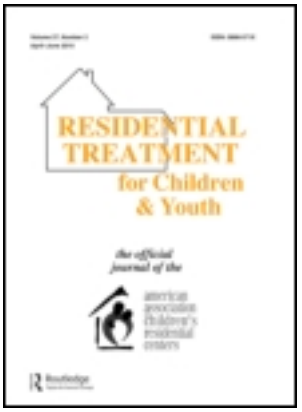

Residential Treatment for Children & Youth

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/wrtc20

How Presenting Problems and Individual Characteristics Impact Successful Treatment Outcomes in Residential and Wilderness Treatment Programs

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Accepted author version posted online: 07 May 2014.Published online: 11 Jun 2014.

To cite this article: Anita R. Tucker PhD, LICSW, Amy Smith MSW, MS & Michael A. Gass PhD, LMFT (2014) How Presenting Problems and Individual Characteristics Impact Successful Treatment Outcomes in Residential and Wilderness Treatment Programs, Residential Treatment for Children & Youth, 31:2, 135-153, DOI: 10.1080/0886571X.2014.918446

To link to this article: http://dx.doi.org/10.1080/0886571X.2014.918446

Residential Treatment for Children & Youth, 31:135–153, 2014

ISSN: 0886-571X print/1541-0358 online
DOI: 10.1080/0886571X.2014.918446

Routledge
Taylor & Francis Group

How Presenting Problems and Individual Characteristics Impact Successful Treatment Outcomes in Residential and Wilderness Treatment Programs

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This research expands the examination of the effects of individual characteristics on client treatment outcomes at private Residential Treatment Centers (RTCs) and Outdoor Behavioral Healthcare (OBH) programs. A sample of 1,058 participants was used from the NATSAP Practice Research Network. Logistic regression analyses found that within OBH programs females were significantly more likely to have clinically significant improvements than males. RTC participants reporting a history of sexual abuse were more likely to achieve clinically significant improvements than those with no history. All other presenting problems within RTCs and OBH programs were nonsignificant, demonstrating equally beneficial treatment effectiveness with all other individual client characteristics.

KEYWORDS Outdoor Behavioral Healthcare (OBH), Residential Treatment Centers (RTC), clinical outcomes, NATSAP

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Adolescent mental health, substance abuse, and at-risk behaviors are increasing nationwide concerns (Substance Abuse and Mental Health Services Administration [SAMHSA], 2011). Nearly 21% of youth between the ages of 13–18 in the United States are affected by mental illnesses (Merikangas et al., 2010). Resulting symptoms and emotional disturbance can significantly interfere with how these youth develop at home, at school, and in communities (Friedman, Katz-Leavy, Manderscheid, & Sondheimer, 1996). Adolescents affected by more than one mental health condition are significantly more likely to be affected by a substance use disorder (SAMHSA, 2011). And the treatment of adolescent substance abusers should include careful examination of mental health issues, for failing to address such needs often sabotages treatment approaches (National Institute on Drug Abuse, 2014). Rates of co-occurring substance use and mental health problems are estimated to be over 60% of youth in treatment (Turner, Muck, Muck, Stephens, & Sukumar, 2004), with each condition often exacerbating the development of the other (Measelle, Stice, & Hogansen, 2006).

In 2008, 12.5% of adolescents received treatment or counseling in special mental health settings for problems with behavior or emotions (SAMHSA, 2009). Yet, there are alarming proportions of youth who are not able to receive any treatment. In 2011, 1.6 million adolescents (ages 12 to 17) who required treatment for a substance use problem did not receive any treatment or were not able to access the specialty treatment they required (SAMHSA, 2012). Co-occurring mental health and substance use problems can operate synergistically at great costs to a youth's thinking, behavior, and neurological functioning as well as to the health of our communities. Co-occurring disorders in adolescents are also associated with legal issues. For hospital admissions in 2004 with co-occurring disorders in youth, nearly half (48%) of referrals for treatment were from the juvenile justice system (SAMHSA, 2011). Few children and adolescents are likely to receive treatment for both a mental health problem and a substance use problem (SAMHSA, 2011); yet, effective treatment requires identifying all of an individual's challenges and addressing each need appropriately, not in isolation of one another.

