Trait Emotional Intelligence, Client Symptoms, and Predictive Factors in Wilderness Therapy

by

Kostas Zolotas
Bachelor of Arts, University of Victoria, 2011

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Supervisory Committee

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Dr. Nevin Harper, School of Exercise Science, Physical and Health Education
Supervisor

Dr. Doug Magnuson, School of Child and Youth Care
Departmental Member

Abstract

Background: Mental health issues and harmful substance use are problems that affect many Canadian youth. Wilderness therapy (WT) is a residential adventure-based therapy modality shown to have some success in treating these issues. Further research is needed regarding the ways that participants change, and if there are certain individuals that benefit more from this treatment than others. **Purpose:** The purpose of this study is to explore the changes in presenting problems and trait emotional intelligence of participants at one WT organization in Ontario, Canada. The working alliance - shown to have a positive impact on therapeutic treatment - along with sex and age, were examined to determine if these elements moderate outcomes. **Methodology:** Two separate samples were created from archival data provided by the participating organization. The first sample includes pre and post Youth Outcome Questionnaires (N=30, 14 to 18 year olds). The second sample includes pre and post Trait-Emotional Intelligence Questionnaires (N=68 youth, 16 to 20 year olds). All participants in both groups completed one Working Alliance Inventory post-WT. Descriptive statistics were calculated, paired t-tests were run, and Pearson correlation matrices and visualizations were created.

Findings/Conclusions: Findings indicate that older male individuals report greater reductions in presenting problems as a result of their participation in WT. Trait emotional intelligence did not seem to change, and the working alliance did not seem to moderate any of these outcomes.

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Acknowledgments

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Chapter 1: Introduction

What is the Issue or Problem?

The primary question this study addresses is how effective wilderness therapy (WT) may be for youth with mental health issues and who use harmful substances. One of the greatest detractors to efficacy for adolescent treatment of mental health and substance use issues is low retention (Landrum et al., 2015). WT, an adventure-based therapy modality with a residential component, is one option with significantly higher retention (Gass et al., 2019). It is a treatment modality that some studies have found to be highly effective for treating adolescents with addiction and mental health issues (DeMille et al., 2018; Kraft & Cornelius-White, 2020).

Outdoor therapy is an umbrella term that generally involves therapies that take place in natural settings (Harper & Doherty, 2021). This category captures related approaches such as adventure therapy and WT, as well as other therapies such as equine therapy and garden therapy. Adventure therapy usually involves outdoor activities, but lacks the residential or expeditionary component that is present in WT. In the United States, WT is often referred to synonymously as Outdoor Behavioral Healthcare (OBH; DeMille et al., 2018; Dobud, 2021). The focus of this study is on WT at one specific institute in Canada.

Inquiry in Context

Existing Scholarship

There is a wealth of published WT research completed in the United States, but much less so in Canada (Harper, 2017). The OBH research overwhelmingly reports positive treatment outcomes, whereas the comparatively little amount of research from Canada is less positive. Overall, positive outcomes of WT have been reported on a variety of measures, such as family functioning, communication, interpersonal relationships, changes to self-concept (Kraft & Cornelius-White, 2020), self-esteem, locus of control, personal effectiveness, clinical measures (Bettmann et al., 2016), reduced substance use (Uliaszek et al., 2019), and even a movement towards a healthier body mass index (DeMille et al., 2014). Some studies have suggested that WT is far more effective and has a greater retention rate than treatment as usual (DeMille et al., 2018; Gass et al., 2019).

Pine River Institute

This present study was conducted with archival data from Pine River Institute (PRI), which is a not-for-profit, youth (ages 13 to 19) addiction and mental health residential treatment centre with an eight-week WT phase located in Ontario (Pine River Institute, n.d.). According to their website, they were founded in 2006, and now have capacity to take on 36 individuals at a time. Of these 36 spaces, 29 are 90% funded by the Ministry of Health and Long-Term Care. PRI is committed to reaching individuals with financial constraints and has a bursary program for families that are unable to cover the additional 10%.

Rationale

PRI has prioritized data collection and research since their inception in 2006 and has collected a significant amount of data through a variety of questionnaires and metrics. Several studies have already been published from their data (Mills et al., 2013; Riddell et al., 2019; Uliaszek et al., 2019).

Among the archival data collected by PRI is the Working Alliance Inventory (WAI; Hatcher & Gillaspy, 2006) which measures the alliance between client and therapist, the Youth Outcome Questionnaire (YOQ; Dunn et al., 2005) which measures clients' presenting problems, and the Trait Emotional Intelligence Questionnaire (TEIQ; Petrides, 2009) for emotional intelligence. While the YOQ has been used in numerous WT studies (Bettmann et al., 2016; DeMille et al., 2018; Gass et al., 2019; Tucker et al., 2018), only a recent graduate dissertation has explored the use of the TEIQ in WT (Mott, 2020). Additionally, while the working (or therapeutic) alliance has been explored in very few WT studies (Bickman et al., 2004; Harper & Scott, 2006), the WAI was only found in one WT study (Harper, 2009).

Statement of Purpose

This study explored the effects of the WT phase on youth that have attended PRI through the metrics of the YOQ and TEIQ as dependent variables, and the WAI, age, and sex as independent variables. The focus was on the effectiveness of treatment, and potential predictive factors that may contribute to outcomes. By doing so, this research aimed to contribute to existing WT literature in Canada, and findings will also be shared

with the clinical and administrative teams at PRI to help in assessment and treatment services.

Guiding Questions

What are the changes in participants' presenting problems (YOQ) and emotional intelligence (TEIQ) after six to eight weeks of wilderness therapy? Are age, sex, and working alliance associated with these changes?

Chapter 2: Literature Review

Canadian literature on wilderness therapy (WT) is scant, and after several adaptations of keyword searches such as *("wilderness therapy" OR "adventure therapy" OR "outdoor behavioral healthcare") AND (Canada)* in the University of Victoria's academic databases, only a few relevant papers on the topic were apparent after hand filtering for studies in Canada. Additional consultation with my supervisor confirmed the exiguous results were due to a lack of extant research, and not inadequate searches. As such, literature from other countries, primarily the United States has been included in this preliminary review.

Outdoor Behavioral Healthcare Research

Effectiveness of Wilderness Therapy

A recent OBH study from DeMille et al. (2018) involved a direct comparison between youth that had received WT, and those that had undergone treatment as usual (TAU). By analyzing data from the YOQ filled out by parents before and after treatment, DeMille and colleagues found that the WT group had 2.75 times greater improvements than the TAU group. They reported that males generally experienced greater changes than females, though this finding was not considered to be significant. Age was not considered to be a significant factor either.

DeMille and colleagues (2018) also provided a fairly comprehensive overview of existing literature that depicts WT as a highly effective treatment for youth with mental health issues. This overview includes a list of 20 academic papers with successes

covering areas such as positive treatment gains for up to 18-months post-treatment, improved physiological outcomes, decreased substance use, mood improvements including decreased depression, and decreased conduct disorder behaviors.

The statistic of 2.75 times greater than TAU is extremely positive, especially when contrasted to research that compares different therapeutic modalities. In a seminal study that reviewed comparative clinical trials, Luborsky et al. (1975) proposed that specific therapeutic approaches account for very little difference in efficacy of treatment, a concept to which they applied the term "the dodo bird verdict"[1]. Dobud and Harper (2018) applied this term specifically to OBH research in their scoping review of studies that included direct comparison trials with other therapeutic interventions. They found that there were few salient differences that point to specific elements of WT that produce significant change. This implies that WT *is* effective, but not much more (if at all) than similar programs that do not have a therapeutic component, and nowhere near DeMille and colleagues' (2018) attestation of 2.75.

Program Completion Rates

One of the greatest challenges for treatment of adolescent mental health and substance use issues is treatment completion (Landrum et al., 2015). In a study on incident monitoring in OBH, Russell and Harper (2006) looked at four years of reports from ten different organizations. While this data showed that the rates of injuries and illnesses in OBH declined, they also found a 93% completion rate. While this data is older, it seems as though it is still the standard that is being circulated in current research.

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[1] from Lewis Carrol's (1865) *Alice's Adventures in Wonderland*, in which the dodo birds state that "everybody has won, and all must have prizes" (p. 412)

In an OBH to TAU cost-benefit analysis study, Gass et al. (2019) used a similar 94% completion rate for their calculations on a simulated group of youth, though they do not cite their source for this statistic. When compared to TAU, which they posit has a completion rate of 37%, they concluded that OBH has better treatment outcomes by a very high measure of 424%.

There are two major criticisms of this study. The first is that the authors did not provide references to their sources, specifically regarding the percentages of program completions. The second is that they did not delve into the potential reasons for having such a high rate of completion. While Gass et al. (2019) cite an Australian study (Harley et al., 2018) to validate that treatment completion rate is "one of the strongest predictors of successful therapy" (Gass et al., 2019, p. 2), they neglect to take into consideration that the Australian study was based on the therapeutic community model in which individuals voluntarily participate. Making this program completion comparison to OBH participants, many of whom were involuntarily transported to treatment, and may not have the agency to leave treatment, was a significant oversight.

Aftercare

The above studies are fairly representative of OBH research. With such formidable numbers as those mentioned above, one would expect participants to be generally successful upon returning home. However, in most cases, the participants *did not* return home after treatment, and were instead placed in longer-term residential therapeutic schools and other similar programs. Harper et al. (2021) found an average of only 21% of youth returning home after OBH treatment.

One study by Bettmann et al. (2013) looked at the YOQ results from a sample of 189 OBH clients from a WT program in an endeavor to locate specific factors that contribute to participants' successes. Like many other OBH studies, they found that there were significant improvements to YOQ scores, and that this could be at least partly attributed to being in a wilderness setting that promotes drug abstinence and coping strategies. A regression analysis was calculated for age and sex, and found no significant results. Despite the familiar story of the great successes of OBH programs, they also note that a startling 76.9% of participants moved on to out-of-home aftercare post-WT completion. This number is low compared to rates from other studies. Russell (2005) reported that aftercare was used with 85% of clients, and Bolt (2016) claimed 95% from one specific organization. Harper et al. (2021) suggest that returning home should be a measure of treatment success. If this is the case, one might question why more youth are not going back to their families after treatments that OBH research claims to be so successful?

Working Alliance in Wilderness Therapy

A positive working alliance between counselor and client has been suggested to be one of the greatest predictors of positive outcomes in therapy (Horvath, 2001). As mentioned above, only a few studies could be found in the WT literature that have focused on the working alliance. Bickman et al. (2004) examined relationship building between children with "behavioral and/or oppositional disorders" (p. 138) and professionals of a day school in a hospital, and a wilderness camp. The metrics used in this study were the therapeutic alliance scale (Doucette & Bickman, 2001, as cited in

Bickman et al., 2004, p. 138), which was administered to both youth and professionals, and the CAMS (Bickman & Doucette, 2000, as cited in Bickman et al., 2004, p. 143) to measure symptom severity. They reported that symptom severity was not correlated to the working alliance, regardless of other factors such as age, gender, or ethnicity. Additionally, their study found that there was a consistent discrepancy between the youths' views and the professionals' views of the working alliance. This discrepancy was related to age with youth younger than 17 viewing the relationship more positively than the counselors, and the inverse for youth older than 17. For the purpose of this thesis, it should also be emphasized that the sample of youth from the hospital and from the wilderness setting were all grouped together, and only some of the adult reports were from trained clinical counselors. As such, it may not provide an accurate portrayal of the working alliance in WT.

Only one published study could be found that specifically used the WAI in WT. Harper (2009) used the WAI as a process measure, the YOQ as an outcome measure, and reported a non-significant relationship between the two. However, when Harper further analyzed the WAI from its three individual subscales (Goal, Task, and Bond), he found that there were medium to large, significant correlations. Much like Bickman and colleagues' (2004) methodology, the adult reports of WAI were completed by both trained clinical counselors and group leaders, and the results did not provide a distinction between these two groups.

Research on Pine River Institute

Uliaszek et al. (2019) conducted a study on the effectiveness of the four-phase, 12-14 month residential treatment program at Pine River Institute (PRI). They compared 56 individuals that had completed treatment to 56 who did not attend the program. Through a variety of questionnaires, Uliaszek et al. found that those who completed the program had improved significantly on several facets, such as reduced substance use, fewer interactions with law enforcement, and better physical and mental health. The YOQ was not used in this study, which is notable since it is the most commonly used metric in the above mentioned OBH studies.

