INTO THE WILD: TREATMENT EFFICACY AND CLINICAL UTILITY FOR ADOLESCENTS IN WILDERNESS THERAPY

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By

Madeline Frances Adolf

Chair: Dr. David McCord, PhD
Professor Emeritus
Psychology Department

Committee Members:
Dr. Sarah Lewis, Ph.D., Psychology
Dr. Andrew Bobilya, Ph.D., Human Services

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ABSTRACT

INTO THE WILD: TREATMENT EFFICACY AND CLINICAL UTILITY FOR ADOLESCENTS IN WILDERNESS THERAPY

Madeline Frances Adolf, M.A.

Western Carolina Univeristy (August 2024)

Chair: Dr. David McCord

This study investigated the treatment efficacy of wilderness therapy for adolescents and explored relationships between adolescent psychopathology, personality, and treatment outcomes to understand the clinical utility of wilderness therapy. Parent-reported symptom changes were analyzed for 201 adolescents who completed a wilderness therapy program. Additionally, correlations between Minnesota Multiphasic Personality Inventory-Adolescent-Restructured Form (MMPI-A-RF) scales and symptom changes were examined for a subset of 47 participants. Results showed significant improvements across multiple symptom domains, including conduct, depression, substance abuse, and suicidality. Girls showed greater improvement in suicidality compared to boys, even when controlling for admission severity. Correlational analyses revealed associations between certain MMPI-A-RF scales and symptom improvements, and *post-hoc* analyses of clinical elevations on MMPI-A-RF scales found significant symptom reductions for participants with elevated scores on several scales. The findings suggest wilderness therapy is an effective treatment modality for adolescents with various presenting concerns, although more experimental research with control groups is needed. The MMPI-A-RF shows promise as a tool for evaluating the potential utility of wilderness therapy for individual clients. However, the

study was limited by its reliance on parent reports and small sample size for MMPI-A-RF analyses. Future research should incorporate adolescent self-reports, larger samples, and measures of additional constructs to further examine predictors of treatment response in wilderness therapy programs. Understanding how clinical profiles relate to outcomes will be critical for individualized treatment planning and improving clinical efficacy.

CHAPTER ONE: INTRODUCTION AND LITERATURE REVIEW

Wilderness therapy programs, often referred to as Outdoor Behavioral Healthcare (OBH), treat an estimated 10,000 adolescents each year in the United States (Johnson et al., 2020). Research has demonstrated that this type of treatment may improve clients' behavioral functioning, intrapersonal/emotional functioning, interpersonal functioning, and clinical functioning (Bettmann et al., 2016). However, research exploring individual characteristics in relation to the treatment process and outcomes is extremely limited. As a result, wilderness therapy remains a "black box" (Fernee et al., 2017) with regard to how and for whom it works.

What is Wilderness Therapy?

Although the specific therapeutic orientation, living environment, and daily activities vary, wilderness therapy programs (WTPs) share many key components and theoretical foundations (Gass et al., 2012; Russell, 2001). Broadly speaking, wilderness therapy programs stand at the crossroads between adventure programming and residential treatment, though they are not synonymous with broader "adventure therapy" (Tucker et al., 2023). WTPs provide a 24-hour intermediate level of care that typically incorporates individual, group, and family therapy into an immersive outdoor setting with limited modern conveniences and group living (Tucker et al., 2016). Like residential treatment, WTPs remove clients from the environments that likely maintained their maladaptive behaviors and cultivate positive habits such as sobriety, healthy eating, and exercise. Clients are typically placed in small groups, which are then guided by staff on backpacking treks of varying durations. During treks or "expeditions," the small group of students and staff engage in a series of activities centered around the expedition, including camp cleanup, cooking meals, hiking to a new campsite, setting up camp, and debriefing together.

Daily programming inherently requires a healthy level of risk-taking, trusting oneself and others, emotion regulation, problem-solving, and adaptability (Tucker et al., 2023). The small group structure teaches social skills such as communication and cooperation.

Formal therapy sessions may take place on expeditions, with therapists joining the group "in the field," or they may occur during "stationary days" between treks, during which the groups are staying at a home base camp (Tucker et al., 2023). Most WTPs use eclectic therapeutic models but some rely heavily on cognitive behavioral interventions with a family systems perspective (Russell, 2001) to facilitate change. However, the process of change differs significantly from traditional residential care, instead building on concepts from adventure programs like Outward Bound. For example, wilderness therapy programs utilize natural consequences, ritual, metaphor, and positive stress to improve self-esteem, self-efficacy, responsibility, and resiliency (Fernee et al., 2017; Tucker et al., 2014; Tucker et al., 2022). Activity interventions are intentionally planned for clients to experience emotions, thoughts, and behaviors that parallel those experienced in their daily lives, with the goal of rehearsing new ways to cope and communicate (Tucker et al., 2023).

Although adolescents are frequently sent to these programs unwillingly by their parents or guardians, wilderness program staff do not intentionally employ harsh "boot camp" interventions to force compliance. Instead, it has been suggested that direct care staff and therapists typically appear "more human" than outpatient therapists due to their presence in the field, enduring similar primitive circumstances to the clients (Fernee et al., 2017). Clients' relationships with these staff members become a means to challenge the adolescent's prior relational patterns and behaviors. Wilderness therapy often serves as a first step in a treatment

continuum, offering assessment and stabilization before students transition into more formal residential treatment or therapeutic schools.

Current State of the Field

Although wilderness therapy has been around in its current form since at least the 1980s, the field has risen to notoriety in the past few years amidst ongoing controversy. Wilderness therapy made headlines through the 1990s and early 2000s for participant deaths, typically attributed to the risks of the natural environment such as extreme temperature or physical injury (Klas, 2024). However, reports of abuse by the "troubled teen industry," an umbrella term for residential treatment centers, wilderness programs, boot camps, and therapeutic boarding schools marketed as treating "troubled" or "delinquent" adolescents, reached a head in 2020 when celebrity Paris Hilton recounted her own traumatic experiences as a teenager at a still-operational youth residential treatment program in Utah (Rubino, 2024). Most recently, a 12-year-old boy was found dead in his cabin after being admitted to a wilderness program and was found to be the victim of staff negligence (Vitaglione, 2024). Those in the field would like to blame one-off "unregulated programs" (National Association of Therapeutic Schools and Programs, 2024), which are also the main target of recent legislation initiatives such as the Promoting Accountability, Reporting, Information Sharing, and Health Act, backed by Paris Hilton herself (Nguyen, 2024). However, a "bad apples" argument ignores numerous (though anecdotal) accusations of traumatization from the modality itself. Former participants of wilderness therapy have taken to blogs, forums, and social media to share the impact of being forced to "sleep in tents and build fires from scratch" (Myers, 2023), with "no access to the outside world except weekly letters" (Gibbons, 2023). Another major criticism involves the use of transport services, hired by parents to "escort" unwilling adolescents to treatment, which may involve taking

custody of the adolescent in the middle of the night or resorting to physical force if the child resists (Tucker et al., 2015)

Whether as a direct result of increased visibility, scrutiny of the risks, or a broad lack of regulation, many wilderness programs have recently closed their doors. Others have restructured into residential treatment with outdoor "components," (Schreifels, 2024; Larson, 2024) or rebranded; the semi-annual regional and national professional conference hosted by the Outdoor Behavioral Healthcare Council, was renamed from the Wilderness Therapy Symposium to the Outdoor Therapy Symposium. These changes signify the crossroads upon which the industry has arrived: wilderness therapy must either cease to exist or transform from a "black box" (Fernee et al., 2017; Norton et al., 2014) into a legitimatized, evidence-based treatment modality.

Characteristics of Wilderness Therapy Participants

In order to explore the impact of individual differences on treatment outcomes, one first must understand the basic characteristics of adolescents in wilderness programs. Some researchers have investigated the characteristics of adolescents in residential treatment (Connor et al., 2004), but few have restricted their research to wilderness programs in particular. Two known datasets have been used to explore participant characteristic trends.

Bettman and Tucker (2011) and Bettman et al. (2014) analyzed psychological evaluations of hundreds of adolescents in wilderness programs and other residential treatment settings. Broadly speaking, adolescents in these programs show a wide range of severe externalizing problems. When parents were asked about the precipitating reasons for treatment, general defiance was the most common response, followed by substance abuse and school problems. Consistent with those reports, the most common diagnosis given was Oppositional Defiant Disorder (ODD), followed closely by "Parent-child relationship disorder" and Attention-

Deficit/Hyperactivity Disorder (ADHD). Five out of every six adolescents used illegal substances, with the most common being marijuana and alcohol. Approximately one in five had been expelled from at least one school, and one in three had been suspended from school at least once. The sample was split approximately in half with regard to a history of violent behavior or aggression (excluding interpersonal aggression). Almost 40% had been arrested at least once. Bettman and colleagues (2014) also explored MMPI-A scores. Scales with means falling in an elevated range included only the Psychopathic Deviate scale and the Substance Abuse Proneness scale, both of which were substantially revised in the creation of the MMPI-A-RF (Bettman & Tucker, 2011).

These statistics represent the common stereotypes about wilderness programs: that adolescent participants are using drugs, have been expelled from school, and can be aggressive. However, the less obvious characteristics of these adolescents may be equally crucial to program design and treatment planning. Participants had cognitive and academic scores on the high end of the Average range, with verbal abilities in the High Average range. Reports of experiencing various types of abuse ranged from 7%-13%, depending on the type of abuse. Over a third had previously expressed suicidal ideation, and 13% had at least one previous suicide attempt, despite wilderness programs frequently having strict admission criteria that exclude anyone with a recent suicide attempt (Hoag & Grater, 2022).