ADOLESCENT TREATMENT AND PRIVATE PAY PROGRAMS

In light of the extensive social and financial consequences of mental health problems and adolescent substance dependence or abuse, it is clear that effective and efficient treatment modalities are in demand. Residential treatment centers (RTCs) and wilderness therapy programs, often referred to as Outdoor Behavioral Healthcare (OBH), fill a gap in the continuum of care for youth who may have exhausted all other treatment options and resources (Behrens, Santa, & Gass, 2010; Russell, 2007).

Private RTCs

Private RTCs are a subset of residential treatment that are predominantly for-profit and cater to high economic status families that are not able to have their needs met by the public mental health, judicial, or medical services and are able to afford the services (Young & Gass, 2010). Experiential and adventure therapy activities such as challenge courses, art therapy, and equine programs are often key elements of many of these programs (Russell & Gillis, 2010; Young & Gass, 2008).

Research on private RTCs has shown them to have significant impacts on youth clients with complex problems. Behrens and Satterfield's (2011) study of 1,027 youth from nine private pay RTCs found that clients significantly improved at discharge as measured by Achenbach standardized measures in both internalizing and externalizing issues with additional improvements in academic scores as well as family functioning. In addition, these changes were maintained at one year post discharge from their programs as reported both by youth and parents. Behrens and Satterfield (2011) highlighted how these improvements where shown despite youth's high rate of presenting with multiple problems including high levels of co-morbidity and problem severity. Similarly, Tucker, Zelov, and Young (2011)'s study of 104 private residential youth clients found that youth reported significant decreases in dysfunction from intake to discharge as measured by the Y-OQ with these findings supported by parents' report as well. Similar to Behrens and Satterfield (2011), these clients presented with multiple issues, in fact 89.1% of clients had two or more presenting issues at intake.

Outdoor Behavioral Healthcare (OBH)

OBH is the prescriptive use of wilderness experiences provided by mental health professionals to meet the therapeutic needs of clients. OBH consists of:

- Extended backcountry travel and wilderness living experiences long enough to allow for clinical assessment, establishment of treatment goals, and a reasonable course of treatment not to exceed the productive impact of the experience;
- Active and direct use of clients' participation and responsibility in their therapeutic process;
- Continuous group-living and regular formal group therapy sessions to foster teamwork and social interactions (excluding solo experiences);
- Individual therapy sessions, which may be supported by the inclusion of family therapy;
- Adventure experiences utilized to appropriately enhance treatment by fostering the development of eustress (i.e., the positive use of stress) as a beneficial element in the therapeutic experience;

- The use of nature in reality as well as a metaphor within the therapeutic process; and
- A strong ethic of care and support throughout the therapeutic experience (AEE, 2014).

Similar to the preliminary research on private RTCs, research on wilderness therapy and OBH has consistently supported its effectiveness with youth in reducing problem behaviors and dysfunction. Most recently, Bettmann's (2012) meta-analysis of 34 studies on wilderness therapy found medium effect sizes (ES = .43) for overall effects from the treatment, findings supported by Bowen and Neill (2013). In their study, they compared wilderness therapy results with alternative treatment or no treatment, and also found a moderate effect size (ES = .47). These findings are similar to other studies looking at both individual and groups of OBH programs. Bettmann, Russell, and Parry's (2012) evaluation of one OBH program found that not only did the 189 youth participants improve significantly at discharge as measured by the Y-OQ, but youth reported significant increases in coping skills around abstinence, improvements that were maintained 6-month post-treatment. Similarly, Tucker et al. (2011) in their study of over 900 youth who attended one of five different OBH programs found that clients had significant improvements in functioning at discharge as reported both by youth and their parents. In addition, these changes were maintained six months post discharge (Zelov, Tucker, & Javorski, 2013). The research highlights how OBH clients continue to be complex, presenting with multiple problems and/or diagnoses (Bettmann et al., 2013; Tucker et al., 2011), yet outcomes continue to support its effectiveness with adolescent clients.

Rationale for Study

While the research suggests that both private RTCs and OBH programs have shown positive outcomes on youth participants, there is a danger in solely attributing differences to the quality or characteristics of treatment they receive. Clients arrive to treatment with a predetermined set of characteristics and experiences that will influence the likelihood of treatment fidelity and success (Phillips et al., 2000); yet, this past research has predominantly looked at outcomes and not necessarily individual or program characteristics related to outcomes.