A potential criticism for the Uliaszek et al. (2019) study was their comparison group. Though there were few comparative studies in OBH research, most were contrasted to treatment as usual (TAU) in order to assess if OBH was more effective than other treatments. Uliaszek et al. (2019) instead compared the WT to a group that received variable treatments ranging from other types of residential treatments (30%), to day treatment (4%), to no treatment at all (18%). While there has been a call for more comparative studies in the field of WT (Dobud & Harper, 2018), it may be of benefit to choose comparison groups with more consistency to provide more clarity on what is being compared.

Though not a criticism of the study itself, it is worth bearing in mind that the outcomes of Uliaszek and colleagues' (2019) study was on the entire four-phase program, and not specifically the WT phase, which only comprises the first six to eight weeks of the year-long treatment. Therefore, it may be difficult to discern which parts of the

program can be attributed to the improvements of the youth. As such, while this study makes a strong case for PRI as an organization and their multi-phased program, it is limited in its contribution to the field of research regarding WT. This present study aims to utilize the YOQ and to focus specifically on the WT phase of PRI in order to make it more broadly relevant to WT literature.

Three other notable studies have been conducted at PRI. Mills et al. (2013) reported that there were significant improvements for individuals that went through the program at PRI and noted that these results were related to how far youth progressed in the program. Neither gender nor age were functions of these improvements. In a study focusing on youth voice, Harper et al. (2019) explored youth's perspectives of their overall experience in WT. Riddell et al. (2019) also conducted a qualitative study, but focused on identity development where they found students learned more about their identity through their relations with others. They also explored some elements that facilitated these changes, such as check-ins, acceptance within a community, and feedback exchange.

Involuntary Participants

Whereas the participants in Uliaszek and colleagues' (2019) study consented to being in treatment, Russell (2006) investigated a program for young offenders who had been sentenced to participate in a WT program in Ontario. To explore the effects of this program on youths' changes in wellbeing, Russell collected self-reported data from 40 individuals using the YOQ prior to commencing the program and at discharge. Information on recidivism was also collected by contacting parents and probation officers

assigned to the youth. Some open-ended answers were also collected from questions regarding skills, confidence, as well as interpersonal and intrapersonal skills.

While scores on the YOQ improved, Russell (2006) also noted that they were still beyond the level considered the "normal range of symptoms," implying that they are "still exhibiting significant psychological and emotional symptoms and should be considered at risk of returning to preprogram levels of functioning" (p. 196). Assessing recidivism around 16 months post-program completion, more than half the youth (53%) had been charged with an offence within that time period, which is significantly higher than the 37% from a historic study Russell reviewed (Goodstein & Sontheimer, 1987). Russell (2006) offered several recommendations, such as developing strategies to decrease recidivism, and identifying aftercare services to improve and maintain benefits from the program.

Trait-Emotional Intelligence

Trait-emotional intelligence (TEI) is the self-reported perception of one's emotion related dispositions, or, a collection of personality traits, includes biases, preferences and passion, and is not context specific (Petrides, 2001, 2011). TEI is distinguished from *ability emotional intelligence* which refers to one's actual capacity to deal with, manage, and process emotionally challenging information, and is assessed with performance tests. Lower TEI has been associated with higher levels of alcohol and drug use in adolescents (González-Yubero et al., 2019; Kun & Demetrovics, 2010), and conversely, higher TEI has been associated with better coping strategies that also result in less substance use (Resurrección et al., 2014).

TEI has not been very well researched in the field of WT, and only one unpublished master's thesis could be found on the topic (Mott, 2020). In a study on 48 participants at PRI, Mott found no statistically significant increases in TEI as a result of WT. Though age had no association to TEI, there was a significant correlation that associated males with having consistently greater self-reported scores before and after WT.

Chapter 3: Methods

Ethics

Ethics approval from the University of Victoria (protocol number: 04-0490, Appendix A) and access to archival data from Pine River Institute (PRI; Appendix B) was granted for prior and ongoing research from a SSHRC Partnership Engagement Grant together with my graduate supervisor, Dr. Nevin Harper. All participants gave consent for their data to be used. Data was de-identified and assigned numeric codes by PRI in order to maintain anonymity. Data used were collected between 2016 and 2021.

Participating Organization: Pine River Institute

PRI has an integrated multi-phase model of residential treatment in which youth with problematic substance use (mainly marijuana and alcohol) and mental health issues (most commonly ADD/ADHD, anxiety, and/or depression) go through four program phases that gradually lead towards reintegration with their families (Pine River Institute, n.d.). The first phase is wilderness therapy (WT) in which the youth spend six to eight weeks living in the wilderness doing various adventure activities, as well as individual therapy and journaling. This WT phase is the focus of this study. Phase two involves living at the PRI campus and working on academics, arts, and further therapy among other things, while also starting to bring their families into the process via family activity days on weekends. In phase three, the youth and families are closely supported in their transition back home, whereas phase four is ongoing aftercare support which is jointly designed by the family and staff. From 2016 to 2020, around 56% of individuals

completed the four-phase program, 90% of whom participated in aftercare, taking an average of 564 days (Mills & Bingley, 2021).

Measures

This study explored the changes in presenting problems and trait emotional intelligence of participants that completed WT at PRI, and investigated these changes in relation to sex, age, and working alliance.

This study examined specifically the WT phase at PRI. The Youth Outcome Questionnaire (YOQ) and Trait-Emotional Intelligence Questionnaire (TEIQ) data that were used were collected before, and within one week, after completion of the WT phase. The demographic information as well as the Working Alliance Inventory (WAI) were used to see if age, sex, or working alliance (sometimes referred to as therapeutic alliance) were predictive factors for WT outcomes at PRI. Since a relationship between therapist and client is one that takes time to develop, no data for the WAI were collected from before the WT phase, and therefore consists of only one data point collected after completion of the first phase along with the second points of data for the TEIQ and YOQ.

Youth Outcome Questionnaire Self-Report 2.0

The YOQ-SR (Appendix C) is a 64-item self-report for adolescents aged 12-18 who are experiencing behavioral difficulties (Burlingame et al., 2004; Ridge et al., 2009). It was designed by clinicians and researchers to be used in both clinical and research settings (Burlingame et al., 2001). The questionnaire takes around seven minutes to complete and uses a five-point Likert scale to measure overall emotional distress, which is further broken down into six subscales: Intrapersonal Distress, Somatic Distress,

Interpersonal Relations, Critical Items, Social Problems, and Behavioral Dysfunction. The YOQ produces subscale scores as well as an overall score. In a reliability and validity study, Ridge and colleagues (2009) found that the measure's total score test-retest correlations were high ($r = .89$, $p < 001$), and coefficient alpha for internal consistency was .95. The YOQ has a reliable change index (RCI) of 18, which is the amount an individual's score must change for it to be considered clinically significant (OQ Measures, 2018). Information on YOQ subscales, their meanings, ranges, and clinical cut-offs can be found in the YOQ Quick Guide in Appendix F.

This measure was chosen for the relatively high amount of data points that PRI collected as compared to other measures, and because it is the most commonly used metric to measure treatment effectiveness in the OBH studies reviewed in the literature. PRI's YOQ data was collected at the assessment stage (pre-WT), and at the beginning of phase two (post-WT) to identify change after WT.

Trait-Emotional Intelligence Questionnaire - Short Form

The Trait-Emotional Intelligence Questionnaire - Short Form (TEIQ; Appendix D) is a 30-item, self-report questionnaire that measures emotional self-perceptions (Petrides, 2009). Questions use a seven-point Likert scale, and evaluate four factors: Emotionality, Self-Control, Sociability and Wellbeing, as well as producing an overall score. In a systematic review and meta-analysis, Andrei et al. (2016) found that the TEIQ has significant incremental validity. They also noted that while results may be analyzed individually at the factor level, they tend to have lower internal consistency than the full form of the questionnaire. At PRI, all individuals' pre-WT TEIQ data were taken during

the admission stage, except for one, in which was during the assessment stage. This was included since the time and experiential difference between admission and the assessment stage is minimal. Post-WT data was collected at the beginning of phase two.

Working Alliance Inventory - Short Form

The Working Alliance Inventory - Short Form (WAI; Appendix E) is a non-standardized 12-point participant self-report to measure the therapeutic relationship between client and counselor that focuses on three constituent components: Goal (agreement on the overall outcomes and targets of the intervention), Task (agreement on the specific tasks that are done in sessions as a part of the counseling process), and Bond (attachments between counselor and client such as trust, acceptance and confidence) (Hatcher & Gillaspy, 2006). Pantheoretically, working alliance has been shown to be a strong determinant of positive treatment outcomes (Baier et al., 2020), including in WT (Harper, 2009).

The full 36-point WAI that is generally used in studies is often collected at various points to show longitudinal change in working alliance and is often used as a dependent variable (Baier et al., 2020; Bickman et al., 2004; Harper, 2009). In their systematic review of alliance measures, Baier et al. (2020) found that only three of the 25 studies in their review used the WAI short form with a single datapoint. Though the WAI short form's use as a dependent variable with a single point has its limitations, it is the only metric for the working alliance that is available from PRI's archival data. Collection of data for WAI at PRI was at the beginning of phase two, usually within one week post-WT, with the WT therapist in mind.

Procedures

Two different groups of data were used based on the different availability of completed questionnaires. The YOQ dataset (n = 30) consisted of all participants that had both pre-WT and post-WT YOQ scores, and the separate TEIQ dataset (n = 68) consisted of all participants that had both pre-WT and post-WT TEIQ scores. There was some overlap of 18 individuals who are in both datasets since they had all the required data for both YOQ and TEIQ scores.

Age and Working Alliance Groups

Since the overall sample size of these datasets were so small, the decision was made not to split the sample by specific ranges, but instead to divide them into three equal sized groups, both for age and WAI scores. While age groups (AG) were able to be divided equally into youngest, mid, and oldest groups, the amount of youth in each WAI group (WG) varies slightly in order to avoid separating identical scores into different groups. This process was done for both the YOQ and TEIQ datasets, and are summarized in Table 1 below.

Table 1

Groupings for Age and Working Alliance Inventory Scores

Groupings	Age Group Means (Ranges)	WAI Group Means (Ranges)
YOQ	AG1 *n=10*: 15.38 (14.50 - 16.21) AG2 *n=10*: 16.73 (16.33 - 17.04) AG3 *n=10*: 17.47 (17.17 - 17.79)	WG1 *n=9*: 13.56 (11 - 15) WG2 *n=12*: 16.3 (15.5 - 17.5) WG3 *n=10*: 18.95 (18 - 21)
TEIQ	AG1 *n=23*: 15.93 (14.50 - 16.96) AG2 *n=22*: 17.58 (17.04 - 18.25) AG3 *n=23*: 18.92 (18.31 - 20.34)	WG1 *n=19*: 13.25 (11 - 15) WG2 *n=23*: 16.38 (15.5 - 17.5) WG3 *n=22*: 19.30 (18 - 21)

Data Analysis

Data received from PRI was cleaned using Microsoft Excel 365. Additional columns were added to both YOQ and TEIQ for change from pre-WT to post-WT phase, which was calculated by subtracting the pre-WT score from the post-WT score. This data was then imported into RStudio (version 1.4.1103) for analysis.

What are the changes in participants' presenting problems (YOQ) and trait emotional intelligence (TEIQ) after six to eight weeks of wilderness therapy? Are age, sex, and working alliance associated with these changes?

After data was imported into RStudio, the descriptive statistics of frequency, means, and standard deviations were calculated for all variables including subscales to provide an illustration of the sample. In order to do a correlation matrix, the dichotomous variable of sex was given numeric values (female = 0, male = 1). A Pearson correlation matrix was made to explore the relationship between dependent and independent variables. To assess for change, paired sample t-tests were conducted. To further explore the data, visualizations were created.

Chapter 4: Results

Youth Outcome Questionnaire, Sex, Age, and Working Alliance

Sample

The dataset for the Youth Outcome Questionnaire (YOQ) sample was different than that used for the Trait-Emotional Intelligence Questionnaire (TEIQ) due to different availability of completed questionnaires, though there is some overlap of 18 individuals who had the required data filled out for both questionnaires. Only participants with completed YOQ scores for pre-WT and post-WT were used for the YOQ dataset.

The sample (n = 30) consisted of 16 males (53%) and 14 females (47%) with a mean age of 16.53 (SD 0.95, range 14.5 to 17.8). The total WAI score mean was 16.42 (SD 2.37), and the subscale means were 5.44 (SD 0.93) for Goal, 5.59 (SD 0.94) for Task, and 5.38 (SD 0.78) for Bond. The mean length of stay for the WT phase was 50.77 (SD 18.45) days with the shortest duration of 19 days, and the longest of 102 days.