Notably, Bettman and Tucker (2011) used a combined sample of wilderness programs and residential treatment centers because the authors found little to no difference in the demographics between those settings. On the surface, this finding is unsurprising. Wilderness programs often transition students into residential treatment centers, resulting in inherent population overlap and similarity. However, residential treatment centers do not typically have

the same strict admission criteria, leading to a population with, on average, slightly more severe symptom presentations. Bettman et al. (2014) conducted further analyses of these data, focusing solely on the wilderness program sub-sample. When examined for gender differences in symptom presentations and history, it was found that female clients were more likely to have previously attended outpatient treatment of some form than male clients, though no difference was found regarding history of inpatient treatment. Male adolescents had a higher arrest rate and were also more likely to have a history of violence, while female adolescents were more likely to have past suicide attempts, suicidal ideation, and self-harming behaviors. Female adolescents were also more likely to have a history of sexual, physical, and/or emotional abuse. Across symptom measures, female adolescents showed significantly higher levels of psychological distress. The MMPI-A scores for girls were significantly higher than boys on scales related to somatic, internalizing, and externalizing symptoms.

The same year, Hoag et al. (2014) published a large-scale study using program discharge summaries rather than formal psychological evaluations. By the end of their time in wilderness therapy, over 70% of adolescents were given four or more diagnoses. The most common were mood disorders, followed closely by behavior disorders and substance use disorders. Consistent with Bettman et al.'s (2014) findings, adolescent boys were found to have higher rates of substance-related disorders and behavior-related disorders, while adolescent girls were found to have higher rates of anxiety disorders. This is consistent with research on gender differences in residential treatment (Handwerk et al., 2006) and outpatient mental health treatment (Holtberg et al., 2016); some researchers have suggested that girls must demonstrate a more severe level of symptoms in order to be referred for treatment (Handwerk et al., 2006).

In summary, adolescents in wilderness therapy have primary diagnoses/treatment focuses related to behavioral problems and substance use, which is consistent with stereotypes of the industry. However, these individuals often also have histories of trauma and suicidality that, alongside strong cognitive abilities, should be strongly considered in program design and treatment planning.

Treatment Efficacy of Wilderness Therapy

Wilderness therapy programs are intensive and can be a large financial investment for families in crisis. Efficacy research is crucial to the ethical operation of such programs and necessary for a future of insurance reimbursement and increased access. Recognizing this need, the professional organization governing wilderness therapy programs, NATSAP (National Association of Therapeutic Schools and Programs), has sponsored an outcome research project for the past decade, with limited results thus far. Preliminary analyses of the NATSAP Outcomes Research Project included 1,200 participants (despite more than 33 programs contributing data) and demonstrated statistically significant reductions in presenting symptomology (Gass et al., 2009). Similarly, Tucker et al. (2011) found that, across five NATSAP member programs participating in the Research Project, adolescents had significant improvements in functioning, as reported by both themselves and their parents.

Contribution to the NATSAP database is still limited, and therefore so is the generalizability and the ability to conduct more detailed analyses. In response to limited participation, NATSAP began offering in 2016 a new membership status known as a Research Designated Program (RDP) to programs that offer outcome data (National Association Therapeutic Schools and Programs, 2016). Programs can achieve this status by either joining the existing NATSAP Outcome Research Project, managed by the University of New Hampshire

and utilizing the Youth Outcome Questionnaire (Y-OQ; Burlingame et al., 1999), or by submitting an application to use alternative tools/methods. Programs are required to demonstrate 70% of enrollment data and 50% of discharge data to maintain the RDP designation. Of the 93 wilderness programs and residential treatment programs, however, only a third have received the RDP designation, according to the NATSAP online membership directory. Less than 15% have reached the "Gold" tier of RDPs, signifying collection of data post-discharge.

Smaller-scale studies investigating treatment outcomes in wilderness therapy have consistently pointed to positive improvement. Bowen and Neill's meta-analysis of adventure therapy programs (2013) found a moderate effect size when comparing wilderness therapy outcomes with alternative treatment or no treatment. However, their definition of adventure therapy includes both residential wilderness therapy programs and shorter-term outdoor education programming, such as ropes courses. The research focused only on wilderness therapy programs, however, has shown similar results. Two studies from the Outdoor Behavior Healthcare Research Cooperative (OBHRC) have demonstrated statistically and clinically significant improvement in both internalizing and externalizing symptomology as measured by the YOQ, with gains maintained over two years after discharge (Russell, 2002; 2003; 2005). Similar results were found in a multi-site program evaluation coordinated by Dr. Sarah Lewis using the Treatment Outcome Package (TOP) questionnaire (Kraus et al., 2005). A longitudinal analysis showed a significant decrease in internalizing and externalizing symptoms, as well as suicidal ideation, social conflict, and sleep disruption (Lewis et al., 2007). Bettmann et al.'s (2012) evaluation of one wilderness therapy program found significant symptom improvement over the course of treatment and maintenance of those improvements six months after graduation

from the program. Together, these studies indicate a trend of both immediate and maintained symptom improvement, as reported by both clients and their parents (Combs et al., 2016)

Treatment Efficacy by Client Profile

Despite growth in research on wilderness therapy in the past decade, a gap still remains regarding what type of client and what clinical issues are best served by this modality (Tucker et al., 2022). Only two studies to date have explored individual characteristics in relation to treatment outcomes in wilderness therapy. Magle-Haberek et al. (2012) found gender and intake functioning as significant predictors of improvements, with female adolescents showing greater improvement than male adolescents and those with greater symptom severity at intake showing greater improvement than those with lower symptom scores at intake. Given the research on participant characteristics previously mentioned, female adolescents tend to have more severe symptoms at intake, and therefore there is likely significant overlap in these comparisons. Gender was found to be a stronger predictor than symptom severity at intake (Magle-Haberek et al., 2012). Similarly, Tucker et al. (2014) found gender to be a significant predictor of treatment outcomes, even without a significant difference between genders regarding severity scores at intake. Using a combined sample of wilderness therapy and residential treatment centers (85% coming from wilderness therapy), all other characteristics, including presenting issues and diagnoses, were not significant predictors of improvement (Tucker et al., 2014).

Therefore, despite the increasing breadth of research on wilderness therapy, evidence is still lacking to explain individual differences in treatment response within genders. While factors such as intelligence, academic ability, presence of learning disabilities, presence of externalizing behaviors, and degree of pathology have all been shown to predict outcomes in the broader

category of residential treatment (Behrens & Satterfield, 2006; Connor et al., 2002; Gorske et al., 2003), the individual variance in wilderness therapy efficacy is not well understood.

Measuring Adolescent Traits and Symptoms

The majority of the existing research on treatment outcomes in wilderness therapy utilizes the Y-OQ (Burlingame et al., 1999). This parent-report measure was created under pressure specifically for a measure to use in treatment evaluation rather than in diagnosis and treatment of psychopathology. The use of this measure has been endorsed by NATSAP and is utilized in their Research Project, and it was designed to have similar psychometric properties (Wells et al., 1996) to the adult-oriented Outcome Questionnaire (OQ; Lambert et al., 1996). However, a construct validity test (Mueller et al., 1998) failed to support the multifactorial structure of the OQ, bringing into question the structure of the Y-OQ. Although the overall composite score may be reliable and valid as a measure of symptom change, the intercorrelations between subscales limit the nuances of symptom improvement that can be reliably measured.

The Minnesota Multiphasic Personality Inventory-Adolescent-Restructured Form (MMPI-A-RF; Archer et al., 2016) is a broadband measure of adolescent psychopathology and personality (Handel, 2016). It was designed as an adolescent counterpart to the MMPI-2-RF (Tellegen & Ben-Porath, 2008) and was created using the scales and development methods of the MMPI-2-RF as models.

Although the original MMPI was widely used with adolescents, there were several limitations to using the MMPI with this younger population, including concerns about item content, a lack of adolescent-specific scales, problems with extreme responding, and inadequate norms. These led to the development and release of the original MMPI-A in 1992. Later revisions of the MMPI and then the MMPI-2 demonstrated significant psychometric

advancements from the methods used to develop the original MMPI and MMPI-A. The MMPI-2-RF represented a substantial revision and modernization of the MMPI-2, with the revision process aiming to create a comprehensive set of scales representing an efficient yet exhaustive assessment of the most clinically relevant variables within the MMPI-2 item pool (Ben-Porath & Tellegen, 2008).

Likewise, Archer et al. (2016) developed the MMPI-A-RF with the goals of developing an adolescent measure of demoralization, identifying the major distinctive components of the Clinical Scales that are separate from demoralization, developing additional substantive scales where appropriate, developing validity scales, and revising the PSY-5 scales. A further consideration was overall test length; MMPI-A-RF's 241 items represent a significant decrease in test length from the original 478-item MMPI-A.

Many of the items included in various MMPI-2-RF scales do not exist in the MMPI-A item pool, and many items in the MMPI-A item pool do not exist in the MMPI-2-RF item pool. Therefore, the MMPI-A-RF scales frequently do not include the exact same items as their corresponding adult versions. However, the shared scale names are indicative of an attempt to maintain a degree of comparability between the MMPI-2-RF and the MMPI-A-RF so that test users could easily transition between the two forms (Handel, 2016).

