



## AN ABSTRACT OF THE DISSERTATION OF

Sean D. Roberts for the degree of Doctor of Philosophy in Counseling presented on May 21, 2015.

Title: Outdoor Behavioral Healthcare Outcomes for Young Adults

Abstract approved:

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Those experiencing significant psychosocial problems in adolescence and young adulthood are at higher risk for psychological disorder (Pottick, Bilder, Vander Stoep, Warner, & Alvarez, 2008). Compared to peers, these individuals struggle to complete school, fit with social roles, and acquire occupational skills necessary for adulthood (Pottick et al., 2008). Providing effective treatment intervention during this time is essential. Scholars have noted the need for “aggressive efforts to design developmentally appropriate, effective services and to increase their availability to young adults with mental disorders” (Pottick et al., 2008, p. 387).

Otherwise known as wilderness therapy, outdoor behavioral healthcare (OBH), is a form of adventure-based counseling utilizing traditional counseling techniques in natural outdoor settings. Wilderness therapy programs help build success-oriented

identities for clients by increasing self-concept, internal locus of control, self-confidence and improved interpersonal and social skills (Hill, 2007; Russell, Gillis, & Lewis, 2008).

Little empirical evidence currently exists documenting long-term post-discharge effects of OBH for young adult clients. This in part due to OBH initially serving predominately adolescents and only recently beginning to serve a larger young adult population, as well as challenges with attrition in the research that has been completed. Increases in young adult clients utilizing OBH underscores the importance of rigorous outcome research to assess efficacy and inform programming.

The purpose of the two studies presented in this dissertation were to determine when and how change occurs for young adults ( $N = 186$ ) during and after outdoor behavioral healthcare treatment.

The focus of Study 1 was to evaluate changes in young adult participants' psychosocial functioning, over time, from treatment intake to 18-months post discharge. The research questions guiding this repeated measures longitudinal design study were focused on examining changes to overall psychosocial functioning, distress symptoms, interpersonal relationship, and social role performance from intake to 18 months post-treatment.

Three-piece time-trend Hierarchical Linear Modeling (HLM) results indicated participants varied in their starting points and rates of change over time. On average, participants started high on symptomatology and showed statistically and clinically significant reductions across all scales while in-treatment. In addition, it took five weeks before meaningful change was reported and participants reporting greater initial distress

experienced more dramatic improvements. Post discharge, treatment gains were maintained up to 18 months.

Study 2 was intended to build upon findings from study one. A two-step HLM approach was used to model the influence of age, gender, therapist assignment, primary diagnosis, and length of stay on the overall psychosocial functioning of young adults from OBH intake to 18 months follow-up. First, main effect results were assessed to understand if there were systematic differences over time resulting from the covariates. Next, by time interactions were examined to determine change trajectory differences associated with the covariates. Results indicated no differences at intake, or in change trajectories, for participants while in treatment or post-discharge. These findings suggest participants benefited similarly regardless of age, length of stay, gender, therapist, or primary diagnosis.

Findings from the present studies coupled with previous OBH findings with adolescent populations (Behrens, Santa, & Gass, 2010; Russell et al., 2008; Tucker, Smith, & Gass, 2014) and adults (Hoag, Massey, Roberts, & Logan, 2013) furthers OBH as an effective treatment approach.

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Outdoor Behavioral Healthcare Outcomes for Young Adults

by  
Sean D. Roberts

A DISSERTATION  
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Oregon State University

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the requirements for the  
degree of

Doctor of Philosophy

Presented May 21, 2015  
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Doctor of Philosophy dissertation of Sean D Roberts presented on May 21<sup>st</sup>, 2015.

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Jim McGinley provided statistical analysis mentorship in order to utilize Hierarchical Linear Modeling in this study. He was patient, adaptable, and encouraging as we forayed into unfamiliar territory.

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I am also appreciative of my cohort members who shared in the PhD journey with me. Your companionship, goofiness, and rigor buoyed me through the process. Lastly,



I'm appreciative of my wife who endlessly supported me with a smile and warm encouragement and patience.

## CONTRIBUTION OF AUTHORS

Dr. Daniel Stroud served as dissertation chair providing guidance in the creation of the manuscripts. Dr. Matthew J. Hoag and Katie Massey both contributed to this research project through their assistance in the research design and oversight. Katie Massey also worked to oversee data collection both while clients were in program and post-discharge. Dr Hoag additionally served as a dissertation committee member providing guidance and editing in the manuscript production.

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## **Chapter 1**

### **Thematic Introduction**

Young adulthood is a time of transitions (Erikson, 1980). It brings a higher incidence of problematic substance use and mental illness than any other subsection of the population in the United States (Substance Abuse and Mental Health Services Administration, 2013). Identity exploration, forming and navigating relationships, and autonomy are common themes in young adulthood (Erikson, 1980; Kelly, Urbanoski, Hoeppner, & Slaymaker, 2012; Pottick et al., 2008). Those with psychiatric problems in young adulthood have significantly more struggles compared to their peers in their attempt to complete school and acquire adult occupational and social roles (Pottick et al., 2008). However, the majority of young adults with substance use or mental health disorders do not receive treatment (Substance Abuse and Mental Health Services Administration, 2012). There is a void in mental health care for young adults with persistent mental health challenges. Innovative treatment programs that offer experiential learning opportunities to build confidence in a social setting can fill that void. These programs offer opportunities for reflection while being removed from outside distractions such as technology, media, unhealthy relationships, or substances.

Outdoor behavioral healthcare (OBH) is an experiential inpatient treatment option for adolescents and young adults harnessing the power of immersion in a therapeutic milieu within nature. It is a growing treatment modality that is serving more and more clients (Russell et al., 2008). OBH, otherwise known as wilderness therapy, is a potentially valuable intervention for a client who has not responded to traditional therapy or is in need of intensive therapy, assessment, or stabilization (Hill, 2007). Outcome studies have begun to provide initial evidence of efficacy (Behrens, 2007; Hoag et al.,

2013; Russell, 2003; Russell, 2005; Young, 2010) and the population has expanded from serving merely adolescents to now including young adults (White, 2011). However, there is a dearth of research looking at what factors impact outcomes, and the long-term effect of wilderness therapy for young adult clients. This gap in the literature has allowed for concerns over the long-term outcomes and efficacy of wilderness to grow (Anderson, 2014; Harper & Cooley, 2007).

OBH is classified as a residential care program (Pottick et al., 2008). Residential treatment “remains a needed service for a small but significantly challenging group of children and adolescents” (Hair, 2005, p. 555). Pottick et al. (2008) defined a residential care program as a facility where clients live that provides mental health services and employs licensed professionals and 24-hour staff. Russell (2001) articulates that an OBH program is a therapeutically based inpatient program that utilizes outdoor adventure to enhance personal growth, and established individual treatment goals created and overseen by a qualified professional. In the conclusion of their study of mental health utilization for young adults, Pottick et al. (2008) report that residential care programs are inconsistent at best in providing appropriate treatment for young adults presenting with emotional disorders and conclude with the prediction: “residential care will likely remain a scarce resource for transition-age individuals until policy, programmatic, and clinical issues are addressed” (p. 385). The first step in addressing these issues is assessing if and what factors are impacting the treatment modality hitting the target of lasting, meaningful client change.

The growth of OBH over the last 20 years has coincided with a decline in intensive-services for high-risk clients (Behrens, Santa, & Gass, 2010). This decrease in



mental health services is due to a “paradigm shift to crisis stabilization and medication management designed to manage care and contain costs for insurance companies. These real and palpable problems have led to a rapid growth of private therapeutic programs” (Behrens et al., 2010, p. 106). As a baseline to understand the size of the industry, a 2008 survey by Russell, Gillis, and Lewis reported that wilderness treatment is a growing industry that served over 10,000 clients a year. There are 17 wilderness programs in the National Association for Therapeutic Schools and Programs directory that serve young adults (NATSAP, 2014). However, White’s (2011) extensive history of wilderness therapy did not explore the use of wilderness therapy for adult clients. Russell et al. (2008) completed the largest survey research project on wilderness therapy to date. Sixty-five programs participated in the study and the authors expressed surprise that 60% of the programs reported working with clients 18 years of age or older. This suggests that 36 programs indicated that they accepted adult clients into their wilderness program; yet there is very little data backing up the merits of this expensive intervention for the specific population of young adults.

The two most consistent findings in the outcome studies that have been done on OBH with adolescents have to do with personal and relationship growth. Clients show increased self-concept, a shift towards an internal locus of control, and interpersonal development including the acquisition of more adaptive social skills (Harper, 2009; Hill, 2007; Russell, 2003). A 2003 outcome assessment of adolescents who had completed at least a 45-day wilderness experience at seven different programs found that participants in OBH programs showed a significant reduction in behavioral and emotional symptoms immediately following treatment, and they maintained their gains or continued to

progress 12-months post treatment (Russell, 2003). However, the researcher only did follow-up with 10% of the initial population post-discharge leading to questions of whether or not there is sufficient evidence to assert that wilderness therapy proved to be effective 12 months post discharge. Furthermore, this research was completed with adolescent clients and not adults. Hoag et al. (2013) published a recent study focused on young adult clients and found clinically significant change occurring for clients. However, significant attrition limited the authors' ability to make conclusions surrounding the long-term merits of the change.

Without longitudinal outcome research, within program change can be written off as being a result of the nurturing and controlled environment of the program (Hair, 2005). Furthermore, the lack of research has breathed life into allegations of wilderness therapy being an ineffective, unnecessarily tough treatment modality (Anderson, 2014). Hess, Bjorklund, Preece, and Mulitalo (2012) pointed out that “one of the central concerns is whether successes or gains achieved in residential care endure once the child returns home” (p. 156). Insight into how individual characteristics, presenting problems, and treatment variables can be used to inform and refine treatment is vital to the success of OBH. In addition, consumers, OBH staff, and families would be served by an increased understanding of what happens to young adult clients after leaving outdoor behavioral healthcare. Such knowledge would provide valuable data for practitioners in how to individualize treatment and provide feedback on the merits of an OBH intervention.

### **Dissertation Overview**

This dual-manuscript dissertation is the single largest longitudinal assessment focused on young adults outcomes in outdoor behavioral healthcare (OBH) completed to

date. The two studies in this dissertation build upon each other to fill gaps in the OBH literature. The data were collected from 2011 to 2013 tracking 186 young adult participants. Data collection occurred six times over the course of the study. Data were gathered at four in-program intervals (week 1, week 3, week 5, and discharge), and two post-discharge intervals (6- and 18-month follow-ups). Overall psychosocial functioning, symptom distress, social role, and satisfaction with interpersonal relationships were measured by the Outcome Questionnaire-45.2 (OQ) (See Appendix A). The OQ is a broad outcome assessment instrument designed for repeated measurement that is highly sensitive to psychological changes (Lambert, 2007).

The first study, entitled “A Longitudinal Assessment of Young Adult Outdoor Behavioral Healthcare Outcomes,” is detailed in Chapter 2. The aim of this study was to contribute to the OBH literature base by examining changes in young adult’s overall well-being from intake to 18-months post-discharge. In addition, symptom distress, social role, and interpersonal relationships were similarly examined as key indicators of well-being. As hypothesized, hierarchical linear modeling results indicated clinically and statistically significant change occurred. The change occurred in a similar manner with consistent improvement while in the program. The gains were then maintained post-discharge. Participants reported greater and earlier improvements in symptom distress, as social role and interpersonal relationships showed smaller and more delayed gains. Additionally, participants who began treatment endorsing more dysfunction and symptomology reported greater improvements over those with lower Week 1 scores. The manuscript for this study will be submitted to the *Journal for Counseling and Development* (for author guidelines see Appendix B).

Building upon findings from this study, the aim of Chapter 3 was to determine the predictive ability of factors previously identified in the literature. Chapter 3, entitled “Outdoor Behavioral Healthcare: An Assessment of Client and Treatment Characteristics on Young Adult Outcomes” is a more in depth examination of the change captured in Chapter 2. Findings from this study are useful for those who work in, and refer clients to, OBH programs. For this study, hierarchical linear modeling was used to determine the effects participants’ primary diagnosis, gender, age at intake, therapist assignment, and length of stay had on overall well-being. Chapter 3 results indicated that participant starting points or outcomes did not vary across the individual demographic and treatment covariates identified. This finding indicates that the participants in this study reported similar gains regardless of age, gender, primary diagnosis, their OBH therapist, or their length of stay within the program. The consistency in the outcomes found in this study implies that OBH may be suited to a relatively wide range of clients. Chapter 3 will be submitted to the *Counseling Outcome Research and Evaluation* journal (for author guidelines see Appendix C).