To date, only Magle-Haberek, Tucker, and Gass (2012) endeavored to explore how individual and program characteristics in both RTC and OBH programs are associated with clients who have statistically significant treatment outcomes. Magle-Haberek et al. found no significant relationship between length of stay, program type, and improvement in clients; however, this study found gender, intake functioning and time spent engaging in adventure therapy in groups as significant predictors of improvements.

This current study aims to expand this body of research and investigate how individual characteristics and presenting problems are predictive of clinically significant improvements in functioning.

The purpose of this study is to explore pre-treatment youth characteristics and discharge outcomes for adolescents in RTC and OBH programs. Understanding the factors that predict treatment outcomes can ultimately aid providers in improving treatment (Phillips et al., 2000). This study specifically addresses the following research questions:

1. Is there a relationship between program type, gender, history of abuse, and presenting issues, and the likelihood of youth reporting clinically significant improvements at discharge?
2. Are gender, history of abuse, and presenting issues predictors of clinically significant improvements at discharge for youth in RTCs and OBHs?

METHOD

Measures and Procedure

The private RTC industry, as well as Outdoor Behavioral Healthcare (OBH), have invested in research initiatives that provide the foundations of evidence to support private therapeutic programs (Gillis, Gass, & Russell, 2008; Young & Gass, 2010). The establishment of the National Association of Therapeutic Schools and Programs (NATSAP) Practice Research Network (PRN) came out of these efforts. The PRN is an ongoing research initiative in which multiple programs are using similar instruments with participants in tracking client progress from intake, discharge and post-discharge. This data from this study came from this PRN and the measures used to gather psychosocial information included the Outcome Questionnaire Family of Instruments (OQ) (Wells, Burlingame, & Rose, 2003) and admission data gathered via the NATSAP Staff Admission (SA-R) form.

Outcome/Dependent Variables

Measures from the OQ family of instruments used for this research included the Y-OQ-Self Report (SR) 2.0 as well as its abbreviated version, the Y-OQ 30 SR. Both of these instruments are youth self-report surveys that assess a variety of behavioral and emotional problems in youth between the ages of 11 and 19 (Burlingame et al., 1996) and were completed both at intake and discharge by youth participants. The OQ assessments have published validity and reliability scores, and have a broad and diverse normative sample. The OQ instruments were developed to be sensitive to therapeutic change of the client (Lambert et al., 1996; Mueller, Lambert, & Burlingame, 1998; Wells

et al., 2003). The Y-OQ 30 SR consists of the 30 questions chosen from the Y-OQ 2.0 SR that best represent the various areas measured by the OQ 2.0 SR and show the most sensitivity to clinical change. The Y-OQ 30 SR was designed to be a brief measure of behavior and disturbance, and therefore reports results in a single generalized total score. As programs could elect whether to measure via the Y-OQ 2.0 SR or the Y-OQ 30 SR, in this study data from the Y-OQ 2.0 SR was converted to a Y-OQ 30 SR score by scoring only the 30 items that are included in the shorter instrument. The Y-OQ 30 has consistently demonstrated strong reliability and validity in a variety of clinical treatment settings (Holloway, 2004; Jones, 2004).

For the Y-OQ 30 a cutoff score of 30 represents a clinical threshold between normal functioning and clinical concerns (Burlingame et al., 1996). Additionally, the Y-OQ 30 uses a reliable change index (RCI) of 10 points to determine if a client's change (decreases on the Y-OQ 30) is clinically meaningful (OQ Measures, 2014). The RCI was specifically used in this study to classify client improvements into two categories, Clinically Significant Change and No Clinically Significant Change. Hence, a Y-OQ change score from pretest to posttest was calculated and then dichotomized into a new variable referred to as Clinically Significant Change categorizing youth who either did or did not have 10 or more points of improvement (0 = no, 1 = yes).

Independent Variables

An additional questionnaire was used to obtain data for this study. The NATSAP Revised Staff Admission form collects information about a client from program staff (e.g., diagnostic codes, reasons for referral, referral source, date of admission, gender, birth date, and history of abuse). In addition, program type was used as a variable to compare differences.