As a result, the MMPI-A-RF is a comprehensive measure of adolescent traits and symptoms, which is substantially shorter than the MMPI-A and closely replicates the advancements of the MMPI-2-RF. It can be administered on paper or online and can therefore be easily administered in either office settings or as part of paper packets given to clients during a wilderness therapy program. However, given the relatively recent development of the MMPI-A-

RF, its functionality and correlates have not been fully explored in any area of research, including its use with treatment outcome measures.

The purpose of this study was to explore relationships between adolescent psychopathology and personality, as measured by the MMPI-A-RF scales, and individuals' treatment outcomes following participation in a wilderness therapy program. We hypothesized correlational associations would be found between individuals' scores on MMPI-A-RF scales and their treatment response to wilderness therapy programming. While a causal direction cannot be addressed by this analytic design, and causal relationships are likely to be complex, these analyses were a necessary first step to understanding the efficacy of wilderness therapy as a modality for adolescents.

Hypotheses

Given the limited number of existing research studies on individual characteristics affecting treatment outcomes, this project was primarily exploratory. As previously described, there exist a handful of studies demonstrating a gender difference in wilderness therapy treatment outcomes (Magle-Haberek et al., 2012; Tucker et al., 2014). Therefore, this project expected to find a gender difference in treatment efficacy as well.

Two studies have also demonstrated a gender difference in presenting symptomology (Bettman et al., 2014; Hoag et al., 2014). Taking these two trends in tandem, we expected to find a positive correlation between treatment improvement and scores on all somatic and internalizing scales on the MMPI-A-RF. Conflicting research exists related to gender differences in externalizing symptom severity and frequency. While Bettman et al. (2014) found that girls scored higher than boys on MMPI-A scales related to externalizing symptoms, Hoag et al. (2014) found that boys had higher rates of substance-related disorders and behavior-related disorders.

Given the residential nature of wilderness therapy, this project expected to find a positive correlation between treatment improvement and scores on externalizing and interpersonal scales. In summary, this project expected to find positive correlations between all symptom scales on the MMPI-A-RF and treatment efficacy.

CHAPTER TWO: METHODS

Data Collection

Participants were adolescents who enrolled and completed treatment at a wilderness therapy program in the rural Southeast. Adolescents completed the MMPI-A-RF as a component of psychological evaluation prior to or during enrollment in the wilderness therapy program. This psychological battery was administered by clinicians from a local private practice.

Adolescents and their parents also completed additional measures of the therapeutic process, treatment effectiveness, family functioning, and psychopathology, including the Treatment Outcome Package (TOP; Kraus et al., 2005), if they assented to participate in a separate, longitudinal clinical outcomes study (and parents provided informed consent for their participation) governed by the University of Arkansas IRB. A complete list of assessments in the research battery can be found in Appendix A. Adolescents and their parents were administered the research battery at two time points: (1) within ten days of program admittance, and (2) within ten days of program graduation.

These two sources of data were linked using a process approved by the Western Carolina University IRB to protect the information of clinical clients who are not part of a research database. Therefore, the linked database was created from first name, last name, current age (not DOB), and research participant number. Only after the databases were linked and the relevant

participants are identified as a unique participant pool, were assessment scores imported and linked to these participants. Although data collection is ongoing, these data are considered archival for the purpose of this project.

Treatment Model

The wilderness therapy program from which this study's data were collected utilized a therapeutic base camp model, with clients segmented into groups by age, gender, and (when possible) presenting problems. A client group typically consisted of 4-8 clients, one therapist, and a rotation of two field staff. In a base camp model, the group moves between short expeditions (less than a week) and nights at a base camp. This program used two base camp locations, each of which would include camping sites, showers, and space for academic classes, as well as therapist offices and rooms for psychological testing. Days at base camp may include adventure activities like horseback riding or canoeing interspersed with formal therapy sessions, medical appointments, assessments, and academic courses. Compared to nomadic or expedition models in which returns to a base camp are either nonexistent or spread out over weeks or months, a base camp model allows for more formal therapy and academics to occur outside of adventure programming (Tucker et al., 2023). The program in this study offered an academic curriculum that can earn students high school credit in topics like environmental studies and earth science, personal wellness, and literature relevant to rites of passage. In line with the therapeutic base camp model, clients would have regular talk therapy sessions rather than relying solely on adventure therapy activities. Therapists at this program were advertised to use a trauma-informed, family systems approach and conduct individual therapy sessions, family therapy sessions, and therapy groups while clients were at base camp, in addition to virtual parent coaching.

The remaining time is spent on expeditions. On expeditions, a client group is led by (typically) two field staff on multi-day hiking and camping trips. On these trips, clients engage in aspects of "wilderness living," including building shelters and fires. Although formal therapy occurs at base camp, field staff live full-time with client groups often for at least a week at a time, supervising their physical and emotional safety, serving as role models for healthy interpersonal interaction and communication, and running daily process groups. Field staff may also implement basic clinical interventions if issues arise while on an expedition.

Participants

Adolescents were included in this project sample if (1) they assented and their parents consented to be part of the longitudinal research study, and (2) their parents had completed the Parent Report of the TOP at two time points. Participants were excluded listwise if they had completed the MMPI-A-RF AND they violated the validity criteria for the MMPI-A-RF. All other analyses were conducted with case-wise exclusion. Of the seven validity scales on the MMPI-A-RF, four can demarcate invalid protocols (the remaining three may suggest validity problems that should be investigated further). This study excluded any participants whose protocols contained scores that were above the upper limit t-score for validity concerns, as established by the MMPI-A-RF technical manual, on any of these four scales. The resulting sample (n = 202) was 55.4% female (n = 112), had an average length of stay of 87 days (SD = 12.98), and an average age at admission of 15.7 years (SD = 1.27) (Table 1).

Measures

Minnesota Multiphasic Personality Inventory-Adolescent-Restructured Form (MMPI-A-RF)

The MMPI-A-RF (Archer et al. 2016) is a self-report inventory measuring adolescent psychopathology and personality. It consists of 241 true-false questions that produce six Validity Scales, three Higher-Order Scales (H-O), nine Restructured Clinical Scales (RC), twenty-five Specific Problems Scales (SP), and five Personality Psychopathology Scales (PSY-5). The scales on the MMPI-A-RF overlap extensively with those of the MMPI-2-RF. However, the MMPI-A-

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age at Admission	201	12.4	17.9	15.706	1.2737
Length of Stay	192	27	120	87.04	12.986

RF does not include all items from the MMPI-2-RF and instead includes additional adolescent-specific items. The alphas for internal consistency vary markedly from .45 (RC9) to .80 (RCd) for males and .52 (RC9) to .83 (RCd) for females (Archer et al. 2016). Convergent and discriminant validity were established with a wide range of external criteria (Archer et al., 2016).

Treatment Outcome Package (TOP)

Adopted by a large number of mental health providers, the TOP is a behavioral health and treatment outcome measure specifically designed for natural settings (Kraus et al., 2005). Based on years of exploratory and confirmatory factor analytic work, it has been constructed to provide an extensive assessment of clients' difficulties and resources while being short enough to repeatedly administer without adding a burden to the clients and providers. The TOP questions have high face validity, are easy to read (fifth-grade level), and are related to DSM symptoms that are key to an initial interview (e.g., "felt little or no interest in most things"). The TOP has demonstrated construct validity, internal consistency, test-retest reliability, discriminant and

convergent validity, criterion validity, and sensitivity to change. Additionally, no ceiling or floor effects were found for the TOP; therefore, the TOP is able to measure clinical extremes as well as normative behaviors (for an in-depth psychometric review, see Kraus et al., 2005).

CHAPTER THREE: RESULTS

This project is two-fold. First, this project examined treatment efficacy through a comparison of pre-treatment and post-treatment T-scores on each of the 11 TOP symptom scales. Paired t-tests were used to compare the T1 and T2 scores on each of the 11 symptom scales. Additionally, ANCOVAs were conducted to compare the pre-and post-treatment scores across each domain by gender.

No significant differences were found between genders in terms of age at admission to treatment or in length of stay. Significant differences ($p < .01$) were found in pre-treatment scores between genders in the domains of depression, psychosis, substance abuse, social conflict, and suicidality. Pre-treatment, girls on average had higher symptomology than boys regarding depression [$t(200) = -4.59$, $p < .001$], psychosis [$t(200) = -4.55$, $p < .001$], social conflict [$t(200) = -2.75$, $p = .006$], and suicidality [$t(200) = -4.87$, $p < .001$]. Boys had higher levels of substance use than girls [$t(200) = 4.50$, $p < .001$]. Mean scores by gender pre-treatment can be found in Table 2.