In Chapter 4 the two studies are further detailed with particular focus on interpreting the results and practical implications for the future.

### **Summary**

Twenty years ago Schön (1995) critiqued the lack of researchers actually working in the “swamps” where problems are complicated. Complications include various threats to internal validity and difficulty measuring through traditional scientific methods (Schön, 1995). This dissertation was part of a research project designed by a team initially composed of two practitioners working in OBH, an outside consultant, and a

research director whose previous responsibility was working as a field staff in wilderness therapy. This study took over six years to complete from initial conceptualization to completion. This was due to researching “in the swamp” (Schön, 1995, p. 3) and wanting to mitigate similar problems with attrition that has plagued longitudinal outcome research in social science research (Bettmann & Jasperson, 2009). Each of these studies provides meaningful theoretical contributions and clinical implications.

## Glossary of Terms

Clinical significance: Change of more than 14 points on the OQ-45.2 total score

(Jacobson & Truax, 1991; Lambert et al., 2004).

Community functioning cut-off score: “A weighted midpoint between the means of a functional and dysfunctional sample” (Lambert et al., 2004, p. 25) on the OQ total or subscale domains.

Improved: A classification utilized for clients who have passed the reliable change index on the OQ but not the norm-referenced community functioning cut-off score (Lambert et al., 2004).

Initial Distress: Level of psychological functioning at Week 1.

Interpersonal Relationships: Subscale of OQ-45.2 that assess for reports of loneliness, friction, inadequacy, and conflict with others in family relationships and friendships (Lambert et al., 2004).

Intercept: Participants OQ total or subscale score reported at Week 1.

Length of stay: A measurement of time in OBH treatment including from admission to discharge.

Outdoor behavioral healthcare: The prescriptive, therapeutic use wilderness experiences overseen by mental health professionals to serve clients (Tucker et al., 2014). Also referred to as wilderness therapy.

Primary diagnosis: Primary diagnosis was collected from a review of the diagnosis given by the attending therapist on the clients’ discharge summary.

Rate of change: A measurement of the speed at which scores on the OQ change over time.

Recovered: A classification utilized for clients who report an OQ score that drops below the norm-referenced community functioning cut-off score and a decrease in symptomology that surprises the reliable change index criteria (Lambert et al., 2004).

Reliable change index: The amount of change that participants must match or exceed on the OQ to demonstrate the change is reliable and has clinical significance (Lambert et al., 2004)

Social Role: Subscale of OQ-45.2 that assesses dissatisfaction, conflict, distress and inadequacy related to school/work, family and leisure (Lambert et al., 2004).

Symptom Distress: Subscale of OQ-45.2 that assesses a broad range of symptoms according to epidemiological prevalence of disorders (Lambert et al., 2004).

Therapist assignment: The therapist assigned to work with each participant during his or her stay in OBH.

Wilderness Therapy: Synonymous with outdoor behavioral healthcare. A therapeutic intervention that utilizes adventure-based activities and traditional counseling strategies in an outdoor setting (Hill, 2007).

Young Adults: Individuals ranging in age from 18-25 (Pottick et al., 2008).

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**Chapter 2:**

**Outdoor Behavioral Healthcare: A Longitudinal Assessment of Young Adult  
Outcomes**

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### **Abstract**

This article details a three-year outdoor behavioral healthcare (OBH) outcome study. Hierarchical Linear Modeling was used to analyze data from 186 young adults in a wilderness therapy program. Participants completed the Outcome Questionnaire six times from Week 1 to 18-months follow-up. Results indicated clinically and statistically significant change occurred in treatment. Rates of change varied and post-treatment scores remained stable demonstrating in-treatment gains were maintained. Implications and recommendations for future research are discussed for OBH.

*Keywords:* Wilderness Therapy, Young Adults, Outcomes, Hierarchical Linear Modeling, Outdoor Behavioral Healthcare

## Outdoor Behavioral Healthcare: A Longitudinal Assessment of Young Adult Outcomes

Young adulthood can be a time of increased intimacy and meaningful relationships as one's identity, social role, and sense of self become clearer. Though identity development and social role processes highlight adolescence, these developmental tasks are known to continue well into, and often throughout, young adulthood (Pottick et al., 2008). As personally and interpersonally meaningful and promising as this time can be, it can also be fraught with rejection and result in isolation (Erikson, 1980). Those experiencing significant psycho-social problems in adolescence and young adulthood have significantly more struggles, compared with peers, in their attempts to complete school, fit with social roles and acquire occupational skills necessary for adulthood (Pottick et al., 2008). The transition from late adolescence to young adulthood highlights the demand for effective intervention for those heading down maladaptive life-paths who are ultimately at higher risk for psychological disorder (Pottick et al., 2008).

Unfortunately, effective and engaging intervention can be challenging. A precipitous drop in mental health care services utilization occurs among clients above 18 years of age. To provide additional context to this problem, consider results from the 2012 Substance Abuse and Mental Health Administration's survey on drug use and health. A significant finding was that the highest rate of illicit drug use was among individuals between 18-20 years of age at 23.9% and that the next highest rate was found among 21-25 year olds (19.7%). Combining the data on the decreased utilization of services and the spike in drug use we see that those most frequently engaging in illicit substance abuse are those shown to be falling off behavioral and mental health care

providers' radar. These findings and more have led researchers to conclude there is a direct need for "aggressive efforts to design developmentally appropriate, effective services and to increase their availability to young adults with mental disorders" (Pottick et al., 2008, p. 387). In doing so, more successful navigation of young adulthood development may occur.

### **The Healing Use of Nature**

Nature has long been a medium for growth. Native American tribes used nature for healing and rights of passage. In the 1920's, many therapeutic summer camps employed clinicians (White, 2011). In the 1960's Kurt Hahn's Outward Bound model was brought to the United States to help train Peace Core volunteers (White, 2011). A quarter century later, in 1987, Ewert completed an overview article of research in outdoor adventure recreation, and reported findings of enhanced internal locus of control, positive relationship between program length and self-concept, increased self-esteem, and reduced defiant behavior. Additionally, Kaplan (1995) pointed out the increase in evidence showing the psychological benefits of nature while focusing on the role of nature in helping individuals learn how to handle stress through increased directed attention. Given the numerous benefits of connecting to nature and the applicability of these benefits to counseling, counselors' increasingly favorable attitudes toward, and purposeful use of nature in their clinical work comes as little surprise (Wolsko & Hoyt, 2012). Even more recently, Reese and Myers (2012) express how nature has been shown to increase wellness and introduced the construct of *EcoWellness*. While exploring the dimensions of *EcoWellness*, the authors discuss self-transcendence through peak experiences and the sense of community connectedness that can occur in nature. Wilderness therapy builds

off the history discussed previously and is a growing clinical treatment modality that works to create peak experiences and foster connection in natural settings.

### **Outdoor Behavioral Healthcare**

Otherwise known as wilderness therapy, outdoor behavioral healthcare (OBH) is a form of adventure-based counseling utilizing traditional counseling techniques in natural outdoor settings. OBH is most commonly defined as “the prescriptive use of wilderness experiences by licensed mental health professionals to meet the therapeutic needs of clients” (Association for Experiential Education, 2014, p.1). Over the past few decades it has grown considerably, receiving increased recognition in the counseling field (Behrens et al., 2010; Hoag et al., 2013; Russell et al., 2008; Tucker, Javorski, Tracy, & Beale, 2013).

Kazdin (1991) describe psychotherapy as an intervention intended to reduce distress, unhealthy behaviors, and psychological symptoms while encouraging pro-social functioning. These outcomes are obtained through “learning, persuasion, counseling, and discussion integrated into a specific treatment plan. The focus is on how clients feel (affect), think (cognition), and act (behavior)” (Kazdin, 1991, p. 785). Guided by trained staff and treated by licensed therapists, the therapeutic environment is a social milieu located in a natural setting. Combined, an environment is created to promote social learning, symptom identification and reduction, and the acquisition and practice of healthy behaviors. This is done in an environment that encourages discussion and experiential learning in a social setting where one’s emotions, cognitions, and actions are more easily accessed. Wilderness therapy is a model that deemphasizes dysfunction and



failure, by focusing instead on strength and competency identification and development in a holistic manner (Cason, 1994).

OBH provides an experiential residential treatment option for adolescents and young adults. This treatment model utilizes wilderness living experiences, active client involvement in their therapy, group therapy and living, individual therapy, the positive use of stress, and a strong ethic of care and support (Association for Experiential Education, 2014). It is a valuable intervention for a client who has not responded to traditional therapy or one in need of intensive therapy, assessment, or stabilization (Russell, Hendee, & Forest, 2000). Wilderness therapy programs help build success-oriented identities for clients by increasing self-concept, internal locus of control, self-confidence, and improved interpersonal and social skills (Hill, 2007; Russell et al., 2008).

While anecdotal stories of the power of wilderness abound, little empirical evidence exists documenting long-term post-discharge effects of wilderness therapy. Most studies have focused on within treatment group process oriented variables or in-program change with post discharge follow-up that only tracks a small percentage of participants (Bettmann & Jasperson, 2009; Breunig et al., 2008; Goldenberg & Pronsolino, 2007; Paxton & McAvoy, 2000; Russell, 2003). Lee and colleagues (2013) research on resilience highlights the value of strengthening the client's sense of self as "enhancing the protective factors (e.g., self-efficacy, positive affect, and self-esteem) is more effective than reducing the risk factors (e.g., depression and anxiety) to improve resilience" (p. 275). Wilderness therapy has potential to increase such protective factors that serve as moderators of psychological distress; however, less is currently known about wilderness-specific longitudinal outcomes compared to traditional inpatient

treatment settings. Additionally, much of the current literature on wilderness outcomes has come from studies composed of adolescent samples (Behrens et al., 2010; Russell et al., 2008; Tucker et al., 2014).

A 2003 outcome assessment of adolescents who had completed at least a 45-day wilderness experience at seven different programs found that participants not only showed a significant reduction in behavioral and emotional symptoms immediately following treatment, they also maintained their gains—or continued to progress—12 months post treatment (Russell, 2003). However, the researcher was only able to follow-up with 10% of the initial population post-discharge leading to questions of whether or not sufficient evidence warrants concluding that the wilderness therapy intervention was effective 12-months post discharge.

A mixed methods study on wilderness therapy outcomes two years post-discharge found 80% of parents and 90% of youth clients believed the intervention was effective (Russell, 2005). A noted limitation regarding these findings is the study's sample size and attrition. However, these findings are encouraging and worthy of further investigation given findings from traditional residential treatment programs. Residential treatment research has shown clients often make gains in residential treatment, yet "...those gains are frequently lost when they return to the community" (Leichtman & Leichtman, 2001, p. 21). Findings such as these continue to challenge the counseling profession to attend to the question: What approaches are associated with the continuance of in-treatment gains, post treatment and over time?

Russell et al. (2008) completed perhaps the largest wilderness therapy survey research project to date. Sixty-five programs participated and the majority (60%) reported

working with clients age 18 and older. This suggests that the provision of wilderness therapy to young adult clients is occurring yet the research literature necessary to assess its efficacy and inform ongoing design and delivery improvements is lacking.

To this end, Hoag, Massey, Roberts, and Logan (2013) published the first data on young adult wilderness therapy outcomes tracking 297 participants. A particular strength of this study was their ability to operationally define and document the clinical and statistical significance change that occurred for clients using the Outcome Questionnaire<sup>®</sup> 45.2, and look at how change occurred in life effectiveness, motivation for therapy, therapeutic alliance, and dysfunctional attitudes. However, a noted limitation was participants' post-treatment follow-up participation rate dropped considerably from the in-treatment rate (61%). This ultimately led the authors to conclude:

we see the need to decrease attrition rates and gain more consistent results as we continue the iterative process of understanding the change agents found in wilderness therapy. Additionally improved long-term follow-up is essential to evaluate how young adults respond to this type of treatment and whether gains made in therapy generalize post-treatment (Hoag et al., 2013).

Other critiques of wilderness therapy outcome research seemingly agree—small sample size and lack of longitudinal data have limited efforts to research the long-term effects of wilderness therapy (Cason, 1994; Davis-Berman & Berman, 1994; Hill, 2007; Russell, 2003).

In short, wilderness therapy with young adult clients is an area in need of further research. What we do know is the importance of young adult development and transition, both in terms of identity development and the ability to develop meaningful relationships with others (Erikson, 1980). We also know relationship exists between growth, function, and overall wellness when connected with nature (Reese & Myers, 2012; Tucker et al.,

2013). We are beginning to elucidate wilderness therapy effects in general (Bowen & Neill, 2013) and outcomes with adolescents in particular (Tucker et al., 2014). What we do not yet know are young adult wilderness therapy outcomes over time (Hoag et. al, 2013).