Participants were recruited upon admission to a NATSAP program, and consent and/or assent was given. Upon consent, participants were registered in the NATSAP database, on the Carepaths system (an internet data management system); member programs to which participants are admitted were kept anonymous. Participants completed one age appropriate version of the OQ family of measures (either the Y-OQ 30 or the Y-OQ 2.0) upon admission and discharge, and program staff entered student background information into the database via the NATSAP SA-R form.

Participants

The sample size for this study was limited to the 1,058 participants with matched admission and discharge Y-OQ data from 15 different programs. The majority of the participants came from OBH programs ($n = 896$, 84.6%) with 14.4% ($n = 162$) of participants coming from RTCs. The majority of the

sample was male (73.4%, $n = 657$) with 23.6% ($n = 234$) of the population being female, with missing gender data on 67 youth. The mean age for clients in this sample was 15.7 ($SD = 2.1$ years).

Presenting Factors

This study focused on a set of background and other predictor factors because: a) past research has found them to be indicative of treatment outcomes (Boyer, Hallion, Hammell, & Button, 2009); b) they are relevant to this population (Behrens & Satterfield, 2011); and c) they were important control variables omitted in previous studies. Table 1 shows the array of different presenting issues for participants in the study. Substance abuse, trauma histories, and conduct disorders are the most prevalent issues reported by participants.

Analysis

Chi-square analyses were conducted to determine if program type (RTC and OBH), gender, or certain presenting issues increased the likelihood that youth participants would report clinically significant improvements. Logistic regressions were run to determine if demographic and presenting issues were predictors of clinically significant changes.

RESULTS

Clinically Significant Improvements

As discussed improvements for the Y-OQ 30 are considered clinically significant when scores decrease from intake to discharge by 10 more points (RCI) and mean changes reflected this level of improvement for both RTC and

TABLE 1 Presenting Issues of NATSAP Participants ($N = 362$)

Presenting Issue	Yes (%)	No (%)
Substance/alcohol abuse	55.8	44.2
Trauma	51.1	48.9
ODD/CD	23.2	76.8
Anxiety	19.1	80.9
Attention	18.5	81.5
Physical abuse ($N = 372$)	12.9	87.1
Sexual abuse ($N = 372$)	9.7	90.3
Depression or mood disorder	8.8	91.2
Learning disability	3.6	30.4

OBH program participants. Out of the 1,058 pre-post pairs of data, 32.6% ($n = 348$) of participants reported no clinically significant improvements at discharge with a mean Y-OQ score improvement of only 2.39 points ($SD = 10.78$), While 67.4% ($n = 719$) reported improvements of 10 or more points with an average mean improvement score of 28.9 points (SD = 13.8). Specifically, the mean for RTC participants at intake was 49.36 ($SD = 20.0$) and 25.62 ($SD = 17.3$) at discharge, improvements found to be statistically significant, $t = 13.1$, $df = 161$, $p < .001$. However, due to large variances in levels of change only 74.7% ($n = 121$) of these participants reported 10 or more points of improvement. The mean for OBH program participants at intake was 41.16 ($SD = 17.1$) and 22.50 ($SD = 15.0$) at discharge. These means improvements were also found to be statistically significant, $t = 28.3$, $df = 895$, $p < .001$; yet only 66.7% ($n = 598$) of OBH participants reported 10 or more points of improvement considered clinically significant as measured by the RCI. Despite these different rates of participants reporting 10 or more points of improvement and RTC participants having higher intake means scores, chi-square analyses revealed that participants in RTC and OBH programs were not more likely than the other to report clinically significant improvements, $x^2 = 3.370$, $df = 1$, $p = 0.066$, $phi = .056$. Hence, there seemed to be no programmatic differences in terms of likelihood to have clinically significant change as measured by the RCIs.