What are the changes in participants' presenting problems (YOQ) after six to eight weeks of WT? Are age, sex, and working alliance associated with these changes?

Means and standard deviations were calculated for pre-WT and post-WT, as well as the change between two, and t-tests were run. Overall scores of the YOQ and its six subscales were also calculated, followed by separating these for the dependent variable of sex (Table 2). The overall YOQ score dropped a mean of 12.93 (SD 38.67), below the reliable change index (RCI) for the YOQ of 18, which is the amount the score must decrease in order to show positive clinical significance (OQ Measures, 2018). This

pattern of lowered YOQ scores was also reflected in the sub-scores which all improved, though to varying degrees. The greatest change was in Social Problems (SP; -4.00, SD = 7.23), and Somatic Distress (SD) was the least (M = -0.5, SD = 5.73).

Males displayed a greater drop in YOQ scores (-16.50, SD 41.37), coming very close to the RCI of 18, though it was not statistically significant. The change scores of females by contrast were nearly half those of the males (-8.89, SD 36.44).

Table 2

Youth Outcome Questionnaire Scores Overall and by Sex

	Mean (SD)								
	Overall *n = 30*			Females *n = 14*			Males *n = 16*		
Variable	Pre-	Post-	Change	Pre-	Post-	Change	Pre-	Post-	Change
YOQ Score	95.47 (37.93)	82.53 (32.54)	-12.93 (38.67)	101.10 (37.88)	92.29 (32.57)	-8.89 (36.44)	90.50 (38.50)	74.00 (31.00)	-16.50 (41.37)
Subscales									
ID	31.80 (13.37)	28.47 (10.87)	-3.33 (12.97)	36.07 (12.40)	35.07 (5.29)	-1.00 (11.30)	28.06 (13.43)	22.69 (9.71)	-5.38 (14.31)
S	11.37 (6.08)	10.87 (5.18)	-0.50 (5.73)	11.29 (4.78)	11.93 (4.97)	0.64 (6.64)	11.44 (7.19)	9.94 (5.34)	-1.50 (4.80)
IR	9.80 (6.14)	7.23 (4.78)	-2.57 (5.95)	10.00 (6.56)	8.50 (5.23)	-1.50 (5.60)	9.63 (5.98)	6.13 (4.13)	-3.50* (6.27)
SP	10.87 (8.17)	6.87 (7.87)	-4.00 (7.23)	10.50 (9.12)	6.71 (8.96)	-3.79* (4.76)	11.19 (7.54)	7.00 (7.09)	-4.19 (9.02)
BD	19.50 (8.15)	18.23 (6.01)	-1.27 (7.22)	19.50 (9.48)	18.07 (6.70)	-1.43 (8.20)	19.50 (7.10)	18.38 (5.56)	-1.23 (6.51)
CI	12.13 (6.87)	10.80 (6.00)	-1.33 (7.51)	13.79 (6.15)	12.00 (6.60)	-1.79 (6.89)	10.69 (7.04)	9.75 (5.42)	-0.94 (8.23)

Note. Information on YOQ subscales, their meanings, ranges, and clinical cut-offs can be found in the YOQ Quick Guide in Appendix F.

* Refers to significant $p < .05$. ** Refers to significant $p < .01$.

Means and standard deviations for YOQ scores were then done by age (Table 3). Since the overall sample size was so small, the decision was made to not split the sample by specific age ranges, but instead to divide it into three equal sized (n = 10) age groups (AG). This resulted in AG1 (M = 15.38, SD = 0.55, range 14.50 to 16.21), AG2 (M = 16.73, SD = 0.24, range 16.33 to 17.04), and AG3 (M = 17.47, SD = 0.24, range 17.17 to 17.79). Throughout these age groups, we see a steady improvement of YOQ scores with

Table 3

Youth Outcome Questionnaire Scores by Age Groups

	Mean (SD)								
	AG1 *n = 10*			AG2 *n = 10*			AG3 *n = 10*		
Variable	Pre-	Post-	Change	Pre-	Post-	Change	Pre-	Post-	Change
YOQ Score	106.80 (33.69)	107.80 (34.66)	1.00 (36.36)	82.00 (41.55)	75.00 (21.74)	-7.00 (46.40)	97.60 (37.77)	64.80 (24.80)	-32.80** (25.52)
Subscales									
ID	34.20 (8.59)	34.30 (11.97)	0.10 (11.80)	28.00 (17.67)	25.40 (7.85)	-2.60 (17.67)	33.20 (12.87)	25.70 (10.92)	-7.50 (7.58)
S	11.40 (4.67)	14.80 (4.73)	3.40 (5.74)	10.40 (7.81)	9.80 (4.24)	-0.60 (5.13)	12.30 (5.87)	8.00 (4.29)	-4.30* (3.71)
IR	11.30 (6.86)	9.80 (5.75)	-1.50 (6.82)	8.00 (5.87)	6.50 (4.12)	-1.50 (6.33)	10.10 (5.82)	5.40 (3.44)	-4.70* (4.47)
SP	12.90 (8.74)	11.70 (10.40)	-1.20 (5.55)	8.30 (8.14)	4.70 (4.64)	-3.60 (9.26)	11.40 (7.78)	4.20 (5.55)	-7.20* (5.61)
BD	23.60 (9.11)	22.80 (6.39)	-0.80 (8.04)	16.20 (6.48)	17.40 (4.40)	1.20 (6.55)	18.70 (7.59)	14.50 (4.09)	-4.20 (6.61)
CI	13.40 (5.64)	14.40 (6.43)	1.00 (5.42)	11.10 (8.39)	11.00 (5.06)	-0.10 (10.31)	11.90 (6.84)	7.00 (4.32)	-4.90* (4.93)

Note. Information on YOQ subscales, their meanings, ranges, and clinical cut-offs can be found in the YOQ Quick Guide in Appendix F. AG1 = 14.50 to 16.21 years old. AG2 = 16.33 to 17.04 years old. AG3 = 17.17 to 17.79 years old.

* Refers to significant $p < .05$. ** Refers to significant $p < .01$.

increasing age, especially in AG3 which has a statistically significant improvement of -32.8, nearly twice the RCI. This improvement is also reflected in statistically significant subscale changes for Interpersonal Relations (IR; -4.70, SD 4.47), and Social Problems (SP; -7.20, SD 5.61).

Table 4

Youth Outcome Questionnaire Scores by Working Alliance

	Mean (SD)								
	WG1 *n = 9*			WG2 *n = 12*			WG3 *n = 10*		
Variable	Pre-	Post-	Change	Pre-	Post-	Change	Pre-	Post-	Change
YOQ Score	101.78 (38.01)	71.44 (24.68)	-30.33 (37.26)	90.33 (32.43)	87.67 (27.79)	-2.6 (36.55)	94.40 (44.92)	89.10 (42.47)	-5.30 (40.61)
Subscales									
ID	34.11 (15.27)	26.00 (10.67)	-8.11 (13.20)	33.67 (11.85)	33.08 (8.26)	-0.59 (11.82)	27.40 (12.88)	25.80 (12.60)	-1.60 (13.64)
S	14.56 (6.75)	10.44 (4.39)	-4.11* (4.83)	10.76 (5.56)	12.08 (5.73)	1.33 (6.61)	9.60 (5.32)	10.40 (5.56)	0.80 (3.61)
IR	10.78 (6.28)	6.67 (3.67)	-4.11 (5.78)	8.17 (5.94)	7.83 (4.41)	-0.33 (5.84)	10.70 (6.20)	7.50 (6.28)	-3.20 (6.18)
SP	11.33 (8.14)	4.11 (5.35)	-7.22* (6.36)	8.67 (6.77)	5.00* (6.93)	-3.67 (5.02)	12.50 (9.72)	11.60 (8.86)	-0.90 (9.19)
BD	18.00 (6.44)	16.00 (4.90)	-2.00 (7.21)	18.00 (8.90)	18.25 (5.15)	0.25 (8.21)	22.20 (8.31)	20.60 (7.78)	-1.60 (6.55)
CI	13.00 (7.40)	8.00 (4.56)	-5.00 (8.76)	11.08 (5.60)	11.08 (4.58)	0.17 (6.46)	12.00 (8.18)	13.20 (7.71)	1.20 (7.13)

Note. Information on YOQ subscales, their meanings, ranges, and clinical cut-offs can be found in the YOQ Quick Guide in Appendix F. WG1 = 11 to 15. WG2 = 15.5 to 17.5. WG3 = 18 to 21.

* Refers to significant $p < .05$. ** Refers to significant $p < .01$.

The same process as above was done for the WAI. First, the sample was split into three WAI groups (WG) of similar sizes based on total WAI scores. The amount of youth in each group varies slightly to avoid separating identical scores into different groups. The resulting groups were WG1 (n = 9, M = 13.56, SD = 1.25, range 11 to 15), WG2 (n = 12, M = 16.33, SD = 0.79, range 15.5 to 17.5), and WG3 (n = 10, M = 18.95, SD = 0.92, range 18 to 21). Means and standard deviations were then calculated (Table 4 above). There seems to be a large difference (-30, SD 37.26) in WG1, including a statistically significant -7.22 (SD 6.36) in the Social Problems (SP) subscale. However, there does not seem to be a similar pattern in the following groups, as WG2 displays less of a change than WG3. It should also be noted that WG1 is the smallest group (n = 9), and therefore more susceptible to chance.

To further explore this data from a visual perspective, boxplots were created for sex (Figure 1), age (Figure 2), and WAI (Figure 3). As boxplots have the potential to hide independent data points, individual scores have been overlaid. Figure 1 illustrates a drop in YOQ scores for both females and males, with a more significant drop for the latter. Figure 2 shows a consistent drop with each consecutively older age group. Figure 3 indicates that the group with the lowest WAI scores may have displayed a greater decrease in YOQ scores, though there seems to be no difference between WG2 and WG3. As this change is not consistent with all three groups, this may be more due to chance than a display of a pattern.

A Pearson correlation matrix was created to explore the potential relationships between the independent variables (sex, age, working alliance), and the dependent

Figure 1

Youth Outcome Questionnaire Score Changes by Sex

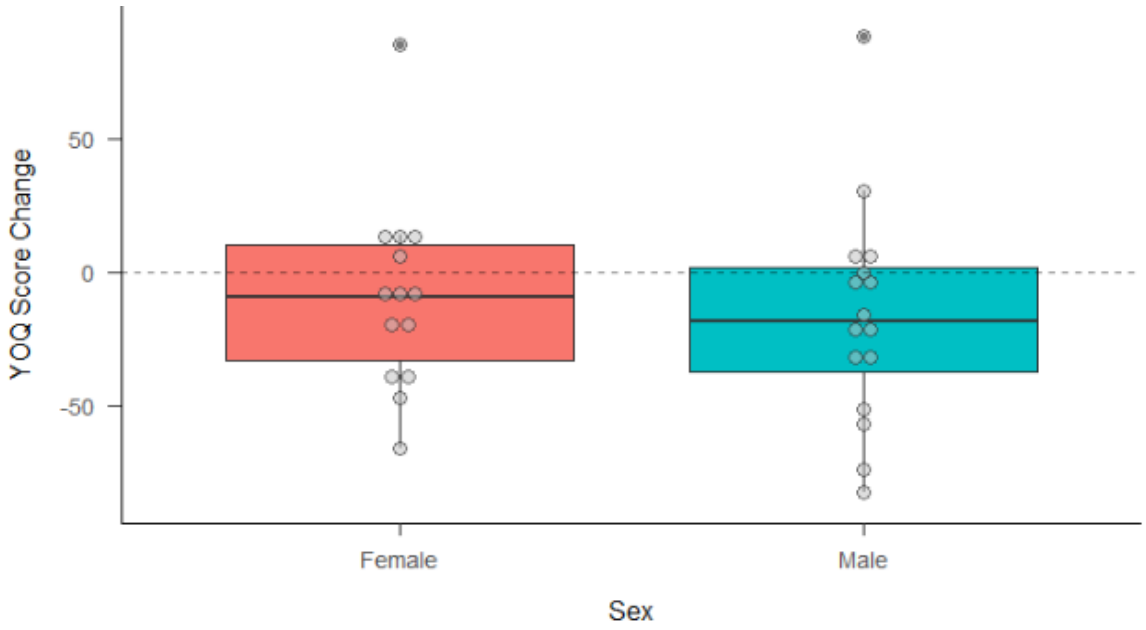
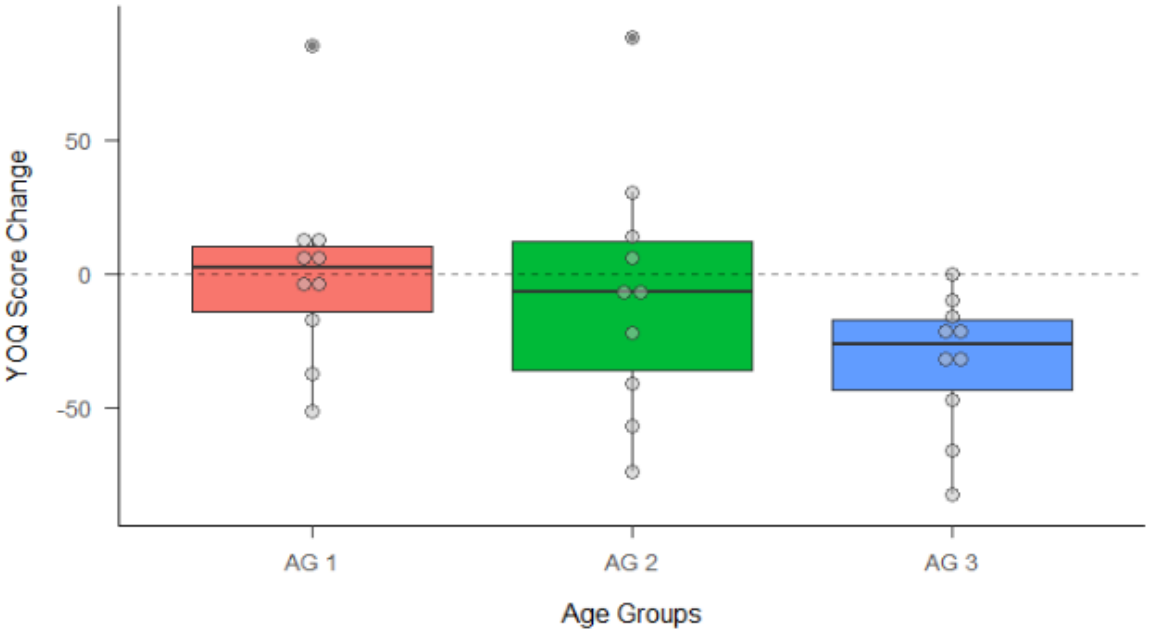