### **Aim and Questions**

The intent of this study was to build upon OBH research by incorporating previous authors' recommendations for assessing wilderness therapy outcomes longitudinally. Specifically, the purpose of this study was to evaluate changes in young adult participants' psychosocial well-being and functioning over time from OBH intake to 18-months post treatment. The research questions guiding this study were:

1. How does overall psychosocial functioning change from intake to 18 months post-treatment?
2. How do distress symptoms change from intake to 18 months post-treatment?
3. How do interpersonal relationships change from intake to 18 months post-treatment?
4. How does social role performance change from intake to 18 months post-treatment?

### **Method**

#### **Participants**

A convenience sample of volunteer participants ( $N = 186$ ) was drawn from young adult clients of an OBH program located in the Southwestern United States. Eligible participants were those who completed the programs 35-day minimum length of stay requirement. The participation rate for this study was 77%. Two hundred and forty one

participants entered the program with 28 declining participation and 27 excluded due to not meeting the minimum length of stay requirement. Males accounted for 153 of the participants while 33 participants were female. Length of stay ranged from 5 to 22 weeks ( $M = 10.1$ ,  $SD = 2.46$ ) in the wilderness. At intake, participants ranged in age from 18 to 32 years of age ( $M = 20.3$ ,  $SD = 2.59$ ).

Mood disorders (39%), substance use disorders (30%), and anxiety disorders (13%) were the most common primary diagnoses for the participants. Pervasive development, behavior, and attachment disorders combined for the remaining 18%. When looking at prevalence of diagnosis by accounting for the first four diagnoses listed for each client, substance use disorders were the most frequently listed (75%). In addition, 85% had either a mood or anxiety diagnosis. Participant ethnicity or socio-economic status was not collected in this study; however, OBH clients tend to be Caucasian and within a higher socio-economic status (Russell et al., 2008). Of all the participants enrolled in the study, 154 (83%) transitioned into some form of continued care, such as sober living, job support, academic coaching, or other supportive transition services.

## **Treatment**

Treatment entailed weekly individual and group therapy sessions facilitated by the assigned therapist. The therapist oversees the clinical assessment, treatment planning, and service delivery that Hill (2007) cited as key to what differentiates wilderness therapy programs from wilderness adventure offerings. The clinician creates a weekly treatment plan intended to provide structure and guidance for the wilderness staff and clients in how to incorporate the therapeutic and relational goals of each client into daily

wilderness processes. In addition to the work of the therapist and congruent with OBH practices (Association for Experiential Education, 2014), staff and participants facilitate the day-to-day process and psycho-education in alignment with the weekly treatment plans.

Participants worked with one of five licensed therapists: a female psychologist, a male psychologist, a female master's-level Licensed Professional Counselor, a male master's-level Licensed Professional Counselor, or a male master's-level Marriage and Family Therapist. The participants were grouped based on therapist assignment. Over the course of this study participants were somewhat evenly distributed across the five clinicians with 43 study participants (23%) being the highest caseload and 33 (18%) participants being the lowest. The number of participants was a function of rolling admissions with a range of 10-60 participants receiving treatment at any one time across all five groups.

## **Outcome Measure**

**Outcome Questionnaire-45.2.** Overall psychosocial function and symptom distress were measured by the Outcome Questionnaire-45.2 (OQ) (Lambert et al., 2004). Well established in the literature, the OQ is sensitive to psychological changes, assesses a wide range of symptomatology, and was designed for repeated measurements and outcome assessment (Lambert et al., 1996).

The 45 items assess key personal and social characteristics related to quality of life across three subscales: symptom distress, interpersonal relationships, and social role performance. Likert response options range from 0 (*never*) to 4 (*almost always*). Overall OQ scores range from 0 to 180 and serve as a global assessment of functioning (Lambert

et al., 2004). A higher score suggests greater endorsement of struggle. The questionnaire includes items assessing positive indicators of mental health and life function to avoid solely focusing on the presence of psychopathology (Lambert et al., 2004). Nine questions are reverse coded with higher scores indicating healthy functioning and resulting in a lower sum score. Subscale scores were recorded for this study to provide greater insight into what ways possible change occurred for the participants.

The symptom distress subscale (25 items) assesses a broad range of symptoms across the most common disorders including anxiety, affective, adjustment, and stress-related illnesses. The scores on this subscale also correlate highly with depression inventories (Lambert et al., 2004). Sample items include: “I feel nervous”, “I have difficulty concentrating,” “I feel no interest in things,” and “I tire quickly.”

The interpersonal relationships subscale (11 items) was included in the OQ to assess for reports of loneliness, friction, inadequacy, and conflict with others in family relationships and friendships. Sample items include: “I am satisfied with my relationships with others,” “I feel loved and wanted,” and “I have trouble getting along with friends and close acquaintances,” “I get along well with others,” and “I have frequent arguments.” While high scores are reflective of concerns with relationships, low scores are suggestive of both an absence of problems and satisfaction with one’s current close relationships.

The social role performance subscale (9 items) assesses dissatisfaction, conflict, distress and inadequacy related to school/work, family and leisure. Lambert et al. (1996) outlined that: “assessment of social role suggests a person’s intrapsychic problems and symptoms can affect their ability to work, love, and play” (p. 251). Sample items read: “I

enjoy my spare time,” “I feel angry enough at work/school to do something I might regret,” and “I find my work/school satisfying.”

Research has shown support for the multidimensional approach utilized with this measure that produces a total score as well as three subscale total scores (Bludworth, Tracey, & Glidden-Tracey, 2010). Following Jacobson and Truax’s (1991) two-step criterion for assessing clinically significant change, the OQ has established specific cutoff scores and reliable change indices for the total and subscale scores. A total score below the threshold score (63) indicates that the responder is in the community non-patient range of functioning as found in a diverse sample of adults in the United States (Lambert et al., 2004). As statistical significance does not always equate to clinical significance, the reliable change index (RCI) identifies whether the magnitude of change is clinically significant (Jacobson & Truax, 1991). An overall score reduction of 14 points or more is considered indicative of reliable change (Lambert et al., 2004). Clients who change 13 points or more and report a score below the established cutoff score of 63, are deemed to be recovered and to have experienced reliable, clinically significant change. Those whose change surpasses the RCI but not the cutoff threshold are considered improved (Lambert et al., 2004). For example, a client whose scores decrease from 85 to 70 would be considered improved, whereas another client’s decrease from 85 to 60 would lead to them being considered recovered.

***OQ-45.2 reliability and validity.*** Studies have shown the OQ successfully measures psychological distress, is sensitive to change week-to-week, and has high internal consistency (.93) and test-retest reliability (.84) (Beckstead et al., 2003; Lambert et al., 2004; Umphress, Lambert, Smart, Barlow, & Clouse, 1997; Vermeersch, Lambert,



& Burlingame, 2000). Psychometrics from a study comparing the OQ to similar commonly used assessment measures (i.e. BDI) determined that the “concurrent validity for the OQ and its individual domains with the criterion measures were all significant beyond the .01 level of confidence” (Lambert et. al., 2004, p. 13).

### **Procedure**

Participants completed the OQ six times: Week 1 (Time 0), Week 3 (Time 1), Week 5 (Time 2), Discharge (Time 3), and at 6- and 18-month post-discharge follow-up (Time 4 and 5). The instrument was completed by paper and pencil at Time 0, 1, 2 and 3 due to the wilderness setting. Scores were inputted into Outcome Tools, an online data management system. Score sheets were scanned into electronic form for record keeping. Follow-up questionnaires were administered via email with a link to the questionnaire. The research coordinator for the study sent an email at the six-month mark requesting completion of the OQ for the six-month data point. If not completed within one week a reminder email was sent. Non-responders received a third and final reminder using alternative contact information provided at intake. The same procedure was followed for the 18-month follow-up, yet with the addition of participants being offered a ten-dollar electronic gift card to an outdoor gear store, iTunes, or Amazon for completing the questionnaire. Follow-up scores were entered into Outcome Tools, exported to Excel, then SPSS for analyses.

### **Data Analysis**

Hierarchical Linear Modeling (HLM) was chosen for its utility analyzing correlated data typical of repeated measures designs (Carey, 2014). This methodology offers greater precision over other multivariate repeated measures approaches allowing

the researcher to look at individual starting points and rates of change as opposed to group means. This was especially important given the doubly nested data structure of this study (i.e., repeated observations within individuals, who are nested within a particular group setting) (Raudenbush & Bryk, 2002). Also important is the ability to retain incomplete data sets as long as data are missing-at-random (Garson, 2012; Raudenbush & Bryk, 2002; Seltman, 2012). Ultimately, HLM allowed for a dynamic understanding of how variables of interest change over time (Osborn, 2000). As such, HLM is considered appropriate for understanding study results in relation to clinical implications (Carey, 2014; Seltman, 2012; Sink & Mvududu, 2010).

Upon IRB approval, the first step in the analysis was to plot the mean OQ total and subscale scores by time. Visual examination of the histograms and scatter plots suggested a normal distribution and linear relationship between time and change. Additionally, a normal distribution was found when the residuals were plotted to check the assumptions of an unconditional growth model.

Assessment intervals varied across participants from treatment Week 5 to discharge, and time spacing between assessments varied from 2 weeks to 12 months. Due to these unequal intervals, data were analyzed using a three-piece time-trend model (Jaggars & Xu, 2015). The first timepiece included the data gathered Weeks 1, 3, and 5. One unit of time in the first timepiece equated to 2 weeks. The second timepiece included data from Week 5 to Discharge. Time between assessment at Week 5 and discharge varied amongst participants due to differing lengths of stay in-treatment. The third and final timepiece spanned discharge to 18-month post treatment with each unit of time equaling 6 months. When linked together the three timepieces paint a complete picture of

the participant journey while allowing for a consistent measurement of time in timepieces 1 and 3 in order to calculate the mean rate of change.

Unconditional models were run for each timepiece with time as the predictor and Time 0 specified as the intercept to establish a baseline. Each model included a random effect for the intercept allowing each participant to have his or her own starting point. In the first and third timepieces the rate of change was also allowed to vary across participants.

## **Results**

### **Preliminary Analyses**

Response rates are detailed in Table 1. Eighty-five percent ( $n = 159$ ) of participants completed the Week 1 assessment, 82% ( $n = 153$ ) at Week 3, 81% ( $n = 150$ ) at Week 5, and 70% ( $n = 131$ ) at discharge. Post discharge 44% ( $n = 81$ ) of participants responded at the 6-month follow-up, while 39% ( $n = 79$ ) responded at the 18-month follow up data point. Attrition from Time 1 to Times 5 and 6 was close to 50%. Decreases in response rates post discharge were expected. The response rates in this study are sufficient as retention rates of 40% are considered typical when administering via email (Sheehan, 2001).

To determine if data were missing at random or due to systematic reasons that would prevent generalizability (e.g., non-response bias) (Gay, Mills, & Airasian, 2009) the Week 1 OQ total score for those who did not respond at discharge were compared to the overall sample at Week 1. Because primary analyses for this study extend beyond discharge, scores were compared similarly between Week 1 and 18-month follow-up responders and non-responders. There was no statistically significant difference between

responders ( $M = 71.38$ ,  $SD = 26.05$ ) and non-responders ( $M = 70.02$ ,  $SD = 24.30$ ) at discharge;  $t(227) = 0.309$ ,  $p = 0.76$ . Additionally, there was no difference in Week 1 scores between those responding ( $M = 71.38$ ,  $SD = 26.05$ ) at 18-months post discharge and participants who did not respond ( $M = 72.0$ ,  $SD = 24.34$ );  $t(293) = 0.202$ ,  $p = 0.84$ . These findings provided evidence that missing data were more likely missing at random as opposed to response bias or some other shared characteristic of the non-responders (e.g., those exhibiting similarly different outcomes than responders) (Gay et al., 2009). In addition, in order to utilize unbiased parameter estimates and standard errors the full dataset was analyzed using maximum likelihood estimation.

### **Research Question 1**

Participants overall psychosocial functioning from Time 0 to Time 5 was examined by looking at the OQ total score with time as a predictor. As seen in Table 2, Time 0 expected total OQ score was above the clinical cut-off score of 63 with participants reporting a score at Week 1 (intercept) of 71.2. There was a significant reduction in total OQ total score from Time 0 to Time 2 ( $p < .0001$ ). More precisely, for every 2-week change in time across timepiece 1 there was an expected 6.7 point decrease in the participants' OQ total scores (Table 2). Similarly, the second timepiece shows total OQ scores significantly decreased from Time 2 to Time 3 ( $p < .0001$ ) with an expected reduction of 9.8 points. Finally, overall OQ scores did not significantly change from Time 3 to Time 5 ( $p = .24$ ) remaining relatively stable. These findings suggest that after five weeks the average client would be nearly considered recovered as their score change almost meets the 14-point decrease suggestive of reliable change (13.2), and below the community functioning cutoff score of 63 (57). These results indicate participants

reported the greatest improvement in overall functioning over the first five weeks of treatment (13.2) than during any other time period. Over the 18 months following discharge participants remained relatively stable reporting no significant changes in distress levels.