Likelihood of Clinically Significant Improvement within RTCs and OBH Programs

RTCs

Results of the separate Chi-square analyses indicated there were a number of presenting issues that increased participant's likelihood of clinically significant change while in residential treatment. As shown in Table 2, the relationship between clinically significant improvements and Sexual Abuse ($x^2 = 5.04$, $df = 1$, $p = .025$, $phi = .192$), Attention ($x^2 = 7.15$, $df = 1$, $p = .007$, $phi = .227$), Learning Disability ($x^2 = 3.869$, $df = 1$, $p = .049$, $phi = .169$) and Oppositional Defiance Disorder/Conduct Disorder ($x^2 = 4.85$, $df = 1$, $p = .028$, $phi = .188$) were all statistically significant. The remainder of presenting issues and characteristics within participants of residential treatment did not demonstrate any statistical significance ($p > .05$) to make them any more likely to have achieved clinically significant improvements upon discharge.

OBH Programs

Chi-square analysis revealed that females participating in OBH programs (72.7%, $n = 168$) were more likely to report clinical change than their male

TABLE 2 Likelihood of Clinically Significant Improvement for Participants in RTCs by Presenting Issue ($N = 132$)

Client Trait	Clinically significant improvements	No clinically significant improvements	χ^2	*df*	*P*
Gender ($N = 158$)			2.826	1	.093
Male ($n = 49$)	65.3%	34.7%			
Female ($n = 109$)	78.0%	22.0%			
Substance/alcohol abuse			1.221	1	.269
Yes ($n = 69$)	78.3%	21.7%			
No ($n = 63$)	69.8%	30.2%			
Trauma			.032	1	.859
Yes ($n = 22$)	72.7%	27.3%			
No ($n = 110$)	74.5%	25.5%			
ODD/CD			4.845	1	.028
Yes ($n = 39$)	87.2%	12.8%			
No ($n = 93$)	68.8%	31.2%			
Anxiety			.065	1	.798
Yes ($n = 49$)	75.5%	24.5%			
No ($n = 83$)	73.5%	26.5%			
Attention			7.151	1	.007
Yes ($n = 32$)	56.2%	43.8%			
No ($n = 100$)	80.0%	20.0%			
Physical abuse			.324	1	.569
Yes ($n = 36$)	77.8%	22.2%			
Unsure/No ($n = 96$)	72.9%	27.1%			
Sexual abuse			5.041	1	.025
Yes ($n = 30$)	90.0%	10.0%			
No ($n = 102$)	69.6%	30.4%			
Depression or mood disorder			.521	1	.470
Yes ($n = 59$)	71.2%	28.8%			
No ($n = 73$)	76.7%	23.3%			
Learning disability			3.869	1	.049
Yes ($n = 27$)	59.3%	40.7%			
No ($n = 104$)	77.9%	22.1%			

counterparts (63.5%, $n = 138$) in OBH programs, $x^2 = 6.36$, $df = 1$, $p = .012$, $phi = .087$ (see Table 3). Chi-square analysis of all remaining presenting issues did not indicate any likelihood of participants reporting clinically significant improvements based on whether or not they presented with certain issues

Predictors of Clinically Significant Improvements

RTCs

As shown in Table 4, there were two significant predictors and one predictor approaching significance. Participants with a history of sexual abuse were 7.3 times more likely to have reported clinically significant improvements

TABLE 3 Likelihood of Clinically Significant Improvement for Participants in OBH by Presenting Issues ($N = 231$)

Client Trait	Clinically significant improvements	No clinically significant improvements	χ^2	*df*	*P*
Gender ($N = 842$)			6.360	1	.012
Male ($n = 611$)	63.5%	36.5%			
Female ($n = 231$)	72.7%	27.3%			
Substance/alcohol abuse			.308	1	.579
Yes ($n = 134$)	66.4%	33.6%			
No ($n = 97$)	62.9%	37.1%			
Trauma			.912	1	.340
Yes ($n = 163$)	66.9%	33.1%			
No ($n = 68$)	60.3%	39.7%			
ODD/CD			.006	1	.939
Yes ($n = 45$)	64.4%	35.6%			
No ($n = 186$)	65.1%	34.9%			
Anxiety			2.182	1	.140
Yes ($n = 20$)	80.0%	20.0%			
No ($n = 211$)	63.5%	36.5%			
Attention			.410	1	.507
Yes ($n = 35$)	60.0%	40.0%			
No ($n = 196$)	65.8%	34.2%			
Physical abuse ($N = 241$)			.656	1	.418
Yes ($n = 13$)	53.8%	46.2%			
Unsure/No ($n = 228$)	64.9%	35.1%			
Sexual abuse ($N = 241$)			.159	1	.690
Yes ($n = 7$)	71.4%	28.6%			
Unsure/No ($n = 234$)	64.1%	35.9%			
Depression or mood disorder			.574	1	.449
Yes ($n = 67$)	68.7%	31.3%			
No ($n = 164$)	63.4%	36.6%			
Learning disability			1.925	1	.165
Yes ($n = 11$)	45.5%	54.5%			
No ($n = 220$)	65.9%	34.1%			