Treatment Efficacy

The efficacy of wilderness therapy was evaluated through two-sided paired t-tests comparing pre-treatment and post-treatment scores across 11 symptom domains: ADHD, Conduct, Depression, Manic, Psychosis, Substance Abuse, Social Conflict, Sleep Problems, Suicidality, Violence, and Work/School Functioning (Table 3). Results suggested that pre-treatment levels of conduct problems ($M = 1.85$, $SD = 3.60$) were significantly [$t(201) = -6.66$, $p < .001$] lower at the post-treatment assessment ($M = 0.10$, $SD = 1.86$). Similarly, levels of depressive symptoms were significantly [$t(201) = -18.43$, $p < .001$] lower at the post-treatment

assessment (M = 0.15, SD = 1.09) compared to the pre-treatment assessment (M = 1.93, SD = 1.22). Manic symptoms at pre-treatment (M = -0.25, SD = 0.85) were significantly [t (201) = -5.07, p < .001] lower at the post-treatment assessment (M = -0.61, SD = 0.63), and symptoms of psychosis showed a similar significant difference [t (201) = -7.47, p < .001] between pre-treatment (M = 0.39, SD = 1.30) and post-treatment (M = -0.29, SD = 0.62). Results suggested that pre-treatment levels of substance use (M = 3.44, SD = 5.28) were significantly [t (200) = -7.99, p < .001] lowered at the post-treatment assessment (M = 0.26, SD = 3.39). Social conflict at post-treatment (M = 0.47, SD = 2.87) was significantly [t (201) = -7.66, p < .001] lower than at the pre-treatment assessment (M = 2.08, SD = 1.38). Similarly, levels of sleep problems were significantly [t (201) = -8.29, p < .001] lower at the post-treatment assessment (M = -0.21, SD = 0.93) compared to the pre-treatment assessment (M = 0.64, SD = 1.33). Suicidality at pre-

Table 2. Test for Equality of Means by Gender

	Male (*n* = 90)		Female (*n* = 112)				
	M	*SD*	*M*	*SD*	*t*	*df*	*p**
Age at Admission	15.81	1.19	15.62	1.34	1.05	199	.291
Length of Stay	86.05	13.93	87.88	12.12	-0.98	190	.329
T1 Symptoms							
ADHD	2.29	1.02	1.89	1.17	2.51	200	.013
Conduct	2.52	4.29	1.31	2.84	2.40	200	.018
Depression	1.52	1.16	2.27	1.16	-4.59	200	<.001
Manic	-0.28	0.93	-0.23	0.79	-0.43	200	.671
Psychosis	-0.06	.87	0.74	1.47	-4.55	200	<.001
Substance Abuse	4.86	5.83	2.27	4.50	3.56	200	<.001
Social Conflict	1.78	1.30	2.31	1.40	-2.75	200	.006
Sleep	0.40	1.23	0.84	1.38	-2.36	200	.019
Suicidality	1.94	2.94	4.22	3.58	-4.87	200	<.001
Violence	1.08	2.32	1.10	2.33	-0.07	200	.942
School/Work Functioning	1.57	1.28	1.39	1.36	0.98	200	.326

*Significance (*p*) is provided for a two-sided *t*

treatment (M = 3.20, SD = 3.49) was significantly [t (201) = -11.68, p < .001] lower at the post-treatment assessment (M = 0.44, SD = 1.68), and violent behaviors showed a similar significant difference [t (201) = -7.14, p < .001] between pre-treatment (M = 1.09, SD = 2.32) and post-treatment (M = -0.33, SD = 1.00). The ADHD symptom domain was the only domain to show no significant difference [t(201) = -1.81, p = 0.07] between pre-treatment (M = 2.07, SD = 1.12) and post-treatment (M = 1.22, SD = 6.45), but the direction of the change suggests symptom improvement.

Table 3. Symptom Change During Treatment

	Paired Differences						
	95% Confidence Interval of the Difference						
Symptom Domain*	Mean	*SD*	Lower	Upper	*t*	*df*	*p*
ADHD	-.850	6.660	-1.774	.074	-1.814	201	.071
Conduct	-1.749	3.733	-2.267	-1.232	-6.661	201	<.001
Depression	-1.783	1.375	-1.973	-1.592	-18.428	201	<.001
Manic	-.361	1.012	-.501	-.220	-5.068	201	<.001
Psychosis	-.678	1.291	-.857	-.499	-7.471	201	<.001
Substance Abuse	-3.183	5.646	-3.969	-2.398	-7.993	200	<.001
Social Conflict	-1.610	2.988	-2.025	-1.195	-7.657	201	<.001
Sleep	-.850	1.458	-1.052	-.648	-8.289	201	<.001
Suicidality	-2.769	3.369	-3.236	-2.301	-11.682	201	<.001
Violence	-1.191	2.372	-1.520	-.862	-7.137	201	<.001
School/Work Functioning	-1.804	1.584	-2.024	-1.584	-16.183	201	<.001

* T-tests calculated as T2 – T1

Impact of Gender on Treatment Efficacy

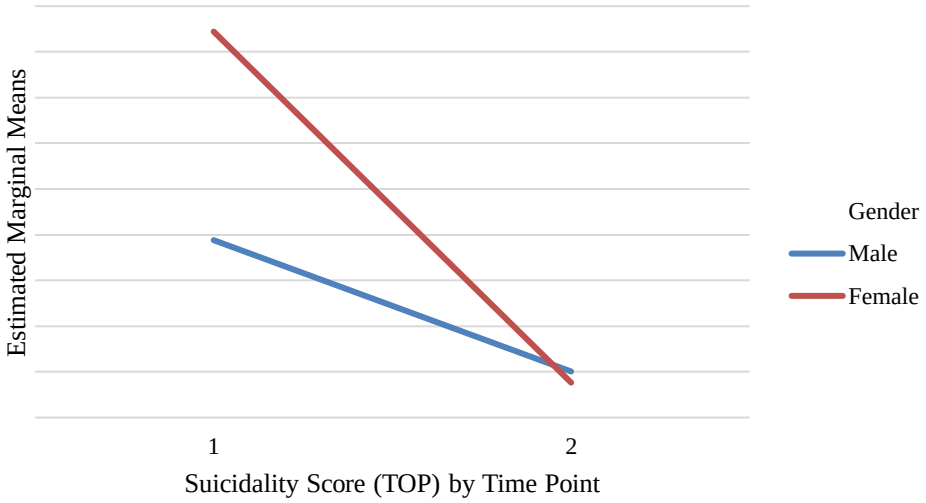
A mixed factorial ANOVA was conducted to compare pre- and post-treatment changes in each symptom domain by gender. These analyses revealed significant gender differences in treatment outcomes across four domains: depression, psychosis, substance abuse, and suicidality.

However, when a one-way ANCOVA analysis was used to control for pre-treatment scores, only suicidality had a significant gender difference. A *post-hoc* comparison of the pre-treatment and post-treatment (Figure 1) scores revealed that girls showed a significantly greater ($F(1, 199) = 4.81$, $p = .030$ decrease in suicidality [$t(111) = -11.04$, $p < .001$] compared to the decrease in boys' symptoms [$t(89) = -5.81$, $p < .001$].

Clinical Utility

Second, this project examined correlations between MMPI-A-RF scales and symptom change scores. T-scores from the 42 symptom scales on the MMPI-A-RF were used in the analysis. Validity scales were used to identify invalid protocols in line with the MMPI-A-RF technical manual cut-off points, and participants with invalid MMPI-A-RF (n = 1) protocols were excluded from the analysis. Because the sample population is in clinical treatment, scores on substantive scales and subscales were not designated as outliers. Participants who were administered the MMPI-A-RF and whose parents completed the TOP at T1 and T2 were

Figure 1. Change in Suicidality by Gender



included in this analysis. The resulting sample (n = 47) was 62.2% female with an average age at treatment admission of 15.5 years (SD = 1.08) and an average length of stay of 87 days (SD = 12.37).

T-scores on each of the 11 TOP symptom scales from two time points were combined into a single change score per scale. These change scores were calculated as T2-T1; thus, a negative change score indicates symptom improvement from T1 to T2. Correlations were analyzed in terms of Pearson's *r*. The relatively large number of bivariate correlations produced from 42 MMPI-A-RF scales and 11 TOP scales create a substantial chance of a Type I error. To reduce that risk, a threshold was set for interpretation at a medium effect size of .30 (Cohen, 1988). Correlations that met the interpretation threshold can be found in Table 4.

Symptom Improvement

Improvements in five symptom domains were correlated with scores on various MMPI-A-RF scales, as indicated by negative correlations. First, improvement in the domain of conduct problems was correlated with scores on Behavioral/Externalizing Problems (BXD), $r(47) = -.32$, $p = .031$. Second, in the domain of psychotic symptoms, improvement was correlated with scores on the Obsessions/Compulsions (OCS) scale, $r(47) = -.41$, $p = .004$. Third, in the domain of substance abuse, improvement was correlated with scores on Antisocial Attitudes (RC4), $r(47) = -.32$, $p = .030$, and Disconstraint-Revised (DISCr), $r(47) = -.32$, $p = .031$. Fourth, improvement in sleep was correlated with OCS, $r(47) = -.33$, $p = .023$, Anger Proneness (ANP), $r(47) = -.45$, $p = .002$, Substance Abuse (SUB), $r(47) = -.39$, $p = .007$, and Aggressiveness-Revised (AGGRr), $r(47) = -.38$, $p = .009$.