Random effects analysis results (see Table 3) indicate participants varied in both their starting points ( $p < .001$ ) and their rates of change from Time 0 to Time 2 and from Time 3 to Time 5 ( $p < .01$ ). Further, covariance parameters show a significant negative association between the intercept (Time 0) and change within Timepiece 1, as well as the intercept and change within Timepiece 3 ( $p < .05$ ). In both cases, these negative correlations indicate individuals with higher total OQ scores at Week 1 tended to have steeper decreases during the first five weeks of treatment, along with more improvement from discharge to 18 months post-discharge. Participants who began with a higher OQ total, suggesting greater distress and endorsement of struggle, saw more dramatic reduction in distress during their first five weeks in wilderness and post-discharge.

## **Research Question 2**

At Time 0 the expected OQ Symptom Distress (SD) subscale score was 39.2. As detailed in Table 2, a significant reduction in participants' scores of 4.2 points occurred every two weeks from Time 0 to Time 2 ( $p < .0001$ ). Similarly, the second timepiece shows a significant decrease in symptom distress from Time 2 to Time 3 ( $p < .0001$ ) with an expected score reduction of 5.3 units. Finally, SD OQ scores did not significantly change from Time 3 to Time 5. These results suggest participants improved into the non-patient range after Week 3 and reached the threshold for reliable change in Symptom

Distress between Week 5 and discharge. Upon graduation, SD scores did not show any significant fluctuations.

Inspection of the random effects analysis for the Symptom Distress subscale (Table 3) indicate participants varied in both their starting points ( $p < .001$ ) and rates of change in Timepiece 1 and Timepiece 3 ( $p < .01$ ). Covariance parameters show a significant negative association between intercept and change within Timepiece 1 ( $p < .05$ ). This suggests participants with greater symptom distress Week 1 tended to have greater reductions in distress symptoms over the first five weeks of OBH treatment.

### **Research Question 3**

Table 2 illustrates at Time 0 (intercept) participants' expected OQ Interpersonal Relationships (IR) subscale score was 17.3. This score is above the clinical cut-off score of 15 suggesting the endorsement of clinically significant struggles in interpersonal relationships. Fixed effects analysis results (Table 2) show a significant reduction in participants' IR scores from Time 0 to Time 2 ( $p < .001$ ) of 1 point every two weeks, and a significant reduction from Time 2 to Time 3 ( $p < .0001$ ) of 2.8 points. Finally, IR scores did not significantly change from Time 3 to Time 5. This suggests participants dropped below the clinical cut-off in their IR scores by discharge but did not report reliable change due to a decrease in score of less than 8 points. Congruent with the findings within the total scores SD subscale, the IR scores did not show significant fluctuations post discharge.

Closer inspection of the patterns and relationships in intercept and change trajectories, revealed participants varied in both their intercept ( $p < .001$ ) and their rates of change in OQ IR scores in Timepiece 1 and Timepiece 3 ( $p < .01$ ) (Table 3). Further,

the covariance parameters suggest a significant negative association between intercept and change within Timepiece 1 as well as intercept and change within Timepiece 3 ( $p < .05$ ). This suggests participants with greater OQ IR scores at the beginning of treatment tended to have greater improvements in relationships from Week 1 to Week 5 and from discharge to 18 months post-discharge.

#### **Research Question 4**

At Time O, the expected OQ Social Role Performance (SR) score was 14.7 (Table 2). The first timepiece suggests for every 2 week change in time there is a significant 1.5 point improvement in relationships reported from Time O to Time 2 ( $p < .0001$ ). The second timepiece also showed a statistically significant reduction on the interpersonal relationships subscale score from Time 2 to Time 3 ( $p < .0001$ ) with an expected reduction of 1.6 units. Finally, SR OQ scores did not significantly change from Time 3 to Time 5. These findings suggest that participants dropped below the clinical cut-off score of 12 at Week 5 but did not change enough to demonstrate reliable change in their Social Role scores.

Participants varied in both their starting points ( $p < .001$ ) and rates of change in OQ SR scores within Timepiece 1 and Timepiece 3 ( $p < .01$ ) (Table 3). Further, the covariance parameters showed a significant negative association between starting point and change within Timepiece 3 ( $p < .05$ ). This indicates participants with greater OQ SR Week 1 scores reported greater improvements in social role from discharge to 18 months post-discharge. However, unlike findings in the OQ total and other subscale scores, there was no significant correlation between intercept and change within the first five weeks of treatment on the SR subscale.

## Discussion

The overall findings of this study are that participants varied in their starting points and rates of change over time. On average, the participants started high on symptomatology and showed significant reductions across all scales from Week 1 to Week 5 and from Week 5 to discharge. Then, the expected symptomatology levels stabilized from discharge to 18-months post-discharge. The constructs captured in the subscales of the OQ all shifted in a similar pattern throughout the participants' wilderness journey and beyond. Participants in this study reported a similar overall level of distress and impairment in functioning (OQ total score of 71) to the expected levels found within a population seeking mental health care (Lambert et al., 2004).

The findings in this study suggest OBH can be an effective intervention for young adults. Participants showed statistically and clinically significant change in their time in wilderness and maintained gains up to 18 months post-discharge. Client's reported a reduction in symptoms of distress and interpersonal difficulties, and an increased sense of purpose while participating in the intervention. These gains appeared to be maintained as participants integrated back into civilization and faced the stressors and challenges of young adulthood (Erikson, 1980; Pottick et al., 2008).

A criticism of residential treatment in general, and a concern for OBH practitioners in particular, is that client gains may be lost after leaving a controlled treatment environment (Leichtman & Leichtman, 2001). Results from this study showed there was no statistically significant change in OQ scores (total and all subscales) from discharge to 6 and 18 months follow up. This suggests treatment gains obtained in the wilderness residential setting were maintained with participants remaining within the



community functioning range. In other words, they successfully moved from the inpatient score range to the community functioning range up to 18-months after completing treatment. A reason for this may be that as participants work towards completion, a focus in OBH treatment becomes relapse prevention and transference of learning (Bray, 2014a; Gass, Gillis, & Russell, 2012). This is an encouraging finding for outdoor behavioral healthcare programs and provides additional evidence for the efficacy of such interventions.

A review of the findings within the fixed effects analysis of the subscales found that, unlike Interpersonal Relationships and Social Role, participants reported levels of Symptom Distress (SD) decreased to the point of hitting the threshold for reliable change. The SD subscale assesses for anxiety, stress, and depression (Lambert et al., 2004). This finding is not surprising given the utilization of physical activity, a regimented schedule, healthy diet, and a highly supportive and emotionally safe environment found in wilderness therapy that have been found to influence depression and anxiety (Fox, 1999; Lopresti, Hood, & Drummond, 2013). Elements of this treatment modality may lead to an immediate decrease in symptom distress, while relationship building and the establishment of social roles may take more time before noticeable changes occur. In addition, the social role subscale assesses close relationships and the remote setting of OBH prevents clients from directly connecting with outside relationships on a regular basis.

An important finding of this study was participants who displayed greater distress at Week 1 showed greater gains both in treatment as well as post-discharge. The greater the level of impairment for the OBH participants, the greater the change they made in

treatment. This finding is in contrast to Lambert's (2001) study that found outpatient therapy participants with significantly higher OQ scores at intake showed less improvement over time than those with lower intake score. The negative correlation found in this study between intercept and rate of change suggests that wilderness therapy may be especially effective for individuals with a high level of distress who do not respond as well to outpatient therapy. The participants may benefit from an intensive intervention such as OBH that completely removes them from their system and the stressors of civilization.

Participants OQ total scores changed more dramatically in the first five weeks of treatment (13.2 points) than during the rest of their stay in wilderness. Findings suggest rate of change slows as time in program increases. This may be due to there being less change being reported due to the decrease in the possible range of scores but also could be suggestive of diminishing returns. Given the relatively high, and at times prohibitive, cost of outdoor behavioral healthcare programs (Bray, 2014b), the question of whether or not length of stays could be shortened without compromising outcomes is an area for further research. Using Jacobson and Truax's (1991) formula for identifying clinically significant change, present study participants in this study met the cutoff score and were very close to the reliable change criteria to be considered recovered after five weeks in program (Lambert et al., 2004). Shorter, less expensive treatment stays could increase accessibility to this unique treatment modality thereby, and as a result opening up this intervention to underserved and under-represented OBH populations such as those of lower socioeconomic status. However, the finding that the participants maintained their

gains post-discharge could be a factor of the intensive transition planning and solidification of learning that occurs in the last few weeks of treatment.

### **Limitations**

While the findings from this study are encouraging, limitations exist. First was the use of self-report data and only one outcome measure. This limits the ability to triangulate the findings in this study. Additionally, this outcome study utilized a convenience sample and within-subjects design without a control group. This allows for potential threats to internal validity (Heppner, Wampold, & Kivlighan Jr, 2007). However, the relatively short duration of the wilderness therapy intervention helped to reduce the threat of maturation or history (Gay et al., 2009; Heppner et al., 2007). Another limitation was that the second timepiece contained only two time points. This limited the ability to look at variances and correlations between intercept and change within the timepiece. As is typical with repeated measures longitudinal designs (Heppner et al., 2007), attrition impacted the sample size of this study. Discharge plans varied dramatically between participants introducing more potentially confounding variables in assessing the impact of the wilderness therapy intervention. Many transitioned into a residential, therapeutic program to help them transition back into civilization and build off their work in wilderness, while some others did not. This introduced the possibility of additional uncontrolled variables influencing participant change post-discharge.

### **Recommendations for future research**

Further OBH research with young adults is needed. Given the various dimensions of this distinctive treatment modality it is difficult to discern the essential change agents. Research attempting to isolate key change factors associated with this intervention would

be valuable. Findings that identify the influential factors in OBH could lead to integration of these factors (i.e. experiential processing, adventure-based activities, or group work in natural settings) into outpatient therapy with clients in high distress who are often not responsive to traditional outpatient therapeutic approaches yet do not have the resources for OBH (Lambert, Hansen, & Finch, 2001). Furthermore, control group study designs would help strengthen what has solely been within-subjects research in the field. Another noted limitation of this study was the introduction of various post-discharge environments for the participants. Future research that can control for and analyze the influence of various aftercare plans to inform discharge planning would be essential to increasing the long-term well-being of clients. An additional need for the field is research focused on the demographics of the participants and other in program data to evaluate if outcomes vary based on different presenting problems, gender, ages, length of stay, or other factors. Finally, research to determine if long-term well-being differs based on length of stay in an OBH program would be useful in examining how much time in treatment is optimal.