in RTCs, *Wald* $x^2 = 5.37$, $df = 1$, $p = .020$. However, having a history of trauma decreased a participant's likelihood of reporting significant improvements; in fact they were four times less likely to do so, $OR = .23$, *Wald* $x^2 = 5.19$, $df = 1$, $p = .02$. Finally, participants who presented with attention issues were also less likely to report improvements considered clinically significant, a finding approaching significance, $OR = .35$, *Wald* $x^2 = 3.66$, $df = 1$, $p = .056$. For other presenting issues, there were no significant differences impacting likelihood to predict clinically significant improvements, suggesting RTC programs were equally effective for each of these diagnoses. This model has a low effect size (*Nagelkerke* $R^2 = .280$), suggesting although it is useful to predict changes, there may be other factors accounting for likelihood of achieving clinically significant improvements.

TABLE 4 Predictors of Clinically Significant Change for Participants in RTCs ($N = 117$)

Predictor	β	$SE\beta$	*Wald's* $\chi 2$	*df*	*p*	$e\beta$ (odds ratio)
Gender (0 = Male)	.476	.596	.639	1	.424	1.610
Alcohol or substance abuse	.037	.513	.005	1	.942	1.038
Trauma	−1.449	.636	5.192	1	.023	.235
ODD, conduct	.965	.710	1.848	1	.174	2.625
Anxiety	.240	.571	.176	1	.675	1.271
Attention	−1.064	.556	3.664	1	.056	.345
Physical abuse	.100	.562	.032	1	.859	1.105
Sexual abuse	1.998	.862	5.37	1	.020	7.372
Mood disorder or depression	−.272	.578	.221	1	.638	.762
Learning disability	.147	.635	.054	1	.817	1.159
Constant	.872	.900	.939	1	.333	2.392
Test			$\chi 2$	*df*	*p*	
Overall model evaluation						
Score test			22.898	10	.011	
Wald test			25.288	1	.000	
Goodness of fit test						
Hosmer & Lemeshow			1.869	7	.967	
Effect Size (Nagelkerke R^2)			.280			

OBH

There was only one significant predictor of clinically significant differing improvement. Females were 3.5 times more likely than males in OBH programs to have 10 or more points of improvement, *Wald* $x^2 = 8.60$, $df = 1$, $p = .003$ (see Table 5). For all other presenting issues, having a specific diagnosis did not make one more likely to improve by 10 or more points, suggesting that OBH programs impacted participants equally regardless of presenting issue. Like the predictive model for OBH participants, this model has a low effect size as well (*Nagelkerke* $R^2 = .121$), suggesting other variables than those measured may be responsible for improvements in youth.

DISCUSSION

The statistics supporting the complexity of mental health, substance abuse, and behavioral and emotional challenges are alarming, but they must be understood to improve the quality of treatment available to youth. While this study was not able to provide substantial evidence on how or why individual differences and presenting issues may influence a participant's likelihood of clinically significant improvements, it does demonstrate there are presenting

TABLE 5 Predictors of Clinically Significant Change for Participants in OBH (N =224)

Predictor	β	SEβ	Wald's $\chi 2$	df	P	eβ (odds ratio)
Gender (0 = Male, 1 = Female)	1.259	.429	8.602	1	.003	3.521
Alcohol or substance abuse	.219	.299	.534	1	.465	1.245
Trauma	−.959	.711	1.820	1	.177	.383
ODD, conduct	.100	.388	.067	1	.796	1.106
Anxiety	.898	.608	2.185	1	.139	2.456
Attention	−.170	.401	.180	1	.671	.843
Physical abuse	−.242	.703	.118	1	.731	.785
Sexual abuse	.447	.967	.213	1	.644	1.563
Mood disorder or depression	.018	.343	.003	1	.959	1.018
Learning Disability	−2.042	1.183	2.981	1	.084	.130
Constant	.283	.288	.970	1	.325	1.328

Test	$\chi 2$	df	p
Overall model evaluation			
Score test	19.419	10	.035
Wald test	18.860	1	.000
Goodness of fit test			
Hosmer & Lemeshow	6.165	7	.521
Effect Size (Nagelkerke R^2)	.121		

issues that increase or decrease the likelihood of a client reporting clinically significant improvements at discharge.

