

# Outdoor Behavioral Healthcare: Its Impact on Family Functioning

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## Abstract

The use of Outdoor Behavioral Healthcare (OBH) as a viable treatment modality for adolescents with behavioral, emotional, and substance use issues has been gaining increased attention. This research builds upon the literature by utilizing a longitudinal study to explore clinical changes, measured using the Youth Outcome Questionnaire (YOQ), and changes in family functioning as measured by the general functioning scale of the Family Assessment Device (FAD). Both clinically and statistically significant positive results with youth, mothers, and fathers at points of intake, discharge, and six months post discharge were found; however, parent and youth reports differed especially at six months post discharge. In addition, regression analyses showed that mothers and youth were more aligned than fathers in their perceptions of changes in family functioning post OBH treatment. This research fills a gap in the behavioral healthcare literature concerning the outcomes of using wilderness therapy and their association with family involvement in maintaining clinical change and improved family functioning.

*Keywords:* Outdoor Behavioral Healthcare, family involvement, family therapy, wilderness therapy

Approximately 10,000 youth annually participate in wilderness therapy, also referred to as Outdoor Behavioral Healthcare (OBH) (Russell, 2003). OBH is considered a type of intervention in the larger field of Adventure Therapy (Tucker, 2009). According to Gass, Gillis, and Russell (2012), adventure therapy is “the prescriptive use of adventure experiences provided by mental health professionals, often conducted in natural settings that kinesthetically engage clients on cognitive, affective, and behavioral levels” (p. 1). As a subset of adventure therapy, OBH is as an alternative option for youth with emotional, behavioral, and/or substance abuse problems (Russell, 2001; 2003). OBH programs provide an intermediate level of care where clients engage in intentional adventure and wilderness experiences in a small group setting, and typically live for extended periods of time either in the outdoors or on expedition (Magle-Haberek, Tucker, & Gass, 2011; Russell & Gillis, 2010). In addition, OBH programs provide individual, group, and family therapy with participants in an effort to meet clinical goals set for clients based on their individual set of therapeutic needs (Gass et al., 2012).

Although research continues to grow supporting OBH as effective in decreasing levels of clinical dysfunction in adolescent participants (Bettmann, Russell, & Parry, 2012; Lewis, 2013; Tucker, Zelov & Young, 2011), much of this research has been limited due to the exclusive reliance on adolescent self-report (Magle-Haberek, Tucker, & Gass, 2102; Tucker, Smith & Gass, 2014; Tucker, DeMille,

## OBH: THE IMPACT ON FAMILY FUNCTIONING

Norton, & Hobson, in press) and/or single program evaluations (Bettmann et al., 2012; Lewis, 2013). In addition, there is limited data looking at if these changes are maintained once youth leave OBH programs (Zelov, Tucker, & Javorski, 2013). Finally, it is also unclear what role OBH plays in the change of functioning in family systems even though data has been collected from parents reporting on the changes they see in their children (Bettmann et al., 2012; Zelov et al., 2013). Evidence supports including families in the traditional treatment process of adolescents as it can increase effectiveness compared to adolescent-only interventions (Diamond, Siqueland & Diamond, 2003; Harper & Russell, 2008). With this in mind, many OBH programs incorporate the family in multiple ways during the OBH treatment process (Bandoroff & Scherer, 1994; Faddis & Bettmann, 2006); however, little research has been done to understand how or why family involvement in OBH treatment contributes to and supports positive clinical change in OBH participants and family functioning.

With the large number of adolescent participants who attend OBH programs and the recently noted successes in treatment (Bettmann et al., 2012; Lewis, 2013; Russell, 2003; Zelov et al., 2013) more information is needed looking at the longer term impact of OBH on participants both in terms of mental health and family functioning to better inform OBH programming and practices. In addition, since access to OBH can be expensive and often not covered by insurance, more research is needed to further develop and substantiate the field as an Evidence Based Practice (Zelov et al., 2013), with the hope of increasing accessibility for families and youth in need. In reviewing the OBH literature, little information on the connection between adolescent outcomes and the impact on family functioning exists. To better understand the relationship of family functioning and treatment outcomes, research from traditional therapeutic programs that included family therapy was considered.