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Table 1: OQ Total and Subscale Descriptives by Time Point

<b>Time</b>	<b><i>N</i></b>	<b>Total</b>		<b>S.D.</b>		<b>S.R.</b>		<b>I.R.</b>	
		<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
0	159	71.38	26.06	39.18	16.51	14.82	5.05	17.38	7.45
1	153	62.18	26.12	33.65	16.32	12.76	5.39	15.77	7.25
2	150	57.10	26.78	30.52	15.55	11.67	5.68	14.91	7.35
3	131	47.11	26.44	24.72	15.40	10.21	5.38	12.18	7.24
4	81	47.81	23.03	26.14	14.06	8.96	4.01	12.72	6.79
5	73	49.15	24.99	26.62	14.54	9.38	4.72	13.15	7.70

*Note.* S.D. = Symptom Distress, S.R. = Social Role, I.R. = Interpersonal Relationships

Figure 1: OQ 45.2 Total and Subscale Scores

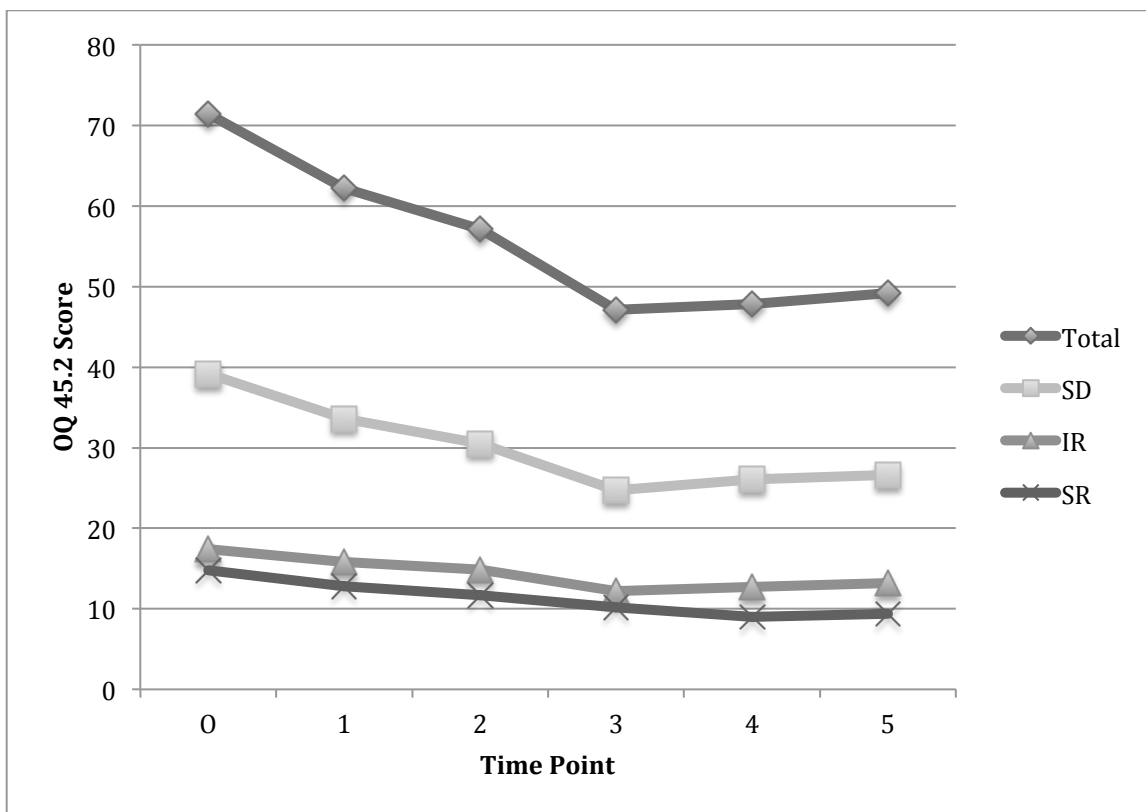


Table 2: Fixed Effects Results for OQ Total and Subscales Across Timepieces

OQ Total				
	<u>Estimate</u>	<u>SE</u>	<u>DF</u>	<u>P-Value</u>
Intercept	71.16	2.01	185	<.0001
Timepiece 1	-6.67	1.04	558	<.0001
Timepiece 2	-9.84	1.67	558	<.0001
Timepiece 3	1.23	1.06	558	.2457
OQ Subjective Distress				
Intercept	39.17	1.28	185	<.0001
Timepiece 1	-4.18	0.62	558	<.0001
Timepiece 2	-5.35	1.02	558	<.0001
Timepiece 3	0.95	.61	558	0.1177
OQ Interpersonal Relationships				
Intercept	17.30	0.57	185	<.0001
Timepiece 1	-1.05	0.29	558	.0004
Timepiece 2	-2.80	0.47	558	<.0001
Timepiece 3	0.53	0.31	558	.0818
OQ Social Role				
Intercept	14.72	0.39	185	<.0001
Timepiece 1	-1.49	0.24	558	<.0001
Timepiece 2	-1.65	0.34	558	<.0001
Timepiece 3	-0.30	0.23	558	.1939

Table 3: OQ Total and Subscales Variances and Correlations Matrix

OQ Total			
	<u>Intercept</u>	<u>Timepiece 1</u>	<u>Timepiece 3</u>
Intercept	511.7***	-.4 c*	-.4 c*
Timepiece 1	-67.5*	57.9***	-.097 c
Timepiece 3	-63.6*	-5.2	50.9**
OQ Subjective Distress			
Intercept	214.36***	-0.52 c**	-.35 c
Timepiece 1	-32.40**	18.15**	-.018 c
Timepiece 3	-18.77	-.28	13.49**
OQ Interpersonal Relationships			
Intercept	40.83***	-.44 c**	-.49 c**
Timepiece 1	-6.09**	4.75***	.29 c
Timepiece 3	-6.34**	1.26	4.10**
OQ Social Role			
Intercept	15.40***	-.31 c	-.40 c*
Timepiece 1	-1.87	2.36**	-.51 c
Timepiece 3	-2.49*	-1.24	2.46**

\*p < .05. \*\*p < .01. \*\*\*p < .001.

Note. c = correlation

### **Chapter 3:**

## **Outdoor Behavioral Healthcare: An Assessment of Client and Treatment Characteristics on Young Adult Outcomes**

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### **Abstract**

Client and treatment demographic effects were analyzed for 186 young adults who participated in outdoor behavioral healthcare (OBH). Hierarchical linear modeling results found no differences at intake or in change trajectories while in treatment or at 6 and 18 months follow-up. Participants benefited similarly in treatment and maintained gains post-discharge regardless of age, length of stay, gender, therapist, or primary diagnosis. Findings support the utility of OBH in general, and the potential for greater impact with client's experiencing a high level of dysfunction. Results are detailed and implications, limitations, and future research directions are discussed.

*Keywords:* Wilderness Therapy, Outdoor Behavioral Health, Young Adults, Outcomes, Hierarchical Linear Modeling



## Outdoor Behavioral Healthcare: An Assessment of Client and Treatment Characteristics on Young Adult Outcomes

Young adulthood is a transitional developmental stage stretching from late teens through mid-20s. Young adults face increasing pressures to individuate, pursue academics, start a career, and build serious relationships. This stage “can be a stressful process because young people become more self-sufficient and make decisions that shape their future” (Substance Abuse and Mental Health Services Administration, 2013, p. 1). It is therefore no surprise that studies regularly show higher rates of mental illness and substance use in this population compared to adolescents or older adults (Pottick et al., 2008; Substance Abuse and Mental Health Services Administration, 2013).

Effective mental health treatment is needed for young adults. Between 2010 and 2012 one in five young adults had a mental illness. Additionally, 6.4 percent of young adults (aged 18 to 25) had a co-occurring substance use disorder along with a mental illness diagnosis (Substance Abuse and Mental Health Services Administration, 2013). Unfortunately, a majority of young adults with mental illness do not receive mental health services (Substance Abuse and Mental Health Services Administration, 2013). Furthermore, limited research exists examining the effectiveness of the intensive treatment modalities specifically targeting young adults. Studies examining inpatient treatment have most often examined relapse rates for substance users (Hesse, Austin, Lykke, & Oestrich, 2009).

In 2013, the Substance Abuse and Mental Health Services Administration declared: “addressing the behavioral health needs of this age group is a critical public health issue because mental health disorders are associated with residential instability,

lower educational attainment, unemployment, and poorer access to health services” (pp. 8-9). Supporting young adults with mental health and substance use issues is a growing challenge. Of the 40 percent of young adults with a mental illness who did receive treatment from 2010-2012, nine percent received some sort of specialty treatment (Substance Abuse and Mental Health Services Administration, 2013).

Outdoor behavioral healthcare (OBH) is a unique specialty treatment modality that has grown in prevalence over the last thirty years (Hoag et al., 2013; Russell et al., 2008). OBH, often referred to as wilderness or adventure therapy, initially began by serving adolescents. It utilizes the inherent value of contact with nature to promote health (Maller, Townsend, Pryor, Brown, & St Leger, 2006) combined with therapeutic programming, group living, and trained staff (Russell, 2001). Supported by promising outcomes, OBH programs have expanded to work more and more with young adult clients (Russell et al., 2008). The most thorough meta-analysis to date on adventure therapy concluded by stating: “these findings suggest adventure therapy offers a moderately effective treatment modality for improving psychological and/or behavioral functioning, and can be a beneficial counterpart to already established treatments.” (Bowen & Neill, 2013, p. 41). Most recently, Hoag et al. (2013) found statistical and clinically significant change in well-being outcomes for young adults in OBH. However, there have not been any published studies that have looked at how client characteristics and treatment variables impact the change process and post-discharge well-being for young adults in wilderness therapy. This gap leaves questions around how clients comparatively fare in wilderness. Answers to these questions could potentially inform how treatment can be tailored to better treat all clients.

## **Outcomes**

Clients arrive to treatment with characteristics and experiences that influence the likelihood of treatment fidelity and success (Phillips et al., 2000), yet past research has predominantly looked at outcomes and not necessarily individual or program characteristics related to outcomes (Tucker et al., 2014). The outcomes research tracking young adults post discharge from inpatient treatment programs that has been done has generally looked at substance use abstinence as opposed to mental health (Hesse et al., 2009; Hoeppner, Kelly, Urbanoski, & Slaymaker, 2011). Adventure therapy is a term often used synonymously with wilderness therapy to represent work with clients involving outdoor activities and experiential learning (Bowen & Neill, 2013). In the conclusion of their thorough meta-analysis on adventure therapy outcomes (Bowen & Neill) state: “Further investigation is needed to better understand the considerable variability in adventure therapy outcomes” (p. 43).

The research that has been done to look at predictors of change in OBH has been done with adolescent participants. Demographic information for adolescents in inpatient or OBH treatment has been found to have a moderate to no effect on outcomes (Bowen & Neill, 2013; Hair, 2005). A meta-analysis of 18 studies looking at residential outcomes for adolescents concluded: “individual characteristics such as diagnosis identified at admission appear to have a negligible association with successful discharge” (Hair, 2005, p. 570). Bowen and Neill’s (2013) published review of adventure therapy outcomes and moderators found the participant characteristics of mean age, sample source, race, gender, population, and presenting problem explained only 27 percent of the variance. These findings suggest there is little known about what types of clients do best in OBH

programs and how clinicians and program directors can tailor the experience based on client characteristics to increase effectiveness.

There has yet to be a substantial study looking at moderators or predictors of change for young adults in wilderness therapy programs. In order to support young adults and refine treatment options, “it is essential to understand the mental health and co-occurring substance use issues in this population and how these problems impact their ability to succeed in life” (Substance Abuse and Mental Health Services Administration, 2013, p. 10). We know young adulthood is a challenging life stage which, along with opportunity, ushers in a spike in mental illness and substance use greater than any other population subgroup (Pottick et al., 2008). Currently, increasing numbers of young adults are utilizing outdoor behavioral healthcare for inpatient treatment (Russell et al., 2008; White, 2011). Clinically and statistically significant change has been evidenced for adolescents in OBH programs (Magle-Haberek, Tucker, & Gass, 2012); and emerging research is showing similar findings for young adult clients (Hoag et al., 2013). Researchers are attempting to determine moderators of change in inpatient treatment for adolescents (Bowen & Neill, 2013; Hair, 2005); however, studies with similar focus are lacking in young adult clients in OBH programs.

This study sought to address gaps highlighted in the literature by looking at how age, gender, primary diagnosis, therapist assignment, and length of treatment effects the overall well-being of young adults over time both in treatment and post-discharge. The questions guiding this study were:

1. What influence does participant age at intake have on psychosocial well-being?

2. What influence does gender have on psychosocial well-being?
3. What influence does primary diagnosis have on psychosocial well-being?
4. What influence does therapist assignment have on psychosocial well-being?
5. What influence does length of treatment have on psychosocial well-being?

### **Selection of Constructs**

#### **Age**

The increase of OBH utilization by adults (Russell et al., 2008) suggests that understanding the effectiveness of this modality across different ages is needed. Tucker et al. (2013) researched the influence of adventure therapy and predictors of change including age. They found no differences in their predominantly adolescent sample ( $N = 1,335$ ) and called for continued research to understand if adventure based therapies were “equally effective across age groups” (p.175). Two other adolescent studies within the OBH field also found that outcomes did not vary for participants when looking at age (Behrens & Satterfield, 2011; Tucker et al., 2014). This study will look to see the impact of age within a young adult population in OBH.

#### **Gender**

A 2013 Substance Abuse and Mental Health Services Administration survey found over 60 percent of young adults with a mental health diagnosis were female. While more females were found to present with mental health challenges, OBH studies have regularly reported considerably more males tend to enroll in wilderness therapy (Hoag, Massey, & Roberts, 2014; Hoag et al., 2013; Russell et al., 2008). Hoag and colleagues reported females constitute less than 20% of OBH clients.

Differences in the general public and those utilizing wilderness therapies are not

limited to a discrepancy between need and utilization. Lambert et al. (2004) found no outcome differences between males and females in both clinical and non-clinical settings. However, gender has been found in multiple studies to be a predictor of change in outdoor behavioral healthcare (Hoag et al., 2013; Magle-Haberek et al., 2012; Russell, 2003; Tucker et al., 2014). Tucker et al. (2014) examined a large dataset of 896 adolescents in OBH and found “females were 3.5 times more likely than males in OBH programs to have 10 or more points of improvement” (p. 145). Similarly, Russell (2003) found females had significantly different scores at admissions—and by discharge their scores had reduced 49% more on the self-report Youth Outcome Questionnaire than male clients over the course of treatment in an OBH program.