Lastly, and perhaps most dramatically, improvements in suicidality were correlated with nine MMPI-A-RF scales. Suicidality improvement was correlated with the broad scale of

Table 4. Correlations between MMPI-A-RF scales and Symptom Change

MMPI-A-RF	TOP Domain								
	ADHD	Conduct	Depression	Manic	Psychosis	Substance Abuse	Social Conflict	Sleep	Suicidality
EID	.231	.282	-.094	.207	-.009	.248	-.051	-.028	-.427*
BXD	-.257	-.315*	.098	-.181	-.080	-.183	-.206	-.258	.150
RC4	-.172	-.200	.112	-.065	-.015	-.317*	-.167	-.215	.114
RC7	.128	.198	-.081	.221	-.030	.271	.000	.138	-.322*
RC8	-.179	.055	-.177	.219	-.268	-.221	-.143	-.243	-.350*
MLS	.085	.301*	-.097	.358*	.041	-.109	-.037	.041	-.385*
NUC	.302*	.239	.101	.145	.043	.149	.105	.042	-.257
COG	.366*	.309*	.215	.193	.028	.247	.087	.053	-.207
SFD	.127	.204	-.144	-.034	-.018	.200	-.168	.100	-.400*
NFC	.403*	.186	.031	.109	.028	.455*	.192	-.120	-.263
OCS	-.026	-.055	-.088	.267	-.414*	.027	.007	-.332*	-.330*
STW	.181	.101	-.045	.243	-.076	.118	.067	.147	-.319*
AXY	-.017	.050	-.139	.227	-.291*	.119	.017	-.091	-.392*
ANP	-.290*	-.148	.071	.147	-.059	-.078	-.086	-.450*	.111
SUB	-.184	-.166	.023	-.088	-.040	-.253	-.152	-.389*	.080
IPP	.349*	.315*	.138	.243	.183	.080	.136	.083	-.143
SAV	.256	.169	-.011	.112	.059	.224	.287	.164	-.250
SHY	.292*	.271	.087	.209	.145	.241	.170	.154	-.176
AGGR	-.262	-.121	.102	.155	.026	-.084	-.069	-.378*	.059
DISCr	-.178	-.286	.181	-.102	.031	-.315*	-.180	-.288*	.178
NEGEr	.160	.185	-.040	.284	-.067	.209	.074	.047	-.338*

* Correlation was interpreted due to at least a medium (.30) effect size

Emotional/Internalizing Problems (EID), $r(47) = -.33$, $p = .025$, as well as the narrow scale Self-Doubt (SFD), $r(47) = -.40$, $p = .005$, which falls under the mid-level domain of demoralization. Suicidality improvements were also correlated with the mid-level scale of Dysfunctional Negative Emotions (RC7), $r(47) = -.32$, $p = .027$, as well as multiple narrow scales under RC7: Obsessions/Compulsions (OCS), $r(47) = -.33$, $p = .024$, Stress/Worry (STW), $r(47) = -.32$, $p = .029$, Anxiety (AXY), $r(47) = -.39$, $p = .006$, and Negative Emotionality/Neuroticism-Revised

(NEGEr), $r(47) = -.34$, $p = .020$. Additionally, suicidality improvements were correlated with scores on Malaise (MLS) $r(47) = -.39$, $p = .007$, which falls under the Somatic/Cognitive domain, and scores on Aberrant Experiences (RC8), $r(47) = -.35$, $p = .016$, which is a mid-level scale of thought dysfunction.

Symptom Exacerbation

In contrast, scores on five MMPI A-RF scales were correlated with worsening symptoms in four domains, as indicated by positive correlations. Malaise (MLS) was associated with worsening conduct problems, $r(47) = -.30$, $p = .040$, and manic symptoms, $r(47) = -.36$, $p = .014$. Neurological Complaints (NUC) were associated with increased ADHD symptoms, $r(47) = -.30$, $p = .039$. Scores on Cognitive Complaints (COG) were correlated with worsening ADHD symptoms as well, $r(47) = -.37$, $p = .011$, along with worse conduct symptoms, $r(47) = -.31$, $p = .035$. Inefficacy (NFC) scores were correlated with increased ADHD symptoms $r(47) = -.40$, $p = .005$, and substance abuse, $r(47) = -.455$, $p = .001$. Finally, Interpersonal Passivity (IPP) was correlated with worsened ADHD symptoms, $r(47) = -.35$, $p = .016$, and conduct problems, $r(47) = -.32$, $p = .031$.

Clinical Elevations

Using these significant correlations as guidance, a *post-hoc* exploratory analysis was conducted using two-sided t-tests to examine symptom change for those with MMPI-A-RF scale scores above or below clinical cut-offs designated by the MMPI-A-RF manual (Archer et al., 2016). An interpretation cutoff of p £ .01 was used. The results of these comparisons can be found in Table 5. Participants with elevated scores on COG and NFC showed significant ($p < .001$) declines in ADHD symptomology over the course of treatment [$t(28) = -7.29$; $t(16) = -4.04$]. Participants with elevated scores on OCS and STW had significant reductions in

symptoms of psychosis [t (12) = -3.26 p = .007; t (23) = -3.93, p < .001]. Participants with elevated scores on RC4 saw significant decreases in substance abuse symptomology [t (14) = -3.17, p = .007]. Finally, reductions in suicidality were observed for participants with elevated scores on EID [t (24) = -6.83, p < .001], RC7 [t (11) = -5.66, p <.001], MLS [t (17) = -5.79, p <.001], SFD [t (26) = -6.32, p <.001], OCS [t (12) = -4.32, p = .001], STW [t (23) = -6.91, p <.001], AXY [t (10) = -5.42, p <.001], and NEGE [t (26) = -6.79, p <.001].

Table 5. Symptom Change by Clinical Elevations

		Paired Differences						
		95% Confidence Interval of the Difference						
TOP	MMPI	Mean	*SD*	Lower	Upper	*t*	*df*	*p*
ADHD	NUC							
	High > 60	-0.92	1.14	-1.74	-0.12	-2.55	9	.031
	COG							
	High > 60	-1.40	1.03	-1.79	-1.00	-7.29	28	<.001
	NFC							
	High > 60	-1.01	1.03	-1.54	-0.48	-4.04	16	<.001
	IPP							
	High > 60	-0.73	0.99	-1.78	0.31	-1.81	5	.130
Conduct	BXD							
	High > 60	-2.58	4.62	-5.52	0.36	-1.93	11	.079
	Low < 40	-0.82	1.81	-2.21	0.57	-1.36	8	.212
	MLS							
	High > 60	-0.35	1.78	-1.23	0.53	-0.83	17	.421
	Low < 40	-1.43	1.44	-3.21	0.36	-2.22	4	.090
	COG							
	High > 60	-0.98	2.63	-1.98	0.02	-2.02	28	.053
	IPP							
	High > 60	-0.14	2.31	-2.56	2.29	-.143	5	.892
Manic	MLS							
	High > 60	-0.12	0.65	-0.43	0.21	-0.71	17	.485
	Low < 40	-1.50	1.39	-3.22	0.22	-2.42	4	.073
Psychosis	OCS							
	High > 60	-1.72	1.91	-2.87	-0.57	-3.26	12	.007

	Low < 40	-0.78	0.95	-1.38	-0.18	-2.85	11	.016
	STW							
	High > 60	-1.02	1.27	-1.55	-0.48	-3.93	23	<.001
	Low < 40	-0.94	0.93	-3.24	1.36	-1.75	2	.222
Substance	RC4							
Abuse	High > 60	-4.24	5.17	-7.10	-1.37	-3.17	14	.007
	Low < 40	-2.29	4.89	-7.42	2.84	-1.15	5	.304
	NFC							
	High > 60	-0.91	2.25	-2.06	0.25	-1.66	16	.116
	DISCr							
	High > 60	-4.84	5.16	-8.31	-1.38	-3.11	10	.011
	Low < 40	-1.37	3.83	-4.11	1.37	-1.13	9	.286
Sleep	OCS							
	High > 60	-1.59	1.90	-2.74	-0.45	-3.03	12	.011
	Low < 40	0.20	1.40	-0.69	1.09	0.50	11	.631
	ANP							
	High > 60	-1.32	2.34	-2.81	0.16	-1.96	11	.075
	Low < 40	-0.47	1.51	-1.73	0.79	-0.88	7	.409
	SUB							
	High > 60	-1.31	2.05	-2.40	-0.21	-2.54	15	.022
	AGGR							
	High > 60	-0.86	2.20	-2.43	0.71	-1.24	9	.248
	Low < 40	-0.37	1.04	-1.02	0.29	-1.22	11	.247
Suicidality	EID							
	High > 60	-4.66	3.41	-6.07	-3.25	-6.83	24	<.001
	Low < 40	-1.93	1.92	-3.94	.083	-2.47	5	.057
	RC7							
	High > 60	-4.58	2.80	-6.36	-2.80	-5.66	11	<.001
	Low < 40	-1.70	1.88	-3.44	0.04	-2.40	6	.054
	RC8							
	High > 60	-3.46	2.44	-6.01	-0.90	-3.48	5	.018
	MLS							
	High > 60	-4.83	3.54	-6.60	-3.07	-5.79	17	<.001
	Low < 40	-1.08	0.99	-2.31	0.15	-2.43	4	.072
	SFD							
	High > 60	-4.35	3.58	-5.77	-2.94	-6.32	26	<.001
	Low < 40	-1.59	1.98	-3.67	0.49	-1.97	5	.106
	OCS							
	High ³ 60	-4.57	3.82	-6.88	-2.27	-4.32	12	.001
	Low < 40	-1.37	1.61	-2.40	-0.35	-2.95	11	.013

STW							
High > 60	-4.38	3.12	-5.69	-3.07	-6.91	23	<.001
Low < 40	-2.50	2.70	-9.20	4.21	-1.60	2	.250
AXY							
High > 60	-5.14	4.15	-7.25	-3.03	-5.42	10	<.001
NEGEr							
High > 60	-4.60	3.52	-5.99	-3.21	-6.79	26	<.001

CHAPTER FOUR: DISCUSSION

The aim of this study was to answer two questions related to wilderness therapy: does it work, and if so, for whom? To answer these questions, multiple analyses examined the change during treatment in various parent-reported symptom domains, as well as the relationship between those changes and adolescent self-reported traits and symptoms on the MMPI-A-RF.