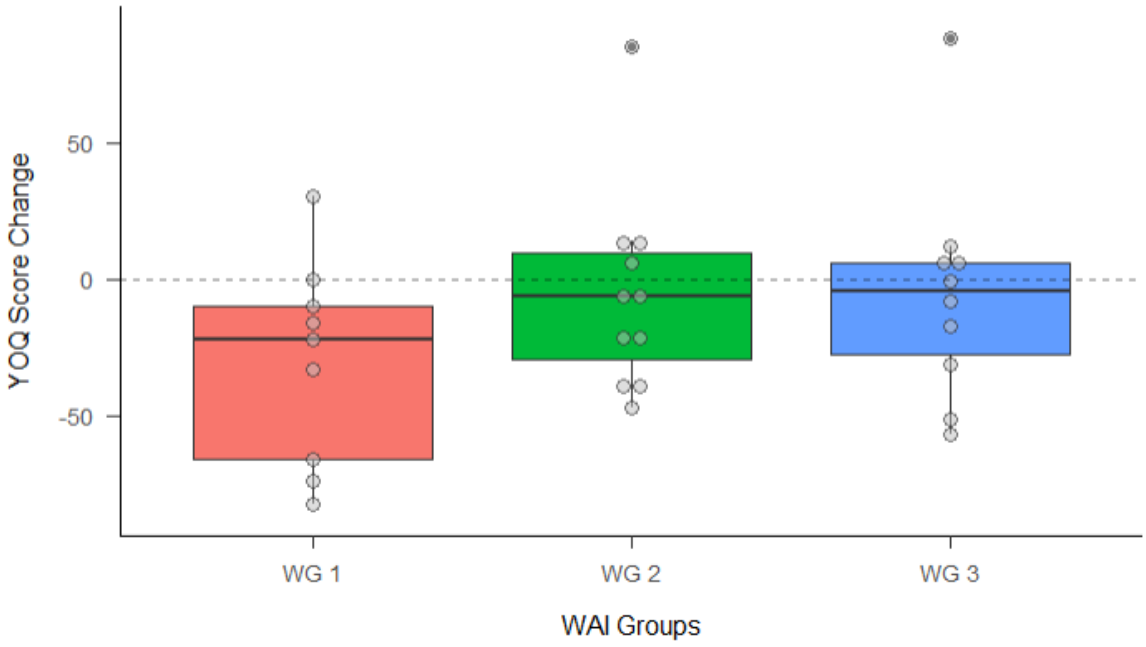
Figure 2

Youth Outcome Questionnaire Score Changes by Age Groups



Note. AG1 = 14.50 to 16.21 years old. AG2 = 16.33 to 17.04 years old. AG3 = 17.17 to 17.79 years old.

Figure 3
Youth Outcome Questionnaire Score Changes by Working Alliance



Note. WG1 = 11 to 15. WG2 = 15.5 to 17.5. WG3 = 18 to 21.

Table 5
Correlations between Predictor Variables and YOQ

Variables	Score Pre-WT	Score Post-WT	Score Change
Sex	-0.14	-0.29	-0.10
Age	-0.07	-0.45*	-0.31
WAI Total	-0.14	0.14	0.26
Subscales			
Goal	-0.18	0.13	0.28
Task	-0.10	0.18	0.25
Bond	-0.10	0.06	0.14

* Refers to significant $p < .05$. ** Refers to significant $p < .01$.

variable of the YOQ (Table 5 above). Age had a significant ($p < .05$) negative correlation with the YOQ score post-WT, meaning that the older individuals had a lower YOQ post-WT score. There were no statistically significant correlations between the YOQ and WAI scores.

Trait Emotional Intelligence Questionnaire, Sex, Age, and Working Alliance

Sample

Again, a different dataset was used for the TEIQ than the YOQ based on availability of completed questionnaires, with some overlap (18 individuals) present. The individuals that had both pre-WT and post-WT TEIQ scores (n = 68) consisted of 32 females (47%), 35 males (51%), and one individual (1%) who did not have a recorded sex. Due to the data being anonymized, PRI was unable to correct this missing data point when it was found. As sex was the only missing variable for this individual, I decided to keep them in the sample, though they were omitted from the sex calculations. Mean age was 16.53 (SD 1.38, range 14.50 to 20.34), and mean length of stay in the WT phase was 52.61 (SD 17.67) days, with a range of 20 to 139 days.

Two individuals were missing all three WAI subscales, and an additional two were only missing the single subscale of Task. When I inquired about this with the research associate at PRI, they said those youth likely did not answer enough questions to receive a reliable scale value (J. Bingley, personal communication, October 14, 2021). These four individuals were omitted from the WAI scoring because of their incomplete data. Total WAI score mean was 16.45 (SD 2.62), and subscale means were 5.38 (SD 0.95) for Goal, 5.51 (SD 1.16) for Task, and 5.57 (SD 0.82) for Bond.

What are the changes in participants' emotional intelligence (TEIQ) after six to eight weeks of wilderness therapy? Are age, sex, and working alliance associated with these changes?

Means and standard deviations were calculated for TEIQ scores pre-WT, post-WT and for complete sample, and then by sex (Table 6). Overall, two TEIQ subscales of Well-Being (WB) and Self-Control (SC) showed slightly improved scores, and the remaining two declined. There was very little change from pre-WT to post-WT (M = 0.07, SD = 0.49), a pattern which was also true for sex differences. No statistically significant changes were found.

Table 6
Trait-Emotional Intelligence Questionnaire Overall and by Sex

	Mean (SD)								
	Overall *n = 38*			Females *n = 32*			Males *n = 35*		
Variable	Pre-	Post-	Change	Pre-	Post-	Change	Pre-	Post-	Change
TEIQ Score	4.15 (0.70	4.22 (0.63)	0.07 (0.49)	3.95 (0.78)	3.98 (0.69)	0.03 (0.52)	4.35 (0.57)	4.45 (0.50)	0.10 (0.47)
Subscales									
WB	4.23 (1.20)	4.38 (1.24)	0.15 (0.86)	3.93 (1.37)	3.90 (1.28)	-0.02 (0.89)	4.52 (0.97)	4.81 (1.05)	0.29* (0.81)
SC	3.63 (0.94)	3.75 (0.90)	0.12 (0.75)	3.28 (0.81)	3.38 (0.80)	0.10 (0.76)	3.97 (0.95)	4.09 (0.88)	0.12 (0.77)
EMO	4.35 (0.80)	4.31 (0.81)	-0.04 (0.77)	4.31 (0.88)	4.26 (0.84)	-0.05 (0.64)	4.38 (0.73)	4.37 (0.80)	-0.01 (0.89)
SOC	4.67 (0.83)	4.55 (0.88)	-0.12 (0.87)	4.59 (0.83)	4.43 (0.84)	-0.15 (0.86)	4.78 (0.89)	4.66 (0.93)	-0.01 (0.89)

Note: WB = Well-Being. SC = Self-Control. EMO = Emotionality. SOC = Sociability.
* Refers to significant $p < .05$. ** Refers to significant $p < .01$.

Means and standard deviations of TEIQ scores were then calculated for age (Table 7). As with the YOQ calculations, the decision was made to split into three equally distributed age groups: AG1 (n = 23, M = 15.93, SD = 0.85, range 14.50 to 16.96), AG2 (n = 22, M = 17.58, SD = 0.34, range 17.04 to 18.25), and AG3 (n = 23, M = 18.92, SD = 0.49, range 18.31 to 20.34). There did not seem to be substantial differences between age groups.

Table 7
Trait-Emotional Intelligence Questionnaire Scores by Age Groups

	Mean (SD)								
	AG1 *n = 23*			AG2 *n = 22*			AG3 *n = 23*		
Variable	Pre-	Post-	Change	Pre-	Post-	Change	Pre-	Post-	Change
TEIQ Score	4.27 (0.41)	4.27 (0.48)	-0.01 (0.51)	4.08 (0.92)	4.22 (0.83)	0.14 (0.44)	4.10 (0.70)	4.18 (0.57)	0.08 (0.53)
Subscales									
WB	4.53 (0.87)	4.57 (1.09)	0.04 (1.00)	4.35 (1.46)	4.35 (1.51)	0.00 (0.75)	3.81 (1.13)	4.23 (1.10)	0.41* (0.77)
SC	3.73 (0.67)	3.68 (0.63)	-0.06 (0.85)	3.30 (1.08)	3.58 (1.05)	0.28* (0.58)	3.83 (0.98)	3.97 (0.97)	0.14 (0.80)
EMO	4.27 (0.72)	4.27 (0.69)	0.00 (0.59)	4.30 (0.89)	4.42 (0.84)	0.11 (0.68)	4.47 (0.80)	4.25 (0.90)	-0.21 (0.99)
SOC	4.83 (0.82)	4.58 (0.80)	-0.26 (0.99)	4.56 (0.84)	4.61 (0.97)	0.00 (0.63)	4.60 (0.84)	4.47 (0.91)	-0.14 (0.96)

Note: WB = Well-Being. SC = Self-Control. EMO = Emotionality. SOC = Sociability. AG1 = 14.50 to 16.96 years. AG2 = 17.04 to 18.25 years. AG3 = 18.31 to 20.34 years. * Refers to significant $p < .05$. ** Refers to significant $p < .01$.

Similar to above, there were three separate WAI groups created from total WAI scores with the intention of keeping the numbers in each group similar without splitting identical scores into different groups. The groups are WG1 (n = 19, M = 13.25, SD =

1.45, range 11 to 15), WG2 (n = 23, M = 16.38, SD = 0.74, range 15.5 to 17.5), and WG3 (n = 22, M = 19.30, SD = 0.74, range 18 to 21). YOQ score means and standard deviations were then calculated for these three groups (Table 8). There did not seem to be any notable differences between the three groups.