In one of the first studies looking solely at young adult outcomes in OBH, Hoag et al. (2013) found significantly higher scores for female clients than male clients at admission, but the difference was not significant by discharge. The authors surmised this could be a factor of females needing to demonstrate greater symptomology before a challenging intervention like OBH is considered. The authors called for more research into the differences between genders in outdoor behavioral healthcare stating: “this gender trend of females in wilderness therapy entering at a higher level of dysfunction and showing greater change merits more study and could have important implications for clinicians and wilderness programs” (Hoag et al., 2013, p. 9).

### **Primary Diagnosis**

There has been limited research examining the impact of presenting problems on outcomes in OBH. The research that has been done has shown mixed results with the only difference being found with severe mental illness or mood disorders (Hesse et al.,

2009; Russell, 2003; Tucker et al., 2014). Diagnostic information has been found to have no predictive value related to successful completion of inpatient (as measured by abstinence from substance use) dual diagnosis treatment (Hesse et al., 2009). The one exception the authors noted was for clients diagnosed with thought disorders such as schizophrenia. Hesse et al. (2009) also suggested their findings indicated clients presenting with anxiety seemed to have more struggles than those with depressive symptoms. In two other more recent, separate studies presenting issue was found to have no predictive value for determining which clients were more likely to report clinical change after being treated in OBH or adventure therapy (Hoag et al., 2014; Tucker et al., 2014). This led the authors of one of the studies to conclude that OBH was equally as valuable for a wide range of adolescent clients (Tucker et al., 2014). Conversely, in a thorough assessment of outcomes in OBH programs, Russell (2003) found clients diagnosed with mood disorders experienced the most improvement.

### **Therapist Assignment**

The therapist is an essential component of an outdoor behavioral healthcare based intervention. However, unlike outpatient therapy the therapist is only one facet of the therapeutic mechanism at play in a wilderness therapy experience. Group process, trained field staff, the wilderness itself, and program curriculum are all additional factors that influence client outcomes (Association for Experiential Education, 2014). A 2003 study, that utilized the OQ45.2 to assess well-being and HLM to analyze the results, found that outpatient therapy clients had vastly different outcomes depending on the therapists they worked with. The authors asserted that their analysis provided “the clearest evidence that there are indeed significant difference amongst therapists in the outcomes of their

psychotherapy clients” (Okiishi, Lambert, Nielsen, & Ogles, 2003, p. 370). Furthermore, upon finding meaningful therapist effects in a separate study Anderson, Ogles, Patterson, Lambert, and Vermeersch (2009) concluded that there are significant differences in outcomes for outpatient therapy clients based on the clinician. Understanding the impact of the therapist on outcome will help the field understand where appropriate resources and energy should be invested to best improve outcome. It will also help illuminate how wilderness therapy may be similar or different than more traditional therapeutic approaches in the mechanisms of change.

### **Length of Stay**

Wilderness therapy is a resource intensive, expensive intervention with high staff to client ratios (Bray, 2014b). Understanding the shortest necessary time needed in a wilderness setting to maximize outcomes could open up this intervention to a wider range of clients of various socio-economic status. Harnett, O'Donovan, and Lambert (2010) highlight the ethical responsibility of looking at length of stay in treatment when they ask “if on average, more therapy is better, how much therapy is enough?” (p. 1) Little research has examined length of stay in inpatient settings for optimum well-being. Gordon et al. (2006) found length of stay for adults in inpatient alcohol dependency treatment was not predictive of relapse at 3-months post-discharge. In one large study, reliable change was found after seven individual therapy sessions with each successive session having a decreasing amount of impact on the client’s well-being (Lambert et al, 1996). However, Harnett et al. (2010) reported that their finding of reliable change being obtained after the tenth week (participating in once weekly therapy sessions) was consistent with other findings. OBH is a more intensive therapeutic environment where



one might expect reliable change to be made in a shorter length of time. For example, Hoag et al. (2013) found young adults demonstrated reliable change at Week 5.

## **Method**

### **Participants and Procedure**

A convenience sample ( $N = 186$ ) was drawn from a wilderness therapy program's existing data set gathered between May 2011 and June 2012. Participants were those who completed the programs' 35-day minimum length of stay requirement. Participant demographics are summarized in Table 1. This predominately Caucasian sample was composed of 153 young men and 33 young women. As seen in Table 1 age at intake ranged from 18 to 32 years ( $M = 20.3$ ,  $SD = 2.59$ ). Length of stay ranged from 5 to 22 ( $M = 10.1$ ,  $SD = 2.46$ ) weeks in the wilderness. Participants' primary diagnoses were mood disorders (39%), substance use disorders (30%), anxiety disorders (13%), while pervasive development, behavior, and attachment disorders combined to account for the remaining 18%. Substance use disorders were the most frequently listed co-occurring disorder (75%). The participants were spread fairly evenly across the five therapists with 43 study participants (23%) working with one clinician and a low of 33 (18%) participants working with another. Post discharge, 83% of participants indicated receiving some form of continued care, such as residential or sober living, job support, outpatient therapy, academic coaching, or other supportive transition services.

### **Measure**

**Outcome Questionnaire 45.2.** The Outcome Questionnaire 45.2 (OQ) is a widely used assessment instrument in patient-focused outcome research to assess client change (Lambert et al., 2004). Highly sensitive to psychological fluctuations, it is used to track

changes during and after therapy. The 45-items assess key personal and social characteristics related to quality of life across three subscales: subjective distress, interpersonal relationships, and social role performance in order to assess client well-being and treatment effectiveness (Lambert et al., 2004). Likert response options range from 0 (*never*) to 4 (*almost always*). Subscales were developed from research pointing to the importance of relationships in life satisfaction, the prevalence of anxiety symptoms across disorders, and the premise that “a person’s intrapsychic problems and symptoms can affect their ability to work, love, and play” (Lambert et al., 1996, p. 251). The total score ranges from 0 to 180 and is a composite of all three subscales including not only measurement of distress but also endorsement of health and positive variables.

***Reliability and validity.*** Extensively used to measure psychological distress, the OQ is internally consistent (.93) and test-retest reliable (.84) (Lambert et al., 2004). Concurrent validity has been assessed with comparable measures and all were significant beyond the .01 level: Symptom Checklist 90R (.88), Social Adjustment Rating Scale (.81), and the Inventory of Interpersonal Problems (.81) (Lambert, 2007; Lambert et al., 2004).

### **Data Collection and Handling**

Initial assessments were conducted within the first week of enrollment in the OBH program. Within-program data were collected in paper and pencil form at week one, three, five, and at the time of discharge. Six and 18-month follow-up measures were distributed and collected via email. Those not responding within one week were sent an email request reminder. A similar procedure was followed for the 18-month follow-up, except a ten-dollar gift card to an outdoor gear store, iTunes, or Amazon was offered as

incentive. All data were entered into Outcome Tools, double-checked for accuracy, and then exported to SPSS for analyses. Week 1 response rates included 85% of participants ( $n = 159$ ); 82% ( $n = 153$ ) at Week 3; 81% ( $n = 150$ ) at Week 5; and 70% ( $n = 131$ ) at time of discharge. Post-discharge, 44% of participants ( $n = 81$ ) responded at 6-month follow-up, while 39% ( $n = 79$ ) responded at the final 18-month follow up.

Age at intake and therapist assignment was gathered from a review of participant demographics. The total OQ score at discharge, 6-months, and 18-months, determined participants' overall psychological distress. Gender was listed on the initial application completed by the participant. Primary diagnosis was listed on the participants' discharge summary completed by the treating therapist. The top three most common diagnoses of anxiety, mood, and substance use disorders were each coded separately with all other diagnoses (pervasive development, behavior, and attachment disorders) being combined. Length of stay was calculated based on admission and discharge dates.

### **Data Analysis**

Hierarchical linear modeling (HLM) was selected to answer this study's research questions. HLM is considered appropriate as it offers a flexible method for analyzing correlated data typical of repeated measures designs (Carey, 2014). This allowed for nuanced analysis of nested longitudinal data while examining multivariate effects (Raudenbush & Bryk, 2002). Unlike other repeated measures approaches (i.e. ANOVA) that discard all results from a subject based on a single missing data point, hierarchical linear models "allow other data on such subjects to be used as long as the missing data meets the so-called missing-at-random definition" (Seltman, 2012, p. 357). Utilizing the

greater research control of hierarchical linear modeling, the intercept and rate of change was allowed to vary across participants (Carey, 2014).

A three-piece time-trend model (Jaggars & Xu, 2015) was employed to analyze data given the unequal time spacing between administrations. Timepiece 1 spanned treatment weeks one through five (Times 0, 1, and 2). One unit of time equated to 2 weeks. Timepiece 2 included data collected Week 5 to Discharge (Times 2 and 3). Time between assessment Week 5 and discharge varied amongst participants due to differing lengths of stay in-treatment. The third timepiece captured change from discharge (Time 3), to 6-months post-discharge (Time 4), up through 18-months post treatment (Time 5). Each unit of time within this timepiece was 6 months.

Upon IRB approval a two-step analytic process was employed to examine the influence of age, gender, therapist assignment, primary diagnosis, and length of stay on OQ scores. First, main effect results were assessed to understand if there were systematic differences across the timeframe as a result of the covariates. Next, by time interactions were examined to see if there were differences in change trajectories across the five covariates. This model determined if participants had either differing baselines or rates of change. To further assess for any differences, the covariates influence on each individual timepiece was examined.

## **Results**

The statistical models assume that the level-1 residuals and level-2 random effects are normally distributed in the population. Examining sample values from the fitted models empirically validated these assumptions had been met. Histograms of estimated level-1 residuals and level-2 random effects were approximately normally distributed.

Further, bivariate scatterplots of the level-1 residuals against the predicted values helped to identify deviations from homoscedasticity, model misspecification, and influential cases. These plots did not indicate problems with the fitted models.

Prior to primary analysis missing data were analyzed to determine if data were missing at random or due to systematic reasons which would prevent generalizability (e.g. non-response bias) (Gay et al., 2009). To this end, discharge non-responders Week 1 OQ total scores were compared to the overall sample Week 1 mean scores. Because primary analyses for this study extend beyond discharge, scores were similarly compared between Week 1 and 18-month follow-up. There was no difference between responders ( $M = 70.02$ ,  $SD = 24.30$ ) and non-responders at discharge;  $t = 0.309$  (227),  $p = 0.76$ . Additionally, there was no difference between scores of those responding week 1 and participants who did not respond at 18-month follow-up ( $M = 72.0$ ,  $SD = 24.34$ );  $t(293) = 0.201$ ,  $p = 0.84$ .

Figure 1 details participants' mean OQ total scores across the six time points. The participants in this study began with a mean OQ total score of 71. Scores exceeding 63 indicate the client is in the patient/nonfunctional range endorsing more symptoms of distress than an individual found in the community (Lambert et al., 2004). Table 2 displays both main effect and covariates by time interaction overall Omnibus results. Main effect results found in Table 2 illustrate statistically significant change occurred in Timepiece 1  $F(1,558) = 40.85$ ,  $p < .0001$  and Timepiece 2  $F(1,558) = 34.75$ ,  $p < .0001$  with no differences found in Timepiece 3. This indicates participants experienced statistically significant change while in treatment and change leveled off post-discharge. Interestingly, there were no significant systematic differences found across the five

covariates. Additionally, the predictor by time analysis results found in Table 2 indicate participants as a whole varied in their rates of change within Timepiece 1  $F(1/558) = 9.11, p = .0027$ ) and Timepiece 2  $F(1/558) = 8.23, p = .0043$ ), yet no variation was found across the covariates in change trajectories across time. Table 3 displays the findings documenting no significant differences in change trajectories within each timepiece. These findings suggest all participants seemed to benefit similarly from their participation in an OBH intervention regardless of their gender, age, primary diagnosis, assigned therapist, or length of stay.

## **Discussion**

### **Age**

Findings from this study mirror previous results looking at the effects of adventure and nature-based counseling approaches with both adolescent participants (Tucker et al., 2014) and adults (Bidell, 2010; Hoag et al., 2013). The therapeutic benefits of OBH is not surprising given that adventure-based counseling has previously been found to have positive influence on adults (Bidell, 2010). This study adds to our understanding of the influence of age on OBH outcomes for young adults by suggesting that the starting points and trajectories did not differ as a function of age. Present study findings, combined with Hoag et al.'s (2013) significant findings, suggest that OBH is effective for young adults of varying ages.