As predicted, symptoms improved through treatment in all symptom domains, with all but one domain reaching statistical significance. Parents reported that their children saw significant improvements in behavioral functioning (Conduct, Substance Abuse, Violence), cognitive and emotional distress (Depression, Suicidality, Manic, Psychosis), biological needs (Sleep), and adaptive skills (Social Conflict, School/Work Functioning). These results are consistent with prior research (Bettmann et al., 2012; Kraus et al., 2005; Lewis et al., 2007; Russell, 2002; 2003; 2005) and point toward wilderness therapy programs being an effective treatment for a wide variety of symptoms. Also consistent with prior research, girls entered the program with symptoms at higher severity levels than boys did, leaving more room for improvement. However, girls showed greater improvement than boys in suicidality even when controlling for admission severity. This is consistent with existing research demonstrating that women and girls tend to be more responsive to suicide-related interventions across contexts (Hamilton & Klimes-Dougan, 2015).

Regarding clinical utility, correlational analyses found a mixed picture of symptom improvement and exacerbation across varying presenting concerns. On the surface, these mixed results suggest that clinicians should be careful when evaluating the appropriateness of wilderness therapy for individual clients, as certain presenting symptoms may indicate that a

client will experience worsening symptoms through this treatment modality. For example, these analyses suggest that adolescents with elevated senses of inefficacy may end treatment with worsened substance use and symptoms of ADHD. One possible explanation is that individuals prone to feelings of inefficacy are negatively affected by their potentially unwilling admission to treatment; however, this hypothesis is untested and runs contrary to previous research suggesting that even involuntary transport to treatment does not have a negative impact on treatment effectiveness (Tucker et al., 2015).

Post-hoc analyses suggest a more nuanced interpretation is necessary. One possible mechanism of change is that the elevations reported by adolescents at admission on the MMPI-A-RF are aspects of or contributing factors to the domains assessed by their parents for treatment efficacy, with higher MMPI-A-RF scale scores at the beginning of treatment simply leaving more room for improvement. For example, substance use can be considered a facet of antisocial behavior, and so an adolescent's elevation on Antisocial Behavior (RC4) leaves more room for their parent to report improvement in substance use. Similarly, cognitive problems could be considered a facet of ADHD, such that initially elevated cognitive problems allow room for improvement of ADHD symptoms.

Similarly, another possible mechanism of change is an issue of parental classification. Parents naturally have more access to their child's behaviors than their child's thoughts, and strong correlations between the adolescent's self-report and the parent's report of symptom decrease may reflect a difference in attribution rather than necessarily a facet or factor relationship. For example, an adolescent may report initial symptoms of malaise, self-doubt, and anxiety, while their parent only reports the resulting suicidal behaviors. In this example, the

initial elevations are not necessarily facets of suicidality; rather, suicidality is a behavioral manifestation that a parent notices.

One final possible change mechanism, meriting further research, is an issue of parental reattribution. It is possible that over the course of their child's treatment, parents may gain an understanding of their child's symptoms that changes how they classify and report their child's behaviors. For example, a parent may have attributed their child's odd behaviors to psychosis. However, through the course of the child's treatment, suppose that the parent comes to learn that the child experiences significant obsessions and compulsions, which would elevate OCS on the MMPI-A-RF. Even if the child's experience of those symptoms does not change, the parent's understanding of these symptoms results in a reported decrease over time of psychotic symptoms. This mechanism of change would be particularly relevant to treatment planning within the family therapy component of wilderness therapy, as psychoeducation may lead to parents reattributing behavioral problems to the internalizing cause.

Clinical Applications

The field of wilderness therapy is encountering a reckoning in the public eye. The sheer number of complaints from former participants discredits attempts by those in the field to blame "bad apples," unregulated programs, or under-trained staff. However, attempts to claim that wilderness therapy is inherently harmful and unsuccessful do not account for the small (but consistent) research body pointing toward treatment efficacy. How can we reconcile two conflicting trends? This study suggests that wilderness therapy, like most behavioral health and medical treatments, is effective for certain people but is not effective for others. This research is a first step to identifying adolescents for whom wilderness therapy will or will not be effective before they embark on a long, risky (from exposure to the outdoors), and expensive treatment.

For clinicians, this study identifies the beginning of a method to guide clinical recommendations and treatment planning. Mental health professionals who conduct or receive psychological evaluations (such as psychologists, therapists, social workers, etc.) can identify clinical profiles in a commonly used and easily administered assessment tool (the MMPI-A-RF). Future research should explore additional measures that appear in assessment batteries such as cognitive/intelligence measures or tests of oral language.

Wilderness programs will also benefit from this line of research. Although most programs have inclusion/exclusion criteria for admission, such criteria did not originate from data. Instead, admissions criteria are based on tradition and clinical judgment. Even program administrators with clinical backgrounds and active research projects in this field do not have research-backed reasons for who they admit to their programs (Hoag & Grater, 2022). A shift toward data-backed admissions would allow wilderness therapy programs to increase their effectiveness and avoid accepting students with needs above their staff's training, while also reducing the impression of profiteering.

Limitations and Future Research

This study had some notable limitations that can guide future research. First, a power analysis using the G*Power computer program (Faul & Erdfelder, 1998) indicated that a total sample of 67 people would be needed to detect medium effects (d=.30) with 80% power using a significance level of .05, while a sample size of 153 would be needed to detect small effects (d=.20). Due to the exploratory nature of this study, medium effect sizes were interpreted, but the study was underpowered. Future studies should seek to gather larger samples of participants.

Due to the extremely limited availability of adolescent self-report data over the course of treatment, this study relied solely on parent reports of symptom change over time. Future

research should explore the potential areas of alignment and discrepancies between adolescent self-reports and parent reports of symptoms and symptom change, as well as investigate adolescents' perceptions of their symptom changes during treatment.

Additionally, this study was subject to inherent limitations of pre/post designs including a lack of passive or active control. The change over time could be attributed to effects of maturation, history, or placebo (Bell, 2010).

Finally, the MMPI-A-RF is only one measure and, although generally considered a broad measure, lacks constructs such as intelligence that have been shown to predict treatment response in other settings (Bowen & Neill, 2013). As noted previously, both admission teams at wilderness therapy programs and referring clinicians would benefit greatly from research incorporating additional measures to predict treatment response.

Conclusion

Despite the drawbacks listed above, this study suggests that adolescents in wilderness therapy see symptom improvement across multiple symptom domains and that the MMPI-A-RF can serve as a useful tool in evaluating the potential utility of wilderness therapy for individual client profiles. Future research should continue to examine how the nuances of clinical profiles may predict success in this treatment modality. Answering questions about clinical utility are critical in furthering the goals of individualized treatment planning and improved clinical efficacy.

REFERENCES

Archer, R. P., Handel, R. W., Ben-Porath, Y. S., & Tellegen, A. (2016). *MMPI-A-RF: Minnesota multiphasic personality inventory-adolescent-restructured form: Administration, scoring, interpretation, and technical manual*. University of Minnesota Press.

Behrens, E., Jensen, S. V., Downing, T., Wright, H., Brownstein, C. M., & Smith, S. (n.d.). *A publication of the National Association of Therapeutic Schools and Programs*. 135.

Behrens, E., Santa, J., & Gass, M. (2010). The evidence base for private therapeutic schools, residential programs, and wilderness therapy programs. *Journal of Therapeutic Schools and Programs*, *4*(1), 106–117.

Behrens, E., & Satterfield, K. (2006). Report of findings from a multi-center study of youth outcomes in private residential treatment. *Proceedings of the Annual Convention of the American Psychological Association*, 1–21.

Bell, B. (2010). In Salkind N. J. (Ed.), *Pretest-posttest design*. SAGE Publications, Inc. https://doi.org/10.4135/9781412961288.n331

Bettmann, J. E., Freeman, P. C., & Parry, K. J. (2015). Differences between adopted and nonadopted adolescents in wilderness and residential treatment. *Journal of Experiential Education, 38*(3), 245–261. https://doi.org/10.1177/1053825915569056

Bettmann, J. E., Gillis, H. L., Speelman, E. A., Parry, K. J., & Case, J. M. (2016). A meta-analysis of wilderness therapy outcomes for private pay clients. *Journal of Child and Family Studies*, *25*(9), 2659–2673. https://doi.org/10.1007/s10826-016-0439-0

Bettmann, J. E., Tucker, A., Behrens, E., & Vanderloo, M. (2017). Changes in late adolescents and young adults' attachment, separation, and mental health during wilderness therapy.