Predictors of Clinically Significant Changes in RTC Participants

Clients in RTC programs with a history of sexual abuse were over 7 times more likely to report 10 or more points of improvement than those without this history, yet those with a history of trauma were four times less likely to find similar outcomes. Upon further investigation, those who reported sexual abuse did not necessarily also report a history of trauma (e.g., only five individuals with a history of sexual abuse also reported a history of trauma). These contradictory findings are unclear, but may be due to the method of measuring this variable, as to what type of trauma this variable describes, or the severity and frequency of trauma. Boyer et al. (2009) emphasize the necessity of differentiating between an individual who has experienced one type of trauma as compared to two or more forms of trauma (e.g., the greater the frequency and forms of trauma experienced by one individual the more likely he or she is to be affected by Post Traumatic Stress Disorder). In addition, Boyer et al. analyzed individual types of trauma, or specific combinations of two or more types of trauma to identify what might be predictive of clinically significant outcomes within residential treatment. In contrast to the results of this study, sexual abuse was not predictive of outcome, although clients who had witnessed community violence were significantly more likely to deteriorate in residential treatment. This highlights

the need to construct clear definitions of what "trauma" is measuring in order to accurately identify how to improve treatment qualities to be sensitive to those needs. As Magle-Haberek et al. (2012) pointed out, differences in treatment outcomes may be more a product of differences in treatment processes rather than initial difference in the presenting issues or severity of issues. Future study of the relationship between the severity of trauma history, type of trauma, and a participant's ability to benefit from intensive care (e.g., private residential treatment) is needed to differentiate which individuals and programs may be best suited for one another or what treatment implications may exist.

Behrens and Satterfield (2011) explored the characteristics of adolescents in private RTC's, in addition to how outcomes vary according to age, gender, and presenting problems (i.e., anxious/depressed, withdrawn/depressed, somatic complaints, social problems, attention problems, thought problems, rule breaking behavior, aggressive behavior, internalizing or externalizing behaviors). They also found that regardless of age, gender, or presenting problems, no matter how severe or high risk the problems, the adolescents' behavior and symptoms shifted from the clinical range upon admission to the normal range on each global measure of psycho-social functioning at discharge and up to a year later post-discharge. Similar findings were found in this study except in terms of trauma and sexual abuse histories. This study supports the previous work of Behrens and Satterfield (2011), suggesting that residential private pay treatment is effective for a variety of youth; however, future research is needed to look in more depth at how trauma not only impacts the presentation of youth problems, but also how programs can respond to best meet the needs of youth with trauma histories. In fact, mental health programs nationally are being urged to take into account a child's trauma when planning treatment (Listenbee, 2013). This type of "trauma informed care" takes into account a youth trauma within a comprehensive treatment approach and/or milieu and can be applied to a wide range of presenting problems (Rosenberg, 2011).

Predictors of Clinically Significant Change for OBH Clients

This study found only gender to be a significant predictor of OBH clients reporting 10 or more points of improvement at discharge. To explore this difference, gender comparisons between intake means and length of treatment were also completed. Females reported mean intake scores of 42.8 (SD = 17.67) and males reported mean intake scores of 40.37 (SD = 16.9); yet independent samples t-tests revealed no significant mean differences between males and females at intake, suggesting that males and females entered OBH program with the same level of dysfunction. In addition, there were no significant differences in terms of length of treatment between females (M =

81.2 days, $SD = 55$) and males ($M = 83.3$, $SD = 51.4$); hence, females were not necessarily at the program longer to account for larger improvements.