### **Gender**

Previous research in OBH has indicated a marked difference in intake scores and change trajectories by gender Magle-Haberek et al. (2012). However, present study results suggest no statistically significant differences between males and females. Hoag et

al. (2013) descriptive data showed females entered OBH with OQ scores 9 points higher at Week 1 than males and 5.5 points lower at discharge. In the present study females at Week 1 had an OQ score 6.9 points higher than males yet at discharge reported a score 8.5 points lower than males. This difference was not statistically significant, potentially due to the small sample of women ( $n = 33$ ). Nevertheless, it brings up a question as to whether gender has a direct effect on outcomes or is moderated by the phenomenon of clients with greater initial distress reporting more dramatic improvements in wilderness therapy (Hoag et al., 2013; Roberts, 2015). Magle-Haberek et al. (2012) called for additional research to investigate the differences in outcomes between males and females in OBH. This investigation could be complicated due to the trend of women being admitted to wilderness with greater initial distress (Hoag et al., 2013) thereby increasing the chance that they make greater changes while in treatment.

### **Primary Diagnosis**

Inconclusive and conflicting results from previous OBH research relating the impact of diagnosis on outcomes spurred the necessity of further examination (Hesse et al., 2009; Hoag et al., 2014; Russell, 2003; Tucker et al., 2014). Participants in the present study had similar starting points and change trajectories regardless of the four diagnostic categories examined in this study. This indicates participants benefited similarly from their involvement in OBH. These findings are congruent with multiple recent findings (Hoag et al., 2014; Tucker et al., 2014). This likely is due to increased intention and selection during admissions intake screening and placement to assure appropriateness of fit within an OBH program. The admissions placement process also creates an intentional procedure in which therapist expertise and treatment planning is

matched with client needs. Additionally, the evolving clinical expertise occurring within the industry (Bray, 2014a) has increased the chance that the therapists and staff are better prepared to work with a variety of presenting problems.

### **Therapist Assignment**

Whereas Okiishi et al. (2003) found dramatic differences when looking at therapist effects, this study found no significant covariation between client outcomes and therapist assignment. These findings may have been impacted by the fact that all five therapists worked within the same program, were fully trained and licensed, and had extensive experience working in OBH programs. An additional interpretation could be that additional change agents found in wilderness therapy (Russell, 2001) outside of the clinician may compensate for the differences found in previous studies assessing therapist influence (Anderson et al., 2009; Okiishi et al., 2003). Examples of other potential change agents include group process, non-clinical trained staff, the inherent factors found in nature, expedition living, and the curriculum provided across an OBH experience (Association for Experiential Education, 2014).

### **Length of Stay**

Assessing how length of stay associates with treatment outcomes is important in the pursuit of understanding optimal lengths of stay within the restrictive wilderness environment. Participant distress levels in this study at Week 1 and their rates of change did not vary significantly when looking at the effect of length of stay. One interpretation of this finding is that the treatment team is making appropriate decisions regarding the necessary length of stay for participants. This allows for all clients to benefit similarly from their participation in wilderness therapy. Similar to the intentionality given through



admissions screening, length of stay decisions are made in a clinically informed and intentional manner. The use of individualized treatment plans (Hill, 2007) and variable lengths of stay informed by evolving clinical needs creates a dynamic program tailored to the clients.

However, the non-significant main effect results indicated participants who had greater distress at Week 1 did not stay longer than those with lesser distress. Also, by time interaction effects showed those with longer lengths of stay did not evidence greater gains. These findings open the question of whether clients directly benefit from a longer length of stay and highlight the need for additional research to determine each client's optimal length of stay.

### **Summary**

The findings in this study coupled with previous findings of meaningful change with adolescent populations in OBH (Behrens et al., 2010; Russell et al., 2008; Tucker et al., 2014) and emerging research showing similar significant growth for adults (Hoag et al., 2013), furthers the knowledge base around the relatively broad reach of outdoor behavioral healthcare. The increases in self-esteem, self-expression, and psychological functioning that Bidell (2010) found with adventure-based counseling seems to not be limited by the demographic or treatment variables assessed in this study. The participants had a distress level at Week 1 that indicated they were experiencing enough distress to fall outside of the norm for a community population. Previous findings have indicated that clients with greater initial distress show greater gains in wilderness therapy (Hoag et al., 2013; Roberts, 2015). The lack of additional significant covariates found in this study augmented by the research on initial distress, indicates that assessing to see if clients are

at a relatively high level of dysfunction is the best indicator of appropriateness of fit for an OBH intervention.

### **Limitations**

A limitation of this study was the size of the sample and attrition. This increased the chance of Type II errors when looking at the impact of the predictors hypothesized to influence outcomes. This was especially evident when looking at gender with only 33 females participating in the study. Additionally, the sole use of the OQ 45.2 to evaluate outcomes in this study limited the ways in which “well-being” was assessed.

An additional common challenge of field based action research designed to directly inform practice with an emphasis on external validity is the various possible confounding variables found within the study (Heppner et al., 2007). The participants in the study interacted with a variety of different direct care staff, numerous and constantly evolving group dynamics, and unique experiential challenges and lessons that emerged from a here-and-now process. These variables introduce more challenge in the quest to identify the change agents in OBH.

### **Recommendations**

The utilization of varied measures and strategies to assess well-being and perceived value of participation in an outdoor behavioral healthcare program across demographic and treatment variables would help in the continued quest to better understand what type and how clients are served by wilderness therapy. The OBH industry would also benefit from a joint study across similar programs that could examine the influence of various demographic and treatment variables within a larger sample size only attainable if programs combine efforts.

Outdoor behavioral healthcare is a unique treatment that has shown some promising results. However, Bray (2014) highlighted in an article entitled “Wilderness Therapy: The question of affordability” that the high cost that is often not covered by insurance prohibits clients from having access to this form of treatment. Further research is needed to understand the dose-response relationship (Harnett et al., 2010) to pinpoint how much time in treatment produces the most change within the shortest amount of time necessary. This research could potentially help open up this form of treatment to clients who currently cannot afford a longer length of stay.

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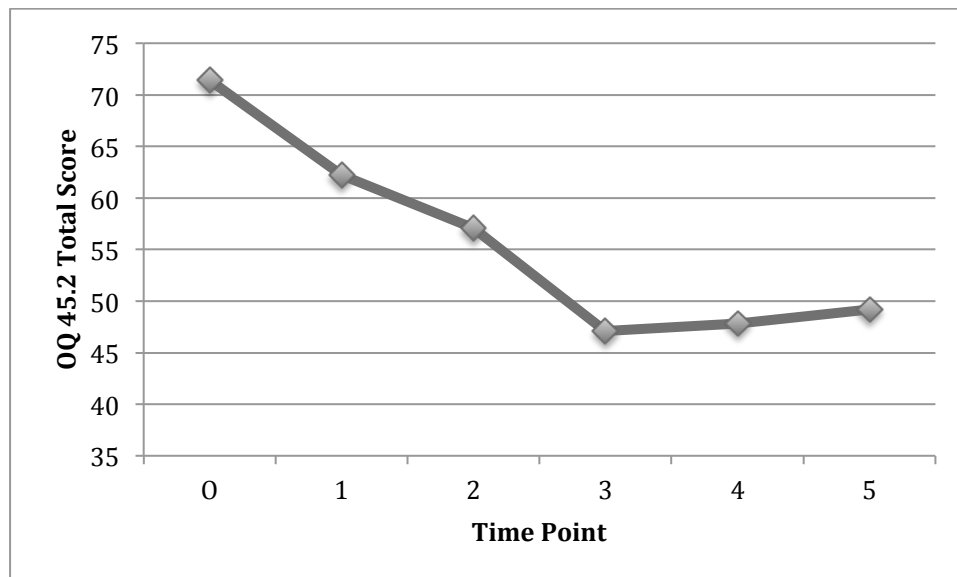
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Figure 1: Mean OQ 45.2 Total Score Results Over Time



*Note.* Time Point 0 = Week 1, Time Point 1 = Week 3, Time Point 2 = Week 5, Time Point 3 = Discharge, Time Point 4 = 6 months post, Time Point 5 = 18 months post

Table 1: Age, Length of Stay, Primary Diagnosis, Therapist, and Gender Descriptives

<b>Variable</b>	<b><i>n</i></b>	<b><i>M</i> <math>\pm</math> <i>SD</i></b>
<i>Age</i>	186	20.31 $\pm$ 2.59 yrs
<i>Length of Stay</i>	186	10.06 $\pm$ 2.45 wks
	<b><i>n</i></b>	<b>%</b>
<i>Primary Dx</i>		
Mood	71	38
Substance	56	30
Anxiety	26	14
Other	33	18
<i>Therapist Caseload</i>		
Clinician 1	33	17.7
Clinician 2	36	19.4
Clinician 3	36	19.4
Clinician 4	43	23.1
Clinician 5	38	20.4
<i>Gender</i>		
Male	153	82.3
Female	33	17.7

Table 2: Main Effect and Covariates by Time Overall Omnibus Results

Main Effect				Covariates by Time Interaction		
Effect	<i>df</i>	<i>F</i>	<i>p</i>	<i>df</i>	<i>F</i>	<i>p</i>
T1	(1/558)	40.85	<.0001	(1/528)	9.11	.0027
T2	(1/558)	34.75	<.0001	(1/528)	8.23	.0043
T3	(1/558)	1.52	.2183	(1/528)	1.98	.1600
Age	(1/175)	.04	.8353	(1/175)	.31	.5806
Gender	(1/175)	.20	.6513	(1/175)	1.61	.2057
Dx	(3/175)	.46	.7117	(3/175)	.87	.4561
Thrpst	(4/175)	.71	.5865	(4/175)	1.07	.3719
LoS	(1/175)	.54	.4627	(1/175)	.26	.6125

*Note.* T1= Timepiece 1, T2 = Timepiece 2, T3 = Timepiece 3, Dx = diagnosis, Thrpst = therapist,

LoS = length of stay

Table 3: Covariate by Timepiece Results

<b>Effect</b>	<b><i>df</i></b>	<b><i>F</i></b>	<b><i>p</i></b>	<b>Effect</b>	<b><i>df</i></b>	<b><i>F</i></b>	<b><i>p</i></b>
T1*age	(1/528)	0.61	0.4349	T1*Thrpst	(4/528)	0.88	0.4785
T2*age	(1/528)	0.09	0.7598	T2*Thrpst	(4/528)	1.37	0.2427
T3*age	(1/528)	0.00	0.9914	T3*Thrpst	(4/528)	0.34	0.8505
T1*gender	(1/528)	1.40	.2373	T1*LoS	(1/528)	0.02	0.9016
T2* gender	(1/528)	1.30	0.2542	T2*LoS	(1/528)	1.18	0.2779
T3* gender	(1/528)	1.14	0.2870	T3*LoS	(1/528)	2.12	0.1461
T1*Dx	(3/528)	0.39	0.7597	-	-	-	-
T2*Dx	(3/528)	0.96	0.4129	-	-	-	-
T3*Dx	(3/528)	0.09	0.9636	-	-	-	-

*Note.* T1= Timepiece 1, T2 = Timepiece 2, T3 = Timepiece 3, Dx = diagnosis, Thrpst=therapist,

LoS = length of stay

## Chapter 4

### General Conclusions

This chapter summarizes the two-part dissertation research study assessing young adult outcomes and predictors in outdoor behavioral healthcare (OBH). Designed to assess outcomes for young adult participants, the sample consisted of 186 participants tracked over a time period ranging from intake to 18-months post discharge. Participants' psycho-social functioning was determined by Outcome Questionnaire 45.2 (OQ) total and subscale scores across six time points: Week 1, Week 3, Week 5, Discharge, 6-months post discharge, and 18-months post discharge. This project consisted of two studies that utilized Hierarchical Linear Modeling (HLM) data analysis procedures. Both studies used a piecewise time-trend model chunking time points to allow the rate of change to be calculated across units of time.

### Summary of Manuscript 1

The first study was an outcomes study looking at change over time on the OQ total and three subscales assessing interpersonal relationships, social role, and symptom distress. Variations and covariance in starting points and rates of change were examined. Results indicated participants made statistical and clinically significant changes while in treatment, followed by a leveling off of their OQ total scores post-discharge as they re-entered society. This encouraging finding indicates meaningful gains were made in the relatively controlled therapeutic wilderness environment and maintained up to 18 months after treatment completion. More careful analysis of these results illustrated client's overall OQ scores improved more dramatically in the first five weeks than during the latter part of their treatment stay. Additionally, symptoms of anxiety and depression captured on the symptom distress subscale reduced to the point of hitting the threshold for reliable change as participants dropped into the non-patient community functioning range. The

same was not seen for the Social Role and Interpersonal Relationship subscale scores as the reductions were less dramatic. This fits with the idea that improvements could occur more quickly in regards to acute distress and depressive feelings when put in the active wilderness environment than in relationship and identity formation that may take more time to improve.