Journal of Child and Family Studies, *26*(2), 511–522. https://doi.org/10.1007/s10826-016-0577-4

Bettmann, J. E., & Tucker, A. R. (2011). Shifts in attachment relationships: A study of adolescents in wilderness treatment. *Child & Youth Care Forum*, *40*(6), 499–519. https://doi.org/10.1007/s10566-011-9146-6

Bettmann, J. E., Tucker, A. R., Tracy, J., & Parry, K. J. (2014). An exploration of gender, client history, and functioning in wilderness therapy participants. *Residential Treatment for Children & Youth*, *31*(3), 155–170. https://doi.org/10.1080/0886571X.2014.943554

Bettmann, JoannaE., Lundahl, BradW., Wright, R., Jasperson, RachaelA., & McRoberts, ChrisH. (2011). Who are they? A descriptive study of adolescents in wilderness and residential programs. *Residential Treatment for Children & Youth*, *28*(3), 192–210. https://doi.org/10.1080/0886571X.2011.596735

Boswell, J. F., Kraus, D. R., Castonguay, L. G., & Youn, S. J. (2015). Treatment Outcome Package: Measuring and facilitating multidimensional change. *Psychotherapy (Chicago, Ill.)*, *52*(4), 422–431. https://doi.org/10.1037/pst0000028

Bowen, D. J., & Neill, J. T. (2013). A meta-analysis of adventure therapy outcomes and moderators. *The Open Psychology Journal*, *6*(1). https://doi.org/10.2174/1874350120130802001

Combs, K. M., Hoag, M. J., Roberts, S. D., & Javorski, S. (2016). A multilevel model to examine adolescent outcomes in outdoor behavioral healthcare: The parent perspective. *Child & Youth Care Forum*, *45*(3), 353–365. https://doi.org/10.1007/s10566-015-9331-0

Fernee, C. R., Gabrielsen, L. E., Andersen, A. J. W., & Mesel, T. (2017). Unpacking the black box of wilderness therapy: A realist synthesis. *Qualitative Health Research, 27*(1), 114–129. https://doi.org/10.1177/1049732316655776

Fernee, C. R., Mesel, T., Andersen, A. J. W., & Gabrielsen, L. E. (2019). Therapy the natural way: A realist exploration of the wilderness therapy treatment process in adolescent mental health care in Norway. *Qualitative Health Research, 29*(9), 1358–1377. https://doi.org/10.1177/1049732318816301

Gass, M. A., Hallows, G., Gillis, H. L. "Lee," & Russell, K. C. (2020). *Adventure Therapy: Theory, Research, and Practice* (2nd ed.). Routledge. https://doi.org/10.4324/9781003016618

Gass, M., Zelov, R., & Young, M. (2009). *The 2009 annual report of the NATSAP research database*.

Gibbons, K. (2023, June 8). I Was a Wilderness Therapy Success Story. Then my PTSD Surfaced. *Undark Magazine*. https://undark.org/2023/06/08/opinion-i-was-a-wilderness-therapy-success-story-then-my-ptsd-surfaced/

Hamilton, E., & Klimes-Dougan, B. (2015). Gender Differences in Suicide Prevention Responses: Implications for Adolescents Based on an Illustrative Review of the Literature. *International Journal of Environmental Research and Public Health, 12*(3), Article 3. https://doi.org/10.3390/ijerph120302359

Handel, R. W. (2016). An introduction to the Minnesota Multiphasic Personality Inventory-Adolescent-Restructured Form (MMPI-A-RF). *Journal of Clinical Psychology in Medical Settings*, *23*(4), 361–373. https://doi.org/10.1007/s10880-016-9475-6

Handwerk, M. L., Clopton, K., Huefner, J. C., Smith, G. L., Hoff, K. E., & Lucas, C. P. (2006). Gender differences in adolescents in residential treatment. *American Journal of Orthopsychiatry*, *76*(3), 312–324. https://doi.org/10.1037/0002-9432.76.3.312

Hoag, M., Combs, K., Roberts, S., & Logan, P. (2016). Pushing beyond outcome: What else changes in wilderness therapy? *Journal of Therapeutic Schools and Programs*, *1*, 41–50. https://doi.org/10.19157/JTSP.issue.08.01.06

Hoag, M. J., Massey, K. E., & Roberts, S. D. (2014). Dissecting the wilderness therapy client: Examining clinical trends, findings, and patterns. *Journal of Experiential Education*, *37*(4), 382–396. https://doi.org/10.1177/1053825914540837

Hoag, M., Massey, K., Roberts, S., & Logan, P. (2013). Efficacy of wilderness therapy for young adults: A first look. *Residential Treatment For Children & Youth*, *30*, 294–305. https://doi.org/10.1080/0886571X.2013.852452

Holtberg, T., Olson, S., & Brown-Rice, K. (2016). Adolescent gender differences in residential versus outpatient mental health treatment: A meta-analysis. *Journal of Mental Health Counseling*, *38*, 217–232. https://doi.org/10.17744/mehc.38.3.03

Johnson, E. G., Davis, E. B., Johnson, J., Pressley, J. D., Sawyer, S., & Spinazzola, J. (2020). The effectiveness of trauma-informed wilderness therapy with adolescents: A pilot study. *Psychological Trauma: Theory, Research, Practice, and Policy*. https://doi.org/10.1037/tra0000595

Klas, S. (2024). *A Field in Need of Reform: An Exploration and Critical Analysis of Outdoor Behavioral Healthcare* [Widener University]. https://www.proquest.com/openview/b961312ab522432633d9a8ee1caeeb23/1?pq-origsite=gscholar&cbl=18750&diss=y

Kraus, D. R., Seligman, D. A., & Jordan, J. R. (2005). Validation of a behavioral health treatment outcome and assessment tool designed for naturalistic settings: The Treatment Outcome Package. *Journal of Clinical Psychology*, *61*(3), 285–314. https://doi.org/10.1002/jclp.20084

Lambert, M. J., Burlingame, G. M., Umphress, V., Hansen, N. B., Vermeersch, D. A., Clouse, G. C., & Yanchar, S. C. (1996). The reliability and validity of the outcome questionnaire. *Clinical Psychology & Psychotherapy*, *3*(4), 249–258. https://doi.org/10.1002/(SICI)1099-0879(199612)3:4<249::AID-CPP106>3.0.CO;2-S

Larson, C. (2024, February 23). Wilderness Therapy Industry's Decline Accelerated by Embark Behavioral Health's Exit. *Behavioral Health Business*. https://bhbusiness.com/2024/02/23/wilderness-therapy-industrys-decline-accelerated-by-embark-behavioral-healths-exit/

Leffler, J. M., & Frazier, E. A. (Eds.). (2022). *Handbook of evidence-based day treatment programs for children and adolescents* (1st ed. 2022 edition). Springer.

Lewis, S. F. (2013). Examining changes in substance use and conduct problems among treatment-seeking adolescents. *Child and Adolescent Mental Health*, *18*(1), 33–38. https://doi.org/10.1111/j.1475-3588.2012.00657.x

Lewis, S., Rogers, S., Dixon, L., Barreto, C., Leen-Feldner, E., & Daniels, S. (2007). Treatment-resistant adolescents: Outcome data from a promising therapeutic intervention. *54th Annual Convention of the Southeastern Psychological Association, Charlotte, NC*.

Magle-Haberek, N., Tucker, A., & Gass, M. (2012). The effects of program differences with wilderness therapy and residential treatment center (RTC) programs. *Residential Treatment for Children & Youth*, *29*. https://doi.org/10.1080/0886571X.2012.697433

Moniuszko, S. (2022, December 8). Wilderness therapy was supposed to help these 'troubled teens.' It traumatized them instead. *USA Today*. https://tangent.usatoday.com/in-depth/life/health-wellness/2022/12/08/wilderness-therapy-troubled-teen-industry/9890694002/

Mueller, R. M., Lambert, M. J., & Burlingame, G. M. (1998). Construct validity of the Outcome Questionnaire: A confirmatory factor analysis. *Journal of Personality Assessment, 70*(2), 248–262. https://doi.org/10.1207/s15327752jpa7002_5

Myers, S. (2023, August 7). Survivors of wilderness therapy camps describe trauma, efforts to end abuses. *Arkansas Advocate*. https://arkansasadvocate.com/2023/08/07/dark-forest-a-look-inside-controversial-wilderness-therapy-camps/

National Association of Therapeutic Schools and Programs PRN Report 2021 (Program Research Network Annual Reports). (2021). National Association of Therapeutic Schools and Programs. https://cdn.ymaws.com/natsap.org/resource/resmgr/research/prn_2021/prnreport2021.pdf

National Association of Therapeutic Schools and Programs. (2024). *NATSAP Response to "The Program" Documentary on Netflix* [Press Release]. https://members.natsap.org/natsappolicydigest/Details/press-release-natsap-response-to-the-program-documentary-on-netflix-218506

National Association Therapeutic Schools and Programs. (n.d.). *NATSAP Membership Directory*. National Association Therapeutic Schools and Programs. Retrieved January 6, 2023, from https://natsap.org/search/custom.asp?id=6395

Nguyen. (2024, April 15). Paris Hilton backs California bill to bring more transparency to youth treatment facilities. *AP News*. https://apnews.com/article/paris-hilton-youth-facilities-regulation-california-b3fa67c952c686f7dafe3dddf83c114f

Norton, C. L., Tucker, A., Russell, K. C., Bettmann, J. E., Gass, M. A., Gillis, H. L. "Lee," & Behrens, E. (2014). Adventure Therapy With Youth. *Journal of Experiential Education*, *37*(1), 46–59. https://doi.org/10.1177/1053825913518895

Research Designated Programs—National Association Therapeutic Schools and Programs. (n.d.). Retrieved August 21, 2022, from https://natsap.org/page/RDP

Rubino, M. (2024). More Than Troubling: The Alarming Absence of 'Troubled Teen Industry' Regulation and Proposals for Reform. *Journal of Legislation*, *50*(2), 429.

