth due to its cost and lack of coverage by insurance companies (Scott and Duerson 2010). Hence, AT in community settings can be more cost effective as well more accessible to clients with low incomes. In addition, Becker (2010) cautions how “parents should be encouraged to think carefully about their decision to place their son or daughter in a highly restrictive placement, and local community resources should be prioritized” (p. 57). Keeping youth closer to home allows for family involvement and decreases the disruption in the child’s life (Scott and Duerson 2010), and community based adventure programs can be that other resource for families. Community-based AT can also be complimentary to wilderness therapy as part of a continuum of care when considering how “aftercare is almost always essential in order for treatment gains to be maintained” (Becker 2010, p. 58). Hence, adventure therapy in a community setting can fill the voids left by wilderness treatment. Considering the rising needs for appropriate and effective treatment of youth in a community setting, more research is not only needed but must be a priority.

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