Further, random effects analysis results indicated participants who began with higher levels of distress at Week 1 generally showed more dramatic improvements both in-program and post-discharge. This suggests the contained and highly responsive treatment environment found in OBH may be especially effective for participants reporting more impairment and who are less likely to respond positively to traditional outpatient therapy (Hansen, Lambert, & Forman, 2002). This also supports the idea of wilderness therapy as an appropriate intervention for clients who have not responded to outpatient care and are in need of a higher level of care (Bray, 2014a).

Another important finding in this study is the greatest improvement in total OQ scores occurred during the first five weeks of treatment. It is also just after the five week mark that participants in this study, in general, would be considered *recovered* based on OQ score change (Lambert et al., 2004). This finding may suggest, on average, a minimum stay in OBH of five weeks in order to increase the chance of meaningful change. However more research is needed to better determine optimal expected lengths of stay.

When discharging from an OBH experience clients typically encounter many challenges and stressors not present in the wilderness. The finding that participant OQ scores remained stable six and even eighteen months post discharge is encouraging for the field and indicative of lasting change.

While encouraging, limitations to this study do exist. One limitation was the lack of a control or comparison group. This study also only tracked outcomes with participants enrolled in

one OBH program. Both of these limitations reduce the generalizability of the findings. A third limitation was attrition. The decreasing sample size across time, though within acceptable limits for repeated measures designs, diminished the power of the findings.

### **Summary of Manuscript 2**

The aim of this study was to determine the effects primary diagnosis, initial distress level, gender, the therapist, and length of treatment had on young adult client initial distress levels and outcome trajectories in an outdoor behavioral healthcare (OBH) program. This was intended to inform the process of determining what types of clients are best served by wilderness and to help inform treatment and programming decisions around treatment duration and therapist selection. The Outcome Questionnaire<sup>®</sup> 45.2 was administered to young adults ( $N = 186$ ) from intake through 18-months post-discharge follow-up. Hierarchical Linear Modeling showed that participants had similar change trajectories regardless of age, length of stay, gender, therapist, or primary diagnosis. None of the hypothesized predictors were found to have any statistically significant influence on starting points at Week 1 or on rates of change over time. All participants appeared to benefit similarly from their participation in an OBH intervention.

The absence of significant covariates found in this study, within a population that made statistically significant changes, suggests OBH may be as effective for male and female clients, of differing ages, and with varying primary diagnoses. Additionally participants benefited similarly despite working with five licensed therapists representing differing professional entities (counselors, marriage and family therapists, licensed psychologist) and having a wide range in lengths of stay in treatment. This may be a reflection of the complex nature of outdoor behavioral healthcare, and the potency of the intervention to have lasting effects even for those with shorter

lengths of stay. These findings illuminate OBH's flexibility in working similarly with a diverse population, and potential for greater impact with client's experiencing high levels of dysfunction.

Similar to study one, a limitation of this study was the sample size and impact of attrition. When the participants were divided into groups based on gender, diagnosis, therapist, or age it left relatively small subsamples thereby increasing the chance of Type II errors. More research, conceivably through collaboration across wilderness therapy programs, could allow larger sample sizes to be utilized in order to better assess the impact of demographic and treatment variables on OBH outcomes for young adults.

### **Combined Findings**

The strongest possible predictor in previous literature on OBH outcomes has been gender (Hoag et al., 2013; Tucker et al., 2014). Females have been found to make more dramatic changes while in wilderness therapy (Tucker et al., 2014). However, females have also been shown to enter OBH with higher levels of distress (Hoag et al., 2013). Also, in this study, while not significant, females entered with an OQ total score nine points higher, on average, than males. The fact that clients entering with higher scores tend to evidence greater change, paired with females entering treatment with higher scores, introduces the idea the greater decreases seen with females may not necessarily be due to gender. It could be more a function of higher initial intake scores that were found in the Chapter 2 study to be predictive of greater change.

These studies provide valuable contributions to the outdoor behavioral healthcare field by strengthening the evidence base for its expanding young adult clientele. Results provide a counter to those who have questioned the value of such a challenging treatment modality (Anderson, 2014). Findings from both studies indicate OBH had a meaningful and sustained impact on the self-reported well-being of the young adult participants. Further, this lasting change did not look



dramatically different across participants when grouped by age, gender, primary diagnosis, therapist, or length of stay. The one nuance found in rates of change across participants was those who began treatment endorsing more distress showed more dramatic rates of change.

Outdoor behavioral healthcare is utilized as a treatment modality for clients who have not responded to less restrictive forms of therapy and are in need of an intensive intervention (Behrens et al., 2010; Hill, 2007). The finding that, unlike previous research in outpatient therapy research (Harnett et al., 2010; Lambert et al., 2001), participants in OBH with higher intake scores on the OQ 45.2 showed greater improvements indicates this treatment modality may be especially suited to work with clients presenting with high levels of distress. These clients are the one's deemed as less responsive when engaging in outpatient therapy (Harnett et al., 2010). In determining the appropriateness of fit between client and OBH program, an assessment of level of functioning and symptomology may be the most important factor in trying to predict how the client will respond to the intervention.

### **Recommendations**

The findings of the first study compliment what has been found in previous studies (Hoag et al., 2014; Hoag et al., 2013; Tucker et al., 2014). There is now mounting evidence suggesting clients make statistically and clinically significant changes through OBH program participation. The present studies and others indicate clients maintain treatment gains post-discharge. So while asserting that participants' make changes in OBH is reasonable, there is still a lack of clarity as to why and how these changes occur. An area needing more research is understanding factors predictive of change in OBH. The second study of this dissertation found similar outcomes across the client and treatment predictors examined. More studies could be done to isolate different components of an OBH intervention, such as field staff, group dynamics and a nature-based

setting, to assess the extent to which these factors influence change. Once the influential factors of OBH are identified, outpatient therapists could incorporate some of the essential OBH factors into their work. This could improve outcomes for clients in greater distress who do not respond as well to traditional therapeutic approaches (Harnett et al., 2010) without requiring them to enroll in the resource intensive OBH intervention.

Another OBH area in need of further analysis is the participant experience post-discharge. Understanding how outcomes vary across differing aftercare environments would be valuable for the field in making more informed discharge planning recommendations. Gaining insight into what types of clients do best in what specific treatment environments, with which specific supports, could increase the likelihood of maintaining and even increasing treatment gains made in wilderness therapy. An additional valuable way of gathering information about the young adult OBH client experience would be to conduct qualitative research examining the lived experience of clients both in and after wilderness therapy. A phenomenological approach would be appropriate to this end. A grounded theory approach could also further this by uncovering thematic processes of change experienced across participants.

Furthering research in these areas may contribute to OBH in general, and the young adults served in particular. This would ultimately lead to more effective treatment delivered over as optimal a period of time with the most appropriate and informed post-treatment transition possible.

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## Appendix A: Outcome Questionnaire 45.2

### Outcome Questionnaire (OQ<sup>®</sup>-45.2)

**Instructions:** Looking back over the last week, including today, help us understand how you have been feeling. Read each item carefully and mark the box under the category which best describes your current situation. For this questionnaire, work is defined as employment, school, housework, volunteer work, and so forth. Please do not make any marks in the shaded areas.

Name: \_\_\_\_\_ Age: \_\_\_\_ yrs.

Sex  
ID# \_\_\_\_\_ M ☐ F ☐

Session # \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_


	Never	Rarely	Sometimes	Frequently	Almost Always	<i>SD</i>	<i>IR</i>	<i>SR</i>
						<i>DO NOT MARK BELOW</i>		
1. I get along well with others.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
2. I tire quickly.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
3. I feel no interest in things.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
4. I feel stressed at work/school.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
5. I blame myself for things.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
6. I feel irritated.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
7. I feel unhappy in my marriage/significant relationship.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
8. I have thoughts of ending my life.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
9. I feel weak.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
10. I feel fearful.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
11. After heavy drinking, I need a drink the next morning to get going. (If you do not drink, mark "never")	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
12. I find my work/school satisfying.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
13. I am a happy person.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
14. I work/study too much.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
15. I feel worthless.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
16. I am concerned about family troubles.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
17. I have an unfulfilling sex life.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
18. I feel lonely.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
19. I have frequent arguments.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
20. I feel loved and wanted.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
21. I enjoy my spare time.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
22. I have difficulty concentrating.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
23. I feel hopeless about the future.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
24. I like myself.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
25. Disturbing thoughts come into my mind that I cannot get rid of.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
26. I feel annoyed by people who criticize my drinking (or drug use). (If not applicable, mark "never")	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
27. I have an upset stomach.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
28. I am not working/studying as well as I used to.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
29. My heart pounds too much.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
30. I have trouble getting along with friends and close acquaintances.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
31. I am satisfied with my life.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
32. I have trouble at work/school because of drinking or drug use. (If not applicable, mark "never")	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
33. I feel that something bad is going to happen.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
34. I have sore muscles.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
35. I feel afraid of open spaces, of driving, or being on buses, subways, and so forth.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
36. I feel nervous.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
37. I feel my love relationships are full and complete.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
38. I feel that I am not doing well at work/school.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
39. I have too many disagreements at work/school.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
40. I feel something is wrong with my mind.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
41. I have trouble falling asleep or staying asleep.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
42. I feel blue.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
43. I am satisfied with my relationships with others.....	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1	<input type="checkbox"/> 0			
44. I feel angry enough at work/school to do something I might regret.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
45. I have headaches.....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4			
						+	+	
						<b>Total=</b>		

Developed by Michael J. Lambert, Ph.D. and Gary M. Burlingame, Ph.D.  
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## Appendix B – IRB Approval Document

 <b>Institutional Review Board</b> Office of Research Integrity   Oregon State University 8308 Kerr Administration Building, Corvallis, OR 97331-2140 Telephone (541) 737-8008 irb@oregonstate.edu   <a href="http://oregonstate.edu/irb/">http://oregonstate.edu/irb/</a>				<b>EXEMPT DETERMINATION</b>	
Date of Notification	9/17/2014				
Study ID	6483				
Study Title	Wilderness Therapy Outcomes for Young Adults				
Principal Investigator	Dr. Daniel Stroud				
Study Team Members	Sean Roberts				
Submission Type	Initial Application	Date Acknowledged	9/17/2014		
Level	Exempt	Category(ies)	4		
Funding Source	None	Proposal #	N/A		
PI on Grant or Contract	N/A	Cayuse #	N/A		

The above referenced study was reviewed by the OSU Institutional Review Board (IRB) and determined to be exempt from full board review.

### EXPIRATION DATE: 9/16/2019

*The exemption is valid for 5 years from the date of approval.*

Annual renewals are not required. If the research extends beyond the expiration date, the Investigator must request a new exemption. Investigators should submit a final report to the IRB if the project is completed prior to the 5 year term.

### Documents included in this review:

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> Protocol           | <input type="checkbox"/> Recruiting tools            | <input type="checkbox"/> External IRB approvals        |
| <input type="checkbox"/> Consent forms                 | <input checked="" type="checkbox"/> Test instruments | <input type="checkbox"/> Translated documents          |
| <input type="checkbox"/> Assent forms                  | <input type="checkbox"/> Attachment A: Radiation     | <input type="checkbox"/> Attachment B: Human materials |
| <input type="checkbox"/> Alternative consent           | <input type="checkbox"/> Alternative assent          | <input type="checkbox"/> Grant/contract                |
| <input checked="" type="checkbox"/> Letters of support | <input type="checkbox"/> Project revision(s)         | <input type="checkbox"/> Other:                        |

### Comments:

### Principal Investigator responsibilities:

- Certain amendments to this study must be submitted to the IRB for review prior to initiating the change. These amendments may include, but are not limited to, changes in funding, , study population, study instruments, consent documents, recruitment material, sites of research, etc. For more information about the types of changes that require submission of a project revision to the IRB, please see: [http://oregonstate.edu/research/irb/sites/default/files/website\\_guidancedocuments.pdf](http://oregonstate.edu/research/irb/sites/default/files/website_guidancedocuments.pdf)
- All study team members should be kept informed of the status of the research. The Principal Investigator is responsible for ensuring that all study team members have completed the online ethics training requirement, even if they do not need to be added to the study team via project revision.
- Reports of unanticipated problems involving risks to participants or others must be submitted to the IRB within three calendar days.
- The Principal Investigator is required to securely store all study related documents on the OSU campus for a minimum of seven years post study termination.