Table 8

Trait-Emotional Intelligence Questionnaire Scores by Working Alliance

	Mean (SD)								
	WG1 *n = 19*			WG2 *n = 23*			WG3 *n = 22*		
Variable	Pre-	Post-	Change	Pre-	Post-	Change	Pre-	Post-	Change
TEIQ Score	3.98 (0.68)	4.11 (0.66)	0.23 (0.44)	4.36 (0.60)	4.23 (0.59)	-0.13 (0.50)	4.07 (0.77)	4.29 (0.67)	0.22 (0.50)
Subscales									
WB	4.04 (1.35)	4.08 (1.22)	0.04 (0.82)	4.44 (0.88)	4.38 (1.02)	-0.57 (0.89)	4.17 (1.26)	4.55 (1.45)	0.37* (0.84)
SC	3.52 (0.86)	3.82 (1.07)	0.29 (0.83)	3.78 (0.91)	3.59 (0.70)	-0.19 (0.66)	3.59 (1.03)	3.89 (0.97)	0.30 (0.73)
EMO	4.06 (0.62)	4.18 (0.91)	0.12 (0.61)	4.74 (0.70)	4.33 (0.82)	-0.41* (0.89)	4.19 (0.83)	4.39 (0.70)	0.20 (0.70)
SOC	4.62 (0.94)	4.54 (1.09)	-0.08 (0.79)	4.68 (0.73)	4.57 (0.94)	-0.11 (0.82)	4.67 (0.89)	4.29 (0.67)	-0.14 (1.04)

Note. WB = Well-Being. SC = Self-Control. EMO = Emotionality. SOC = Sociability. WG1 = 11 to 15. WG2 = 15.5 to 17.5. WG3 = 18 to 21.
* Refers to significant $p < .05$. ** Refers to significant $p < .01$.

These trends are further illustrated in the following boxplot (Figure 3) where we see the TEIQ score change distribution right around zero for both sexes. Again, this pattern is continued with age (Figure 5) and WAI Scores (Figure 6), as illustrated in the following boxplots which show generally irregular distributions throughout.

Figure 4

Trait-Emotional Intelligence Questionnaire Score Changes by Sex

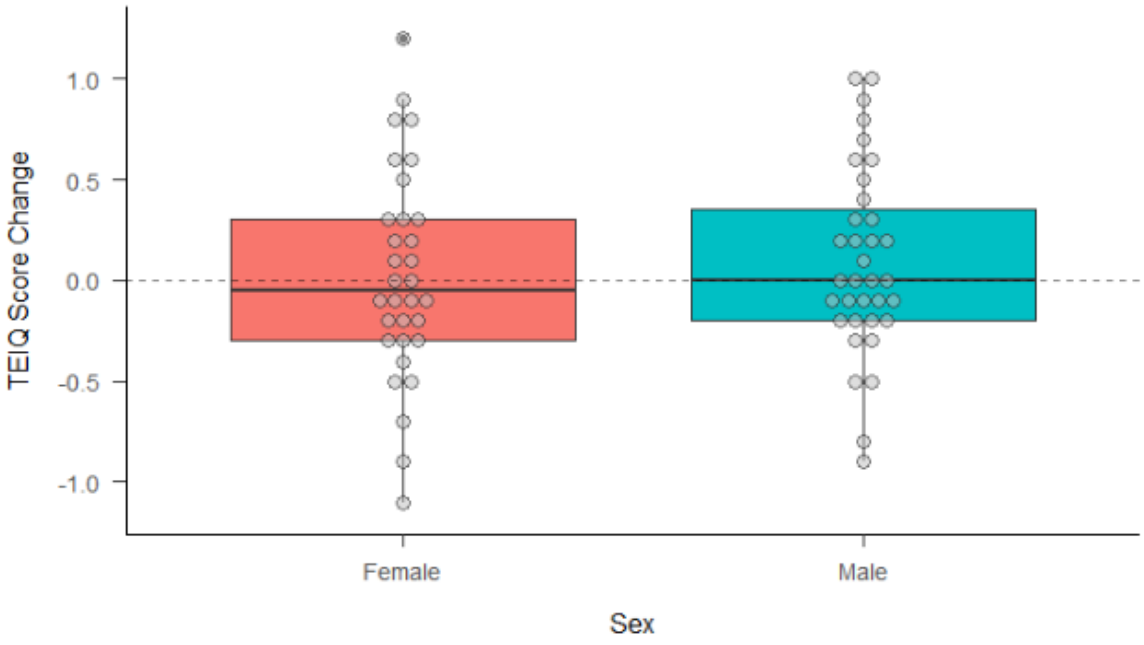
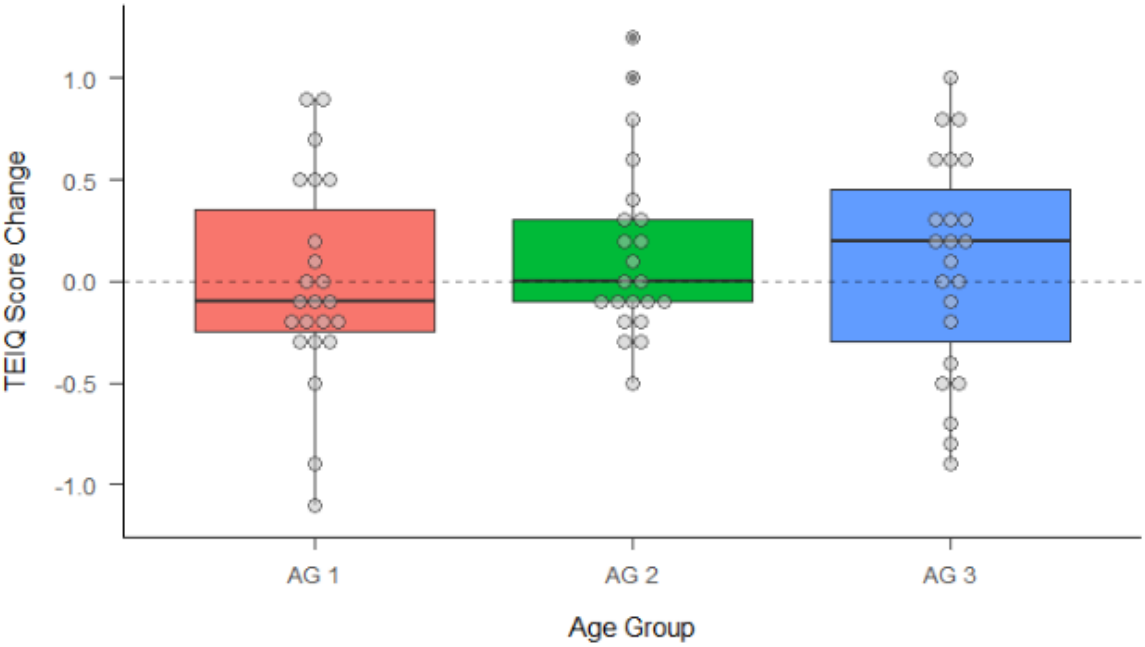


Figure 5

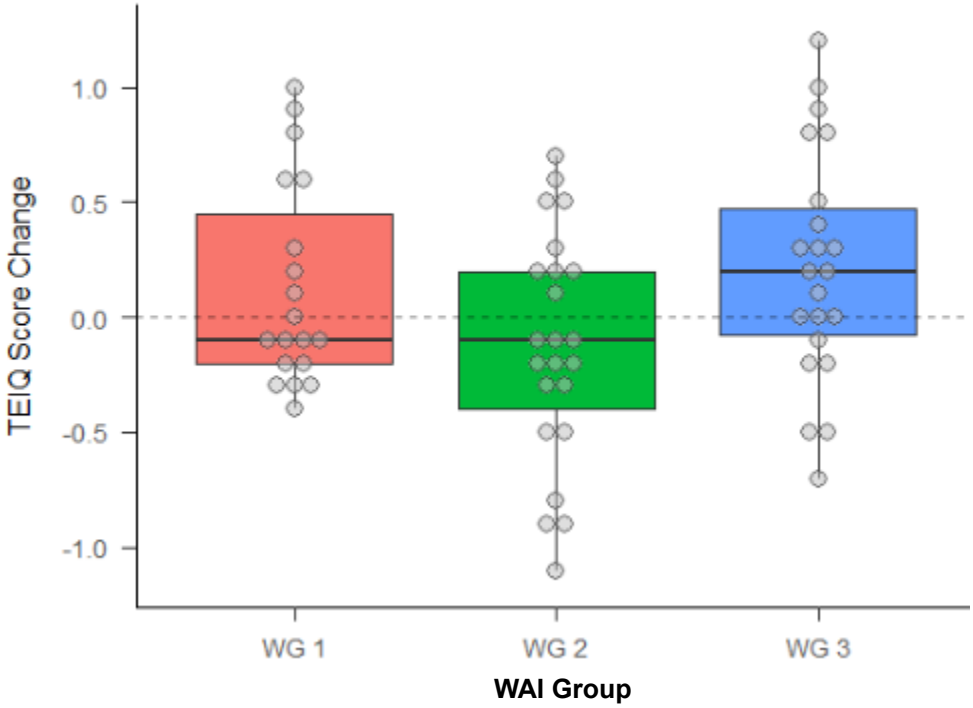
Trait-Emotional Intelligence Questionnaire Score Changes by Age Groups



Note: AG1 = 14.50 to 16.96 years old. AG2 = 17.04 to 18.25 years old. AG3 = 18.31 to 20.34 years old.

Figure 6

Trait-Emotional Intelligence Questionnaire Score Changes by Working Alliance



Note. WG1 = 11 to 15 years old. WG2 = 15.5 to 17.5 years old. WG3 = 18 to 21 years old.

Table 9

Correlations between Predictor variables and TEIQ

Variables	Pre-WT TEIQ	Post-WT TEIQ	Change TEIQ
Sex	0.29*	0.37**	0.07
Age	-0.13	-0.05	0.12
WAI Total	0.05	0.14	0.11
Subscales			
Goal	0.09	0.20	0.13
Task	0.07	0.16	0.11
Bond	-0.02	0.01	0.04

* Refers to significant p < .05. ** Refers to significant p < .01.

To investigate relationships between independent (sex, age, working alliance) and TEIQ scores as the dependent variable, a Pearson correlation matrix was created (Table 9 above). Sex (females = 0, males = 1) had a small but significant positive correlation pre-WT ($r(67) = 0.29$, $p < .05$), as well as post-WT ($r(67) = 0.37$, $p < .01$). This indicates that males had higher TEIQ scores both before and after the WT phase, though there was no statistically significant change between the two time points.

Chapter 5: Discussion and Conclusion

Overview

The purpose of this study was to analyze changes in presenting problems and emotional intelligence of youth that have completed the WT phase at Pine River Institute (PRI). Additionally, potential variables affecting these changes were explored. This chapter includes discussion of these outcomes relative to current WT literature, along with suggestions for future research. The chapter will conclude with the researcher's reflection on this study.

Youth Outcome Questionnaire

Research has often shown that the presenting problems of youth with substance use and mental health challenges may improve after WT as measured by the Youth Outcome Questionnaire (YOQ) (Bettmann et al., 2013; DeMille et al., 2018; Tucker et al., 2018). Similarly, the overall YOQ scores for participants in this study showed improvement, decreasing from 95.47 (SD 37.93) to 82.53 (SD 32.54). Though this is an improvement, it should be noted that the reliable change index (RCI) is 18. The RCI is "the amount by which a client's total score must increase (deterioration) or decrease (improvement) to be considered clinically significant. Changes in the total score that are less than the RCI are not statistically relevant (i.e. no change)" (OQ Measures, 2018, para. 2). The implication here is that although there are positive changes in the YOQ scores, they may not necessarily be considered clinically significant, and may be labelled as "no change" according to the instrument's manual. Furthermore, the post-WT scores

all remain above clinical cut-off levels, meaning that they are still experiencing problematic symptoms while showing improvement.

As a comparison to other research, the YOQ scores for the 41 participants in Bettmann and colleagues' (2013) study at a WT program in Colorado changed from a mean of 74.95 to 43.14, putting them below the clinical cut-off level of 47. The total decline of presenting problems was 31.81, which is far greater than the RCI of 18, suggesting considerable improvement. Duration of WT treatment was also longer with a mean of 64.7 days as opposed to individuals at PRI whose length of stay in the WT phase is 52.0 days. Mills et al. (2013) suggested that participant improvements were related to length of treatment in WT.

For another comparison, Tucker et al. (2018) also found greater client improvements in their study which included 645 participants from four different WT programs throughout the United States. Their YOQ scores went from a mean of 64.63 to 28.33 within a mean length of stay of 72.1 days, a 36.3 improvement in score, double the RCI, and bringing participants well below clinical cut-off levels (i.e. 47). Again, we see duration of treatment as being a difference between the Tucker et al. study and the present one. Additionally, the current study focused on a much smaller sample from a singular institution as opposed to four separate institutions in the Tucker et al. study.