Russell, K. (2003). An assessment of outcomes in outdoor behavioral healthcare treatment. *Child and Youth Care Forum*, *32*(6), 355–381. https://doi.org/10.1023/B:CCAR.0000004507.12946.7e

Russell, K. C. (2001). What is wilderness therapy? *Journal of Experiential Education*, *24*(2), 70–79. https://doi.org/10.1177/105382590102400203

Russell, K. C. (2002). *Longitudinal assessment of treatment outcomes in outdoor behavioral healthcare*. Idaho Forest, Wildlife, and Range Experiment Station.

Russell, K. C. (2005). Two years later: A qualitative assessment of youth well-being and the role of aftercare in outdoor behavioral healthcare treatment. *Child and Youth Care Forum*, *34*(3), 209–239. https://doi.org/10.1007/s10566-005-3470-7

Santa, J. (2016). NATSAP Research Designated Program. *Journal of Therapeutic Schools and Programs*, *1*(8), 8–9. https://doi.org/10.19157/JTSP.issue.08.01.02

Schreifels, J. M. (2024, May 7). Nearly half of Utah's wilderness programs for 'troubled teens' closed in the last year. Here's what's happening. *The Salt Lake Tribune*. https://www.sltrib.com/news/2024/05/07/nearly-half-utahs-wilderness/

Tellegen, A., & Ben-Porath, Y. S. (2008). *MMPI-2-RF: technical manual*. University of Minnesota Press.

Trails Carolina: Boy's death at North Carolina wilderness camp was a homicide, autopsy finds | CNN. (n.d.). Retrieved September 24, 2024, from https://www.cnn.com/2024/06/26/us/trails-carolina-camp-death-update-homicide/index.html

Tucker, A., Norton, C. L., DeMille, S. M., & Hobson, J. (2016). The impact of wilderness therapy: Utilizing an integrated care approach. *Journal of Experiential Education, 39*(1), 15–30. https://doi.org/10.1177/1053825915607536

Tucker, A. R., Bettmann, J. E., Norton, C. L., & Comart, C. (2015). The role of transport use in adolescent wilderness treatment: Its relationship to readiness to change and outcomes. *Child & Youth Care Forum, 44*(5), 671–686. https://doi.org/10.1007/s10566-015-9301-6

Tucker, A. R., Combs, K. M., Bettmann, J. E., Chang, T.-H., Graham, S., Hoag, M., & Tatum, C. (2018). Longitudinal outcomes for youth transported to wilderness therapy programs. *Research on Social Work Practice, 28*(4), 438–451. https://doi.org/10.1177/1049731516647486

Tucker, A. R., Norton, C. L., DeMille, S., Talbot, B., & Keefe, M. (2023). Wilderness therapy. In *Handbook of Evidence-Based Day Treatment Programs for Children and Adolescents*.

Tucker, A. R., Smith, A., & Gass, M. A. (2014). How presenting problems and individual characteristics impact successful treatment outcomes in residential and wilderness treatment

programs. *Residential Treatment for Children & Youth*, *31*(2), 135–153. https://doi.org/10.1080/0886571X.2014.918446

Tucker, A., Zelov, R., & Young, M. (2013). Four years along: Emerging traits of programs in the NATSAP Practice Research Network (PRN). *Journal of Therapeutic Schools and Programs*. https://scholars.unh.edu/faculty_pubs/968

Vitaglione, G. (2024, May 9). State report reveals more details about child's death at Trails Carolina. *Carolina Public Press*. http://carolinapublicpress.org/63957/state-report-reveals-more-details-about-childs-death-at-trails-carolina/

Wells, M. G., Burlingame, G. M., & Lambert, M. J. (1999). *Youth Outcome Questionnaire (Y-OQ).*

Wells, M. G., Burlingame, G. M., Lambert, M. J., Hoag, M. J., & Hope, C. A. (1996). Conceptualization and measurement of patient change during psychotherapy: Development of the Outcome Questionnaire and Youth Outcome Questionnaire. *Psychotherapy: Theory, Research, Practice, Training*, *33*(2), 275–283. https://doi.org/10.1037/0033-3204.33.2.275

Wilson, S. J., & Lipsey, M. W. (2000). Wilderness challenge programs for delinquent youth: A meta-analysis of outcome evaluations. *Evaluation and Program Planning*, *23*(1), 1–12. https://doi.org/10.1016/S0149-7189(99)00040-3

Yan, H., Shukla, N., & Riess, R. (2024, June 26). Trails Carolina: Boy's death at North Carolina wilderness camp was a homicide, autopsy finds. *CNN*. https://www.cnn.com/2024/06/26/us/trails-carolina-camp-death-update-homicide/index.html

APPENDICES

Appendix A: Tests Included in Research Data Set

Symptomatology		**Parent Report of Child Factors**
Achenbach System of Empirically Based Assessment: Youth Self-Report (ASEBA: YSR)		Achenbach System of Empirically Based Assessment: Child Behavior Checklist (ASEBA: CBCL)
Treatment Outcome Package (TOP)		Treatment Outcome Package (TOP-P)
School Refusal Scale (SRAS)		Revised Child Anxiety & Depression Scales (RCADS-P)
Revised Child Anxiety & Depression Scales (RCADS)		Child Avoidance Measure-Parent Report (CAMP)
Substance Use Questionnaire (SUQ)		
Childhood Posttraumatic Stress Scale (CPSS)		
Vulnerability Factors		**Parent Report of Parent & Family Factors**
Adolescent Attachment Questionnaire (AAQ)		BABAS (Changes in Bodily Activity)
Childhood Anxiety Sensitivity Index (CASI-I, CASI-3)		Fagerstrom Test for Nicotine Dependence (FAGER)
Teenage Motivation for Tobacco, Alcohol, and Marijuana Use Questionnaires (TMQ)		Life Stressors and Social Resources Inventory (LISRES)
Prescription Stimulant Expectancy Questionnaire (PSEQ)		Inventory of Depression and Anxiety Symptoms (IDAS)
Emotion Regulation Questionnaire (ERQ)		Anxiety Sensitivity Index-III (ASI-III)
Child Avoidance Measure (CAMS)		Distress Tolerance Questionnaire (DTS)
Child and Adolescent Mindfulness Measure (CAMM)		Short Inventory of Problems (SIP)
Positive and Negative Affect Scale- Child (PANAS-C)		Posttraumatic Diagnostic Scale (PDS)
Interpersonal Needs Questionnaire (INQ-15)		Positive and Negative Affect Scale (PANAS)
Family Functioning Factors		Assessment of Treatment Satisfaction
Family Adaptability and Cohesion Evaluation Scale (FACES)		Family Adaptability and Cohesion Evaluation Scale-Parent Report (FACES-P)
Child Report of Parent Behavior Index (CRPBI)		Parent Report of Parent Behavior Index (PRPBI)
Parenting Styles (ParentSC)		Parenting Styles (ParentSC)

Appendix B: Treatment Outcome Package (TOP) (Kraus et al., 2005)

Indicate how much of the time during the past two weeks you have . . .

1. gone on an eating binge
2. thought you were too fat even though others said your weight is fine
3. purged after eating by using laxatives, water pills, or throwing up
4. been too shy
5. felt too much conflict with someone
6. been emotionally hurt by someone
7. felt someone else had too much control over your life
8. had trouble falling asleep
9. had nightmares
10. awakened frequently during the night
11. had trouble returning to sleep after awakening in the night
12. had conflicts with others at work or school regardless of fault
13. missed work or school for any reason
14. not been acknowledged for your accomplishments at work or school
15. had your performance criticized at work or school
16. not been excited about your work or schoolwork
17. physically hurt someone else or an animal
18. had desires to seriously hurt someone
19. had thoughts of killing someone else
20. felt that you were going to act on violent thoughts
21. had trouble staying still
22. had trouble finishing things
23. lost things
24. had trouble paying attention in class
25. been slow at completing homework
26. had trouble looking people in the eye when talking to them
27. run away
28. had trouble with the police
29. stolen or shoplifted
30. felt down or depressed
31. felt little or no interest in most things
32. felt guilty
33. felt restless
34. felt worthless
35. felt tired, slowed down, or had little energy
36. worried about things
37. had trouble concentrating or making decisions
38. noticed your thoughts racing ahead
39. inflicted pain on yourself
40. felt rested after only a few hours of sleep
41. thought about killing yourself or wished you were dead
42. planned or tried to kill yourself
43. felt you were better than other people
44. felt on top of the world
45. worried that someone might hurt you
46. had unwanted thoughts or images
47. seen or heard something that was not really there
48. felt someone or something was controlling your mind
49. spent more time drinking or using drugs than you intended
50. neglected school, work, or other responsibilities because of using alcohol or drugs
51. felt you wanted or needed to cut down on your drinking or drug use
52. had your family, a friend, or anyone else tell you they objected to your alcohol or drug use
53. found yourself thinking about a drink or getting high
54. used alcohol or drugs to relieve uncomfortable feelings, such as sadness, anger, or boredom
55. made inappropriate sexual comments
56. caused someone to worry about your sexual activity
57. In the past 2 months, how often have you had sex or oral sex without a condom?

58. In the past 2 months, how often have you felt forced to have sex?