### Impact of Family Involvement

Families are a system built of many distinct members. If one member goes through a change in isolation, when reintegrated, the rest of the system will go through a period of adaptation (Wilcoxon, 1985). Wilcoxon (1985) described this process as eliciting resistance by the family system until new patterns are developed by shared adjustment. This notion highlights the idea that it may be beneficial from the start, to work with the entire family to stimulate systematic change. As an adolescent makes clinical improvements, it is highly likely to have an impact on the family system.

In fact, the importance of engaging the family is supported by the literature on traditional adolescent treatment outcomes. For example, research comparing Multidimensional Family Therapy (MDFT) with Cognitive Behavioral Therapy (CBT) and peer group therapy for adolescents in drug treatment found MDFT demonstrated higher effectiveness over 12-month follow-up in reducing substance use compared to the other forms of treatment (Liddle, Rowe, Dakof, Ungaro, & Henderson, 2009). In a similar study comparing CBT to MDFT, adolescents in the MDFT group were also more effective in maintaining changes over time in substance use problem severity, other drug use, and abstinence (Liddle, Dakof, Turner, Henderson & Greenbaum, 2008). In both studies, the MDFT group focused the intervention on family relationships as compared to changes in individual functioning obtained through the peer group work or CBT, hence addressing the system from which the negative behavior originated and/or are sustained is important.

In addition to these studies, Attachment-Based Family Therapy (ABFT) has been highlighted as another family therapy model effective in treating adolescents with mental health issues. Diamond et al. (2010) found that in a randomized controlled study of 66 adolescents, 12-17 years old, identified in primary care and emergency departments with suicidal ideation, ABFT was more successful than enhanced usual care in reducing suicidal ideation and depressive symptoms in adolescents. Siqueland, Rynn & Diamond (2005) found in a randomized study of 11 adolescents assigned to either CBT or CBT/ABFT groups, significant decreases in anxiety and depressive symptoms were reported by both the clinical evaluator and the adolescent with no significant differences by treatment. However, in the CBT/ABFT group, decreases in psychological control were found, whereas adolescents in CBT report increases in this factor. This may indicate that changes in the adolescents are better assimilated when the family participates in treatment as well; larger sample sizes are required to further validate these findings. Overall positive change was sustained through these integrated family approaches in these studies (Diamond et al., 2010; Liddle et al., 2008; Liddle et al., 2009; Siqueland et al., 2005). Based on these findings, the importance of family involvement in adolescent treatment is clear. Approaching

## OBH: THE IMPACT ON FAMILY FUNCTIONING

the problem from a family systems perspective could also be applied in an OBH setting as a way of eliciting and sustaining adolescent clinical change within the system from where they come.

Although the research on family involvement in OBH is not prevalent, there are a few examples that shed light on this important aspect of treatment with adolescents in this setting. For example, both Aspen Achievement Academy (AAA) and a Midwest Community Mental Health Center (CMHC) have offered an auxiliary OBH family program in conjunction with standard care. Both program participant groups showed significant improvements on levels of family functioning from pretest to scores taken six weeks post discharge (Bandoroff & Scherer, 1994; McLendon, McLendon, Petr, Kapp & Mooradian, 2009). The 27 and 25 self-selecting participant families from AAA and the CMHC, respectively, showed greater improvements in family functioning than their informal comparison groups, who chose not to participate in the auxiliary portion of care (Bandoroff & Scherer, 1994; McLendon et al., 2009).

Harper and Russell (2008) conducted a mixed methods study with families who had an adolescent participate in one of two OBH programs that had components of family participation. The quantitative portion of the study with 132 adolescents and 85 parents found a trend toward improved family function in these programs. Congruent findings were also reported from families in the CMHC group that participated in auxiliary family work (McLendon et al., 2009). All groups reported learning new skills to effectively communicate when problems arose leading to their ability to maintain positive changes within the home (Bandoroff & Scherer, 1994; Harper & Russell, 2008; McLendon et al., 2009).