Youth Outcome Questionnaire Subscales

Findings of interest were found in the individual subscales of the YOQ. The most substantial decrease (i.e. improvement) was for Social Problems (-4.00, SD 7.23), which includes "truancy, sexual problems, running away from home, destruction of property,

and substance abuse" (OQ Measures LLC, 2010, p. 8). The second largest decrease was Intrapersonal Distress (-3.33, SD 12.97) which measures emotional distress such as anxiety, depression, and self-harm, and the third greatest decrease was Interpersonal Relations (-2.57, SD 5.95), which assesses the youth's relationship with their parents, peers, and other adults. Bettmann et al. (2013) had similar results, with their top three improved subscales being Intrapersonal Distress (-10.09), Behavioral Dysfunction (-6.27), and Social Problems (-5.52).

Sex

When the PRI overall YOQ score change is broken down by sex, we see a large though not statistically significant difference. Females improved by a score change of -8.89 (SD 36.44), whereas the males improved by nearly twice that with a change of -16.50 (SD 41.37) and nearing the clinical significance of the RCI (i.e. 18). DeMille et al. (2018) also reported that males generally had a greater decrease in YOQ scores than females, though this was again not statistically significant. By contrast, Bettmann et al. (2013) did not find a difference in gender for YOQ scores.

Age

There was also a noteworthy difference of YOQ score changes between age groups in the present study. AG1 (M age = 15.38) showed nearly no change with a score that actually went up by a single point (1.00, SD 36.36). AG2 (M age = 16.73) had medium improvement (-7.00, SD 46.40), and the oldest group, AG3 (M age = 17.47) changed by a large and statistically significant -32.80 (SD 25.52), which is nearly twice the RCI. There was also a significant negative correlation ($r(29) = -0.45$, $p < 0.05$)

between age and the YOQ score post-WT, meaning that older participants had lower YOQ scores after WT. These results are different from both DeMille et al.'s (2018) and Bettmann et al.'s (2013) studies that found no differences in YOQ scores by age. There were also statistically significant changes in this group for the subscales of Interpersonal Relations (-4.70, SD 4.47) and Social Problems (-7.20, SD 5.61). This relationship between age and YOQ scores in WT would benefit from further research with greater sample sizes to help determine client fit for treatment.

Working Alliance Inventory

The group with the lowest Working Alliance Inventory (WAI) score (WG1; M = 13.56) seemed to have the greatest improvement. However, this pattern was not continued in WG2 (M = 16.33) and WG3 (M = 18.95). This is also contrary to the general literature that proposes better working alliances are related to greater improvements (Baier et al., 2020; Horvath, 2001). This is also contrary to Harper's (2009) findings where improved WAI scores were significantly correlated to improved YOQ scores when across the subscales. No such findings were revealed in the PRI data when a Pearson correlation matrix was run.

Appropriateness of the YOQ as a Measure in Wilderness Therapy

All WT studies mentioned in this study were conducted in residential programs, including PRI. With this in mind, the results in these YOQ subscales can be seen in a different light relative to the context of numerous of the measure's items. The problems of truancy, substance use, and running away from home are not an option in a residential WT program, since there is no formal education, and they are away from home. For those

that do run away from their treatment site prior to completion of their therapy, their scores are not recorded, as only those with pre-WT and post-WT YOQ scores are used in the datasets. Assuming there is no access to addictive substances while in the wilderness, it is also not surprising that there is improvement in this area as well. It is obvious too that the Interpersonal Relations subscale would be improved, as in most cases individuals would not have had contact with their parents, or peers apart from those they had just met in WT.

Going through the individual YOQ questions, I have identified 10 of the 64 that seem to be heavily influenced just by being away from home, and therefore may not be good reflections of actual improvement (Appendix C). The YOQ was originally developed as a clinical and research tool in general (Burlingame et al., 2001), for in-patient and out-patient clients in community and treatment facilities, and was not specifically designed for use in WT settings. As such, it is a surprise that it has remained the standard for WT research in OBH for so many years. Furthermore, while the YOQ measures outcomes, it does not explore the specific processes through which WT works to help improve the mental health of youth.

In 2017, Russell and Gillis developed the Adventure Therapy Experience Scale (ATES) that was both specific to WT (by extension of WT as being a form of adventure therapy), and that explored processes. The result was a 21-item Likert scale, self-report questionnaire that was split into four factors: Group Adventure, Reflection, Nature, and Challenge. Later the same year, Russell et al. (2017) used the ATES along with the Outcome Questionnaire (OQ-45.2) on a sample of 168 young adult (M = 21.5 years old)

males with substance use disorders at a residential treatment program in Alberta, Canada. They found that greater OQ improvements were related to the individuals' ATES scores, giving a potential window of insight into the processes by which WT functions.

Curiously, though the results of Russell and colleagues ATES study were positive, and though it was specifically developed for use in WT, no other studies were found that have utilised the ATES since this initial research was published. Further research is needed that uses this scale, or alternatively a new scale should be developed, to explore increasingly accurate representations of client change in WT settings.

Exploring Potential Differences Between PRI and OBH YOQ Score Results

This section will explore what other factors could contribute to this difference in YOQ scores between the OBH studies mentioned and this thesis. There will be some exploration of differences in participant willingness, organizational variance, and differences in participants.

Involuntary Treatment

One controversial aspect of WT in the United States is regarding involuntary transportation (Harper et al., 2021) and participation in Outdoor Behavioral Healthcare (OBH) WT programs, an issue not present at PRI where participants, while often influenced to attend by parents and families, are there voluntarily. Though the above Tucker et al. (2018) study did not find any difference in YOQ scores between those that were and were not transported involuntarily, Harper et al. (2021) suggested that those findings were random as opposed to systematic due to a post hoc measure of voluntariness. Also using the OBH data, Harper and colleagues created five other post

hoc measures which resulted in statistically significant differences across various social and psychological outcomes. The academic discussion of involuntary treatment and transportation is contentious and ongoing, and as such, no conclusions can be made in the comparison between the Tucker et al. (2018) and Bettmann et al. (2013) studies and the present one. At the same time, these differences should not be completely disregarded. Further research on involuntary transportation and treatment by comparing organizations that do and do not allow such practices would help to unpack this controversial topic.

Organizational Variance

Another possible factor comes down to the individual level of the organizations at hand. While a great variety of studies on WT representing a large diversity of organizations have been discussed in this thesis, the actual content and execution of the treatment at these facilities can have great variance. Unlike other therapy modalities that have specific procedures and manuals, WT is much broader in its application. It has been referred to as "various interventions that focus on using nature and the wilderness as a prominent aspect of treatment" (Becker, 2010, p. 48), which leaves a lot of flexibility in how WT is actually *done*. Looking at the particular therapeutic plans and curricula for individual WT organizations is beyond the scope of this thesis, but more research in exploring these differences in WT practices could help to shed some light on the more specific mechanisms of change that account for variance between studies and participants.

Differences in Participants

A notable difference between the aforementioned OBH studies (Bettmann et al., 2013; Tucker et al., 2018) and this study are the YOQ scores of participants on entry into WT. The mean YOQ score at admission for PRI was 95.47, compared to the Bettmann et al.'s at 74.95, and Tucker et al.'s at 64.63. Both of these OBH *pre*-WT scores are lower than PRI's *post*-WT mean score of 82.53, meaning that participants in the OBH studies were presenting fewer problems on entry than PRI participants did at discharge. It is also interesting to consider that the Tucker et al. YOQ scores at admission had a range of -16 to 183, compared to PRI at 14 to 156. This is especially notable considering 47 is the clinical cut-off score, and -16 is the lowest the scale can go, implying a "perfect score." This comparison warrants further research with a focus on the presenting problems of the individuals who participate in WT programs.

Trait-Emotional Intelligence Questionnaire

WT has been associated with significant reductions in substance use (Bettmann et al., 2013; Uliaszek et al., 2019). Higher ratings of trait emotional intelligence (TEI) have also been reported with lower levels of substance use (González-Yubero et al., 2019; Kun & Demetrovics, 2010; Resurrección et al., 2014). With both of the above assertions in mind, one could expect the TEI of participants at PRI to increase. However, there was no statistically significant change in TEIQ scores from before to after WT. Even when the metric was analysed at the subscale level, two subscales of Well-Being (0.15, SD 0.86) and Self-Control (0.12, SD 0.75) had minimal increases, whereas the other two, Emotionality (-0.04, SD 0.77) and Sociability (-0.12, SD 0.87) had minimal decreases.

This finding is in line with the only other study found to use the TEIQ in WT, which also found no significant change in TEI (Mott, 2020).

Predictive Factors: Age, Sex, and Working Alliance

For TEI, significant correlations were positive for both pre-WT TEIQ scores ($r(67) = 0.29$, $p < .05$) and post-WT TEIQ scores ($r(67) = 0.37$, $p < .01$) to sex (female = 0, male = 1). These results imply that males consistently self-reported higher TEI than females, both before and after WT. This observation is parallel with Mott's (2020) results from a similar group of youth at PRI, though with a smaller sample of $n = 41$ as opposed to $n = 68$ for the current study. Studies on TEI in youth with a focus on sex seem to be lacking. The only relevant study that could be found was on children and reported no sex differences in TEI (Mavroveli et al., 2008). No other significant relationships were found between age and working alliance to TEIQ scores.

Limitations

There are several limitations to this study. The most personally prevalent one is the physical and relational distance between myself and PRI. It has been a challenge to do research on an organization in a different province that I have never been to firsthand. Initial contemplations for potential studies in partnership with PRI included travelling there to get to know how PRI operates firsthand, as well as meeting the youth that go through the program. However, this opportunity was not a possibility due to the COVID-19 pandemic and the accompanying restrictions. Because of this, most of what I know of PRI and its operations are theoretical, and as such, there is a greater potential for

misunderstandings and incorrect perceptions. That said, the staff at PRI were incredibly helpful with any questions I had, of which there were many.

Another limitation is the number of individuals with adequate data available for this study. This is particularly notable when compared to other studies, especially those that have used data from the OBH database, in which participants are numbered in the hundreds. For example, Tucker et al.'s (2018) study had 645 participants, and Bettmann et al.'s (2013) had 189. A greater number of participants would have increased this study's statistical strength and generalizability. A final limitation that is familiar to many other WT studies is the lack of a control group and randomization used in experimental designs, thereby limiting generalizations.

As mentioned before, the WAI short form was not an ideal metric to use for alliance, though it was the only one available from PRI's archival data. A further issue with this version of the WAI is that it is the Kokotovic version (Tracey & Kokotovic, 1989), which is now antiquated, and is considered significantly inferior to the newer Hatcher version (Hatcher & Gillaspy, 2006; Horvath, n.d.). If PRI is to continue to collect data about working alliance, it is highly recommended to use the Hatcher version at the least, or the full 36-point WAI as a better alternative. I would also recommend taking an additional WAI measure halfway through the WT phase to be able to measure change in alliance with the WT therapist during this portion of treatment.

Conclusion

Most of the literature on the effects of WT on youth with substance use issues has shown positive outcomes, especially when looking at presenting problems. Though this

study is no exception, it was interesting to see that the results did not display as large of changes in outcome scores as other studies, like Gass et al. (2019) and Tucker (2018). However, while a WT experience can be significant and momentous for individuals, many of those participating in these programs have had issues for many years of their lives. To have all this change and have their YOQ scores go below clinical cut-off levels (Bettmann, 2013; Tucker, 2018), perhaps for the first time in their adolescence and within a six to eight week wilderness experience seems like a great feat.

The amount of change PRI clients experience seems like a good start. And that is exactly what it is intended to be. The WT phase at PRI is only the first of four in their treatment model. This is compared to many of the OBH organizations in which clients are sent to other residential treatment programs after WT, with new peers and staff (Bettmann et al., 2013; Bolt, 2016; Russell, 2005). Mills et al. (2013) noted that clients' improvements at PRI were related to how far along they progressed through the four phases. The seeds of change are sown during their WT experience in the woods, but it is in the following phases that these seeds grow to be able to integrate into their everyday lives from before. Through the WT phase, youth are given the momentum they need to get back on track with their health, academics, and healthy relationships, all of which are further nurtured in phase two where they return to the PRI residence. Their families are also included in the second phase so that they may begin to mend relationships that may have been fractured in the past. The third phase is a gradual transition back to their home life, and the fourth phase is continued support from PRI once the home transition is

complete. Looking solely at the WT component of PRI as a measure of success would be to miss the forest for the trees.