These findings are different than research by Russell (2003) who found that females tended to self-report higher than males during admission and discharge; which was not the case in this study. However, Russell (2003) also found that improvement in female treatment outcomes were 49% greater than males as indicated by their self-report (using YO-Q), and 31%, as reported by their parents' assessment at admission and discharge. More recently, Tucker et al. (2011) found females did significantly better than males in both OBH and RTC programs regardless of presenting issues, hence gender rather than presenting issues were found to account for different rates of change. This finding has also been found in a community sample of adventure therapy participants. Female participants attending adventure therapy groups as an adjunct to traditional individual and family therapy did significantly better than those that did not and did better than males in the sample (Tucker, Javorski, Tracy, & Beale, 2013). It is unclear why females versus males may report larger changes after attending OBH programs. It may be due to the group format of wilderness programs, which can build upon the natural value given to relationships by females (Tucker et al., 2013). It may also be due to the empowering nature of wilderness therapy which challenges females both physically and emotionally by providing challenges perceived as impossible, yet created to provide participants with success (Kimball & Bacon, 1993). Future research including more in depth qualitative research is needed to gain a better perspective of how gender impacts wilderness therapy participation, as the quantitative data continue to show this trend.

It is also interesting to note that for OBH participants, there were no particular presenting issues that appeared to make participants more or less likely to report clinical change. This suggests that wilderness therapy can be effective for a variety of youth, which is indeed the type of clients who seek out wilderness therapy services. This is supported by research that has found OBH to be effective for youth with depression (Norton, 2010; Russell, 2006), substance abuse issues, and conduct disorder (Lewis, 2013). This study supports the trend in the research highlighting that OBH can be an effective alternative for youth with complex issues (Norton et al., 2014).

Limitations and Future Directions

There are several limitations in this study. There were issues with missing data in this study. Although gender information was readily available, presenting issue data reported by programs at intake were often not included with the Y-OQ information. Hence, these findings need to be interpreted with caution because they may not be generalized to the overall population of youth attending NATSAP programs. This study also did not include

post discharge data; therefore, it is unclear if these clinical improvements remained stable over time.

The information gathered for this study was also primarily dependent on self-report of the participants upon admittance and discharge to their program. An effort was made to include parent data in this analysis; however, due to missing data previously discussed on presenting issues, a large enough sample was not present to be used for this analysis. Put simply, although there were matched parent pairs of data, presenting problems and trauma history information was not collected by staff at intake for a large amount of these matched pairs. Hence, they could not be included in the regression analyses which required valid data across all included categories. This lack of parent corroboration is problematic since evidence suggests that relying on single informants to provide a reliable assessment of adolescent functioning is not ideal (Renk, 2005). However, it does invalidate the data either. Smith (2007) highlights how age, setting, and presenting issues influence which informants are best in which setting. For youth in residential settings, especially youth with internalizing issues like depression and anxiety, youth may be the best in reporting their own functioning compared to parents (Smith). In addition, the Y-OQ self-report has been shown to be sensitive to change from intake to discharge with improvements maintained post discharge in both wilderness and inpatient settings supporting its construct validity (Burlingame et al., 2005). Also, in previous studies using data collected by the ongoing NATSAP PRN, youth and their parents reported similar significant decreases in symptomatology as measured by the Y-OQ (Tucker et al., 2011) as well as improvements that last post discharge (Zelov et al., 2013). However, multiple informants are preferred and future research is needed with both youth and parent corroboration to increases our confidence in these findings.

In addition, information regarding client history gathered at intake from clinicians and parents allows room for error as well as underreporting, especially in reported low levels of trauma that may be partially due to defensive response styles (McCart et al., 2005). Given that this research suggests that a history of trauma may be a determinant of successful treatment and the likelihood that there are greater numbers of youth affected by trauma than reported, education and training around trauma informed care is critical for programs to invest in (Briggs et al., 2012).

When working with adolescents at high risk of mental health and substance use problems, programs should be vigilant about matching services to best fit the need of the majority presenting problems of their client population as well as individual needs. This study provides preliminary evidence that both private pay residential and OBH programs are effective at increasing functioning in youth participants with most presenting issues; hence, these interventions seem to meet the various needs of different presenting problems as well as complex problems. Motivated by these findings,

programs should remain proactive in training staff about the types of problems, risk factors, and warning signs that are most likely to be present in their clients (SAMHSA, 2011).

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