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Appendix A - University of Victoria Human Research Ethics

University of Victoria

Office of Research Services | Human Research Ethics Board
Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
T 250-472-4545 | F 250-721-8960 | uvic.ca/research | ethics@uvic.ca

Certificate of Approval - Annual Renewal

PRINCIPAL INVESTIGATOR	**Nevin Harper** (Supervisor)	**ETHICS PROTOCOL NUMBER** Chair/Vice-chair - delegated	**20-0490**
PRINCIPAL APPLICANT	**Kosta Zolotas** **Master's student**	ORIGINAL APPROVAL DATE	26-Oct.-2020
UVIC DEPARTMENT	**Child and Youth Care CHIL**	APPROVED ON	13-Sep.-2021
		APPROVAL EXPIRY DATE	25-Oct.-2022

PROJECT TITLE **Youth mental health and substance misuse treatment: An examination of wilderness therapy**

RESEARCH TEAM MEMBERS
Addison Mott - Research Advisor, UVIC
Kosta Zolotas - Research assistant, UVic
Doug Magnuson - Research Advisor, UVIC

DECLARED PROJECT FUNDING
Social Sciences and Humanities Research Council (SSHRC), UVIC

DOCUMENTS INCLUDED IN THIS APPROVAL
UVIC SSHRC LETTER OF ENGAGEMENT 05252020.pdf - 29-Sep.-2020
PINE RIVER INSTITUTE RESEARCH TOOLS & TIMELINES.docx - 02-Oct.-2020
Data Sharing Agreement FINAL_Harper_SSHRC.docx - 22-Oct.-2020
TCPS2 Core Certificate for REB - Kostas Zolotas.pdf - 27-May-2021

CONDITIONS OF APPROVAL

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Modifications
To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol.

Renewals
Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures
When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.

Certification

This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropiate standards of ethcis as outlines by the University of Victoria Research Regulations Involving Human Participants.

Dr. Rachael Scarth
Associate VP Research Operations

Appendix B - Data Sharing Agreement

PINE RIVER INSTITUTE

Data Sharing Agreement for Pine River Institute Research and Evaluation

Scope: The purpose of this agreement is to set forth expectations and requirements regarding the use of physical and electronic information collected or housed by Pine River Institute (PRI). This policy is intended for any persons employed as a full-time, part-time or contract staff at Pine River Institute ("internal researcher") or for persons formally collaborating with an internal researcher. This policy does not cover the release or use of information for clinical or other purposes required or permitted by law.

Statement of Principle: As a clinical service provider, PRI is committed to improving the lives of adolescents and their families through the delivery of evidence-informed practices. To this end, we are committed to ongoing program evaluation to inform program practice and improve outcomes. We are also committed to advance the field of treatment for adolescent addictions and related health and behavioural issues through internal research programs and knowledge exchange. Further, we are committed to addressing system-level needs through collaborative research projects with collegial programs or institutional partners.

These policies and procedures should be used in conjunction with PRI Research and Evaluation Policies and Procedures and relevant provincial and federal legislation to ensure that risks to all research participants are minimized.

As a custodian of personal and clinical information, PRI has the responsibility to uphold all ethical guidelines when engaged in research and program evaluation including protecting the confidentiality of all program participants and staff members. All internal researchers and collaborators must comply with any conditions and restrictions PRI might impose relating to the use, transportation, storage, security, disclosure, dissemination, return, or disposal of the information. As such, any person who receives PRI data has no rights to use the data beyond what is granted by PRI's Director of Research & Evaluation. Persons wishing to utilize PRI data may only do so as per this document. Specifically, any use of the data must comply with the following guidelines:

1. All persons who wish to utilize PRI data must have completed training in research ethics (e.g. Tri-Council Ethics tutorial) prior to engaging in research activities at the PRI.

2. All research activities involving human participants must be reviewed by a research ethics board prior to commencing data collection.

3. Data may not be used if consent was denied on any consent form from each participant or representative (e.g., parent) prior to his/her data being used for the purposes of

research and evaluation. If the participant is under the age of 16 years old, a parent or guardian consent must also be obtained before the participant's information can be used for research purposes.

4. No penalty shall be imposed upon any participant who withdraws withdraw from research at any time with or without reason. In the case of non-consent, participants will be notified that an unwillingness to consent or a decision to withdraw from research and evaluation activities will not in any way impact their relationship with, or access to services, at the PRI.

5. When in direct communication with participants, all individuals will be explicitly notified that participation in research and evaluation is voluntary and that their identity will be confidential.

6. All data, whether it is in physical or electronic form, remains the property of PRI. This means that collaborators may only use data for purposes outlined and within timelines specified in this agreement. Upon termination employment or expiry of contract or completion of project, all data and any outputs resulting from that data (e.g., recorded variables) must be returned to PRI.

7. Physical data (e.g., raw measures or output from measures) may only be removed from PRI premises with permission of the PRI and under condition that files will remain protected in locked storage unless actively in use.

8. Electronic datasets may only be used or taken off-site (e.g., via email or through fixed data storage) with permission of the Director of Research & Evaluation. Any electronic data that are used off-site must not contain any information that could potentially identify clients/study participants (i.e., through primary or residual disclosure).

9. If the nature or the scope of any project should change, the onus is on the researcher to inform PRI's Director of Research & Evaluation immediately.

10. The Director of Research & Evaluation of PRI will explicitly delineate how data will be used and how results will be disseminated. Authorship, timelines for publication and/or presentation of data shall be determined using the following as a general guideline:

To be named as an author or co-author, an individual is generally expected to be able to defend the work publicly, and thus is required to have a thorough knowledge and understanding of the literature review, research question, the methods used, the data sources used, and the results and the interpretation of those results. The determination of authorship and co-authorship will be a negotiated process between the individuals involved in a research study, but is ultimately the responsibility and decision of the Principal Investigator, and PRI's Director of Research & Evaluation. Individuals who do not meet the above criteria for authorship should, if appropriate, be acknowledged as contributors.

PRI staff will often make significant contributions to research projects by administering surveys, contributing PRI data, or utilizing PRI data or evaluation outcomes. Thus, contributions by PRI staff shall be appropriately acknowledged.

11. PRI shall retain the copyright to all non-published or internal materials resulting from the use, analysis and interpretation of PRI data. In cases where research results are published, copyright rules and regulations of the publishing agent will be upheld, provided item #13 is in compliance.

12. It is expected that knowledge dissemination activities (e.g., written publications, presentations or other activities) will be attached to each project. At the outset of the project, and in an ongoing manner, the researcher will disclose all planned public dissemination activities for the project, and keep the Director of Research & Evaluation of PRI informed of any new developments or opportunities for dissemination. The following must happen with respect to dissemination activities:

    a. ***Presentations/Posters*** – any presentations given to audiences external to PRI must first be given internally to PRI staff, or at a minimum, be subject to review by either the Director of Research & Evaluation or, in the case where the Director is the presenter, review by the Chief Executive Officer (CEO) .

    b. ***Publications*** – written copies of all reports, papers, theses, etc., must be submitted to PRI's Director of Research & Evaluation, for review, with ample notice prior to final submission. in the case where the Director is the author, review by the CEO is required prior to submission.

The purpose of this process is to keep non-research staff informed about the findings of the research, to maximize the extent that findings are communicated in a fashion that is consistent with PRI Mission and Values, to ensure that PRI and its activities are represented accurately in the broader community, and ultimately to contribute knowledge to the field of adolescent mental health and addictions in the most ethically sound manner possible.

13. You must agree not to publish or otherwise disclose the data in a form that could reasonably enable someone to ascertain the identity of an individual to whom the information relates. This is upheld in all cases except when disclosure is required by law (e.g., in the case of potential of harm or disclosure of abuse).

14. Anyone using PRI data shall agree to notify PRI's Director of Research and Evaluation immediately should they become aware of any breach in ethical conduct of research and evaluation activities at or related to PRI.

15. The penalty for violating any terms of the ethical guidelines will depend on the nature of the violation. These could range from the termination of the research project to public disassociation with the investigator to loss of employment or affiliation status. Any breach of the ethical guidelines can be addressed legally, including appropriate penalties as determined by the courts.

Application to Conduct Research Using Data from Pine River Institute

Please complete and sign this form. Please be as concise as possible, but feel free to use the space you need simply by adding space to the appropriate area. If there is more than one researcher involved with the project, add printed name, signature, and date for each below that of the primary researcher.

1. In no more than 1000 words, provide details of full scope of the proposed research. Include a brief explanation of state of the science, knowledge gaps, research hypotheses, proposed methodology, methods of knowledge exchange, and expected timelines. List the variables needed to carry out the project and the dates from which data is proposed to be extracted.

It has already been established that the program evaluation findings from Pine River Institute foster healthy outcomes, and treatment gains that are generally maintained, with a slight decline over time. In this research, we hope to find ways to improve and enhance treatment by analyzing the pre-collected data for patterns of what factors contribute to greater success.

We will be looking closely at the Youth Outcomes Questionnaire (YOQ), and the Emotional Intelligence Questionnaire (EIQ), to search for outcomes of the wilderness phase. We will also be looking at other mechanisms and predictors of change such as gender, age, Working Alliance Inventory, and other characteristics.

These will all be used to answer the question of “what predicts client outcomes in wilderness therapy?”.

2. Who will benefit from this research?

Those that work at, and receive service from Pine River Institute will be the primary benefactors of this research. The international Wilderness Therapy community will also benefit.

3. Who will the participants be and how will you gather data about them? Include information on how you will contact individuals.

The participants of this study consists of the youth (over 200) that have undergone the Outdoor Leadership Experience over the past ten years. The information has already been gathered by PRI.

4. What participants need to do in order to be part of this research?

The participants all consented to having their information used.

5. What are the risks or perceived risks to participants?

There is the potential that some of the information gathered may make participants identifiable. This has already been mitigated by the usual de-identification processes.

6. How do you plan to disseminate the results?

The results will be given to PRI, and may be published in a journal

Please check all that apply:

- ✓ I am affiliated with Pine River Institute (PRI) as an internal researcher, staff, or collaborator and I agree to abide by the terms of data use set out PRI as the data producer and owner.

I understand that:

- ✓ The data provided to me are for the exclusive purposes of research or evaluation as stated in the 'Description of Research Activities' (below) while I am associated with PRI. PRI data may not be used for any other purposes without the explicit prior written approval of the owner of the data, as per PRI's Director of Research and Evaluation.
- ✓ I am prohibited from using these data in the pursuit of any commercial or income-generating venture either privately, with government, or under the auspices of PRI.
- ✓ The data are released to me as a working copy for my use only. The distribution, sale, donation, transfer, sharing or exchange of any portion of these data in any way is expressly prohibited.
- ✓ The data are accepted "as is", and the owner makes no representations or warranties, either expressed or implied, as to the appropriateness and fitness for a particular purpose.
- ✓ All publications, paper printouts, or manuscripts containing the data or the results of its analysis must acknowledge explicitly the owner of the data, PRI.
- ✓ All digital data must be returned to PRI or destroyed upon the completion of my research project.
- ✓ Use of the data may be subject to audit by PRI, so that in the event of audits, my use of these data may be disclosed.

Data covered by this agreement:

De-Identified survey responses from PRI clients or staff
De-Identified clinical case files information
De-Identified clinical notes
De-Identified case files log entries

Appendix C - Youth Outcome Questionnaire

Read each statement carefully. Please check the box that most accurately describes you over the PAST WEEK. If an item does not apply to you currently, **check the "Never or Almost Never"** option. Please be as accurate as possible.	Never or Almost Never	Rarely	Sometimes	Frequently	Almost Always or Always
1. I want to be alone more than others my same age.	0	1	2	3	4
2. I have headaches or feel dizzy.	0	1	2	3	4
3. I don't participate in activities that used to be fun.	0	1	2	3	4
4. I argue or speak rudely to others.	0	1	2	3	4
5. I have more fears than others my same age.	0	1	2	3	4
6. I cut classes or skip school altogether.	0	1	2	3	4
7. I cooperate with rules and expectations of adults.	0	1	2	3	4
8. I have a hard time finishing my assignments or I do them carelessly.	0	1	2	3	4
9. I complain about things that are unfair.	0	1	2	3	4
10. I have trouble with constipation or diarrhea.	0	1	2	3	4
11. I have physical fights (hitting, kicking, biting, or scratching) with my family or others my age.	0	1	2	3	4
12. I worry and can't get thoughts out of my mind.	0	1	2	3	4
13. I steal or lie.	0	1	2	3	4
14. I have a hard time sitting still (or I have too much energy).	0	1	2	3	4
15. I feel anxious or nervous.	0	1	2	3	4
16. I talk with others in a friendly way.	0	1	2	3	4
17. I am tense and easily startled (jumpy).	0	1	2	3	4

18. I have trouble with wetting or messing my pants or bed.	0	1	2	3	4
19. I physically fight with adults.	0	1	2	3	4
20. I see, hear, or believe in things that are not real.	0	1	2	3	4
21. I have hurt myself on purpose (for example, cut scratched or attempted suicide).	0	1	2	3	4
22. I use alcohol or drugs.	0	1	2	3	4
23. I am disorganized (or I can't seem to get organized).	0	1	2	3	4
24. I enjoy my relationships with family and friends.	0	1	·2	3	4
25. I am sad or unhappy.	0	1	2	3	4
26. I have pain or weakness in muscles or joints.	0	1	2	3	4
27. I have a hard time trusting friends, family members, or other adults.	0	1	2	3	4
28. I think that others are trying to hurt me even when they are not.	0	1	2	3	4
29. I have threatened to, or have run away from home.	0	1	2	3	4
30. My emotions are strong and change quickly.	0	1	2	3	4
31. I break rules, laws, or don't meet others' expectations on purpose.	0	1	2	3	4
32. I am happy with myself.	0	1	·2	3	4
33. I pout, cry, or feel sorry for myself more than others my age.	0	1	2	3	4
34. I withdraw from my family and friends.	0	1	2	3	4
35. My stomach hurts or I feel sick more than others my same age.	0	1	2	3	4
36. I don't have friends or I don't keep friends very long.	0	1	2	3	4
37. My parents or guardians don't approve of my friends.	0	1	2	3	4
38. I think I can hear other people's thoughts or that they can hear mine.	0	1	2	3	4
39. I am involved in sexual behavior that my friends or family would not approve of.	0	1	2	3	4
40. I have a hard time waiting for my turn in activities or conversations.	0	1	2	3	4
41. I think about suicide or feel I would be better off dead.	0	1	2	3	4
42. I have nightmares, trouble getting to sleep, oversleeping, or waking up too early.	0	1	2	3	4
43. I complain about or question rules, expectations, or responsibilities.	0	1	2	3	4
44. I have times of unusual happiness or excessive energy.	0	1	2	3	4
45. I'm generally okay with frustration or boredom.	0	1	·2	3	4
46. I am afraid I am going crazy.	0	1	2	3	4
47. I feel guilty when I do something wrong.	0	1	·2	3	4
48. I demand a lot from others or I am pushy.	0	1	2	3	4
49. I feel irritated.	0	1	2	3	4
50. I throw up or feel sick to my stomach more than others my age.	0	1	2	3	4

51. I get angry enough to threaten others.	0	1	2	3	4
52. I get into trouble when I'm bored.	0	1	2	3	4
53. I'm hopeful and positive.	0	1	·2	3	4
54. Muscles in my face, arms, or body twitch or jerk.	0	1	2	3	4
55. I destroy property on purpose.	0	1	2	3	4
56. I have a hard time concentrating, thinking clearly, or sticking to tasks.	0	1	2	3	4
57. I get down on myself and blame myself for things that go wrong.	0	1	2	3	4
58. I have lost a lot of weight without being sick.	0	1	2	3	4
59. I act without thinking and don't worry about what will happen.	0	1	2	3	4
60. I am calm.	0	1	·2	3	4
61. I don't forgive myself for things I've done wrong.	0	1	2	3	4
62. I don't have too much energy.	0	1	2	3	4
63. I feel like I don't have any friends or that no one likes me.	0	1	2	3	4
64. I get frustrated or upset easily, and give up	0	1	2	3	4

Note: Questions 3, 6, 8, 22, 24, 17, 29, 34, 36, 39 have been identified by the author of this thesis as being heavily influenced just by being away from home in a wilderness setting.

SCORING

Response Options:

Never or Almost Never - 0
Rarely - 1
Sometimes – 2
Frequently – 3
Always or Almost Always - 4

Scoring Changes: 7, 16, 24, 32, 45, 47, 53, 60

For these questions, scoring becomes:

Never or Almost Never: 2
Rarely: 1
Sometimes: 0
Frequently: -1
Always or Almost Always: -2

Sub-Scales:

INTRAPERSONAL DISTRESS – SUM: 1, 3, 5, 9, 15, 17, 25, 32, 33, 34, 41, 49, 53, 57, 61, 62, 63, 64

SOMATIC – SUM: 2, 10, 18, 26, 35, 42, 50, 54

INTERPERSONAL RELATIONSHIPS – SUM: 4, 7, 11, 16, 19, 24, 27, 36, 37, 43

CRITICAL ITEMS – SUM: 12, 20, 21, 28, 38, 44, 46, 51, 58

SOCIAL PROBLEMS – SUM: 6, 13, 22, 29, 31, 39, 47, 55

BEHAVIORAL DYSFUNCTION – SUM: 8, 14, 23, 30, 40, 45, 48, 52, 56, 59, 60

TOTAL – SUM: 1-64

Appendix D - Trait-Emotional Intelligence Questionnaire

Circle the number that best reflects your degree of agreement or disagreement with that statement. Do not think too long about the exact meaning of the statements. Work quickly and answer as accurately as possible. **There are no right or wrong answers.**

1. Expressing my emotions with words is not a problem for me.	1	2	3	4	5	6	7
2. I often find it difficult to see things from another person's viewpoint.	1	2	3	4	5	6	7
3. On the whole, I'm a highly motivated person.	1	2	3	4	5	6	7
4. I usually find it difficult to regulate my emotions.	1	2	3	4	5	6	7
5. I generally don't find life enjoyable.	1	2	3	4	5	6	7
6. I can deal effectively with people.	1	2	3	4	5	6	7
7. I tend to change my mind frequently.	1	2	3	4	5	6	7
8. Many times, I can't figure out what emotion I'm feeling.	1	2	3	4	5	6	7
9. I feel that I have a number of good qualities.	1	2	3	4	5	6	7
10. I often find it difficult to stand up for my rights.	1	2	3	4	5	6	7
11. I'm usually able to influence the way other people feel.	1	2	3	4	5	6	7
12. On the whole, I have a gloomy perspective on most things.	1	2	3	4	5	6	7
13. Those close to me often complain that I don't treat them right.	1	2	3	4	5	6	7
14. I often find it difficult to adjust my life according to the circumstances.	1	2	3	4	5	6	7
15. On the whole, I'm able to deal with stress.	1	2	3	4	5	6	7
16. I often find it difficult to show my affection to those close to me.	1	2	3	4	5	6	7
17. I'm normally able to "get into someone's shoes" and experience their emotions.	1	2	3	4	5	6	7
18. I normally find it difficult to keep myself motivated.	1	2	3	4	5	6	7
19. I'm usually able to find ways to control my emotions when I want to.	1	2	3	4	5	6	7
20. On the whole, I'm pleased with my life.	1	2	3	4	5	6	7
21. I would describe myself as a good negotiator.	1	2	3	4	5	6	7
22. I tend to get involved in things I later wish I could get out of.	1	2	3	4	5	6	7
23. I often pause and think about my feelings.	1	2	3	4	5	6	7
24. I believe I'm full of personal strengths	1	2	3	4	5	6	7
25. I tend to "back down" even if I know I'm right.	1	2	3	4	5	6	7
26. I don't seem to have any power at all over other people's feelings.	1	2	3	4	5	6	7
27. I generally believe that things will work out fine in my life.	1	2	3	4	5	6	7
28. I find it difficult to bond well even with those close to me.	1	2	3	4	5	6	7
29. Generally, I'm able to adapt to new environments.	1	2	3	4	5	6	7
30. Others admire me for being relaxed.	1	2	3	4	5	6	7

Completely Disagree = 1… 2, 3, 4, 5, 6 … Completely Agree = 7

Reverse Score: 2, 4, 5, 7, 8, 10, 12, 13, 14, 16, 18, 22, 25, 26, 28

Sub-Scales (Average)

Well-Being: 5, 9, 12, 20, 24, 27

Self-Control: 4, 7, 15, 19, 22, 30

Emotionality: 1, 2, 8, 13, 16, 17, 23, 28

Sociability: 6, 10, 11, 21, 25, 26

Total: Average 1:30

Appendix E - Working Alliance Inventory - Youth Report

Please indicate how you think or feel about your **THERAPIST. IF YOU ARE ON STAGE 2, THINK OF YOUR WILDERNESS THERAPIST. IF YOU ARE ON STAGES 3-5, THINK OF YOUR MAIN THERAPIST. IF YOU ARE IN AFTERCARE, THINK OF YOUR AFTERCARE THERAPIST.**	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
1. My therapist and I agree about the things I will need to do in therapy to improve my situation.	1	2	3	4	5	6	7
2. What I am doing in therapy gives me new ways of looking at my problem	1	2	3	4	5	6	7
3. I believe my therapist likes me.	1	2	3	4	5	6	7
4. My therapist does not understand what I am trying to accomplish in therapy.	1	2	3	4	5	6	7
5. I am confident in my therapist's ability to help me.	1	2	3	4	5	6	7
6. My therapist and I are working towards mutually agreed upon goals.	1	2	3	4	5	6	7
7. I feel that my therapist appreciates me.	1	2	3	4	5	6	7
8. We agree on what is important for me to work on.	1	2	3	4	5	6	7
9. My therapist and I trust one another.	1	2	3	4	5	6	7
10. My therapist and I have different ideas on what my problems are.	1	2	3	4	5	6	7
11. We have established a good understanding of the kind of changes that would be good for me.	1	2	3	4	5	6	7
12. I believe the way we are working with my problem is correct.	1	2	3	4	5	6	7

SCORING

Subscales:

GOAL: AVERAGE (1,2,8,12)
TASK: AVERAGE (3,5,7,9)
BOND: AVERAGE (**4**,6,**10**,11) (4 AND 10 ARE REVERSE SCORED)

Appendix F - YOQ Quick Guide

COUNTY OF LOS ANGELES DEPARTMENT OF MENTAL HEALTH
Program Support Bureau-
MHSA Implementation & Outcomes Division
PEIOutcomes@dmh.lacounty.gov

Purpose

- The YOQ-SR provides useful information about the client's presenting problems.
- Subscale scores may be useful in treatment planning.
- Individual item responses provide useful clinical information for follow up during the early phase of treatment (e.g., "I have hurt myself on purpose.").
- Because the YOQ-SR is sensitive to change over short time periods, as short as 7 days, it is useful for monitoring the client's progress during the course of treatment.
- Finally, the YOQ-SR provides information, from the client's perspective about the client's symptoms at the end of treatment and can be useful when planning termination.

Administration

- The client should be encouraged to answer every question as accurately as possible.
- The clients should indicate how true each statement is for him/her during the past 7 days.
- The YOQ-SR can be administered and scored by non-clinical or clinical staff, but must be interpreted by a trained clinician.

Revised: July 15, 2015

YOQ-SR Quick Guide

Youth Outcome Questionnaire® – Self Report 2.0

Completed for all EBPs by clients ages 12-18, during the first and last EBP treatment sessions, and every 6 months for EBPs exceeding 6 months.

Intrapersonal Distress (ID): **Range -4 to 68**

- A high score suggests the client has a great deal of emotional distress (e.g., anxiety, depression, fearfulness, self-harm).

Somatic (S): **Range: 0 to 32**

- A high score suggests the client reports several physical and/or somatic concerns (e.g., headache, stomach problems, bowel problems, dizziness).

Interpersonal Relations (IR): **Range -6 to 34**

- A high score suggests the client has considerable interpersonal difficulty with family, adults and/or peers (e.g., verbal aggression, defiance, arguing).

Social Problems (SP): **Range -2 to 30**

- A high score suggests the client engages in many behaviors that violate social norms and/or expectations (e.g., vandalism, drug/alcohol use, truancy, physical aggression).

Behavioral Dysfunction (BD): **Range -4 to 40**

- A high score suggests the client has difficulty with attention, concentration, managing impulsive behaviors, organization, task completion and frustration tolerance.

Critical Items (CI): **Range 0 to 36**

- A high score suggests the client has problems that require immediate clinical attention, (e.g., paranoia, suicidal ideation, hallucinations, delusions). **High score on any single item may warrant immediate clinical attention.**

Total Score: **Range -16 to 240**

- A summation of all subscales that reflects total distress in the client's life.

Scoring Information

Using the hand-scoring answer sheet, transfer each item response to the appropriate box in the far right-hand column. Sub-total each scale on both sides of the sheet; then sum the two sub-totals for each scale to derive scale scores. Sum all six scale scores for the Total Score.

Subscales and Total Score	Clinical Cutoffs
Intrapersonal Distress (ID)	≥ 17
Somatic (S)	≥ 6
Interpersonal Relations (IR)	≥ 3
Social Problems (SP)	≥ 3
Behavioral Dysfunction (BD)	≥ 11
Critical Items (CI)	≥ 6
Total Score	≥ 47