With these new skills of how to approach conflict by negotiating and expressing feelings, Harper and Russell (2008) pointed out that possible future family crisis could be averted. Specifically, non-participant families expressed a measurable amount of apprehension concerning the transition period and future of the family due to not having the skills to support their adolescent's changes (Bandoroff & Scherer, 1994). One of the four major themes found in Harper and Russell's (2008) research was that OBH provided a new beginning for the adolescent and their family, yet they were aware that more work still needs to be done. Harper and Russell (2008) concluded that after OBH experiences, adolescents were able to better recognize and understand family dysfunction. In the past, families may have circumvented argument with new skills; however adolescents were raising conversations that may be difficult for families to tackle if they were not also involved in treatment.

Despite these findings, most of the research on the impact of OBH on the family has included smaller samples from single program evaluations, and many were qualitative in nature. No research has specifically looked at quantitatively measuring how OBH impacts family functioning overall. In addition, little research has looked at the impact of OBH beyond functioning at discharge (Zelov et al., 2013). With evidence supporting the inclusion of families in the traditional treatment process of adolescents as an approach to increasing effectiveness when compared to adolescent-only interventions (Diamond, Siqueland, & Diamond, 2003; Kazdin & Whitley, 2003; Harper & Russell, 2008), it is important to establish further understanding of OBH's impact on family functioning and mental health functioning of youth across time. This study aimed to fill this gap in the literature by answering the following research questions:

1. How does mental health functioning, as measured by the Youth Outcomes Questionnaire (Y-OQ) and family functioning as measured by the Family Assessment Device (FAD), change for OBH youth participants from intake to discharge to six months post-discharge as reported by youth and their parents?
2. Are there differences across gender in changes in the Y-OQ and FAD over time as reported by youth and their parents?
3. Is there a relationship between youth's perception of change in Y-OQ and youth's perception of change in FAD?
4. Is there a relationship between parent's perception of youth change in Y-OQ and parent's perception of change in FAD?

# OBH: THE IMPACT ON FAMILY FUNCTIONING

## Methods

### NATSAP PRN

For this study, client data was gathered from 17 participating wilderness therapy programs. The data collection originally started in 2007 from an initiative started by the National Association of Therapeutic Schools and Programs (NATSAP) in partnership with the University of New Hampshire (Young & Gass, 2008). This initiative is known as the NATSAP Practice Research Network (PRN) database. Zelov et al. (2013) describe the PRN as a cost-effective tool that provides outcome data used to indicate the successes and limitations of NATSAP programs as an industry group. Individual programs are also able to utilize the outcomes in order to receive credible and confidential feedback on the effectiveness of that particular program relative to other programs. The NATSAP PRN currently employs the Outcome Questionnaire Family of Instruments (OQ) (Burlingame et al., 2005; OQ Measures, 2011; Wells, Burlingame, & Rose, 2003).

Initially, programs were given the choice of administering either the Youth Outcomes Questionnaire (Y-OQ) 2.0 or the Y-OQ 30. Unlike the Y-OQ 2.0, the Y-OQ 30 does not have a differentiation of subscales but is a briefer version that provides a global index score of youth's behavioral and emotional distress (Burlingame et al., 2005; Wells et al., 2003). In July of 2010 all OBH programs transitioned to using only the Y-OQ 2.0 as it gives clinicians a more detailed picture of the clients clinical disposition across six domains of functioning including: interpersonal distress; somatic; interpersonal relations; critical items; social problems; and behavioral dysfunction (Burlingame et al., 2005). In 2012, the PRN decided to add the McMaster Family Assessment Device (FAD) as an additional measure to the current battery of measures.

### Measures Used

The PRN gathers information from multiple sources and uses the Outcome Questionnaire Family of Instruments (OQ Measures, 2013). In this study, youth ages 11 to 19 and their mother and/or father filled out the Youth Outcomes Questionnaire (Y-OQ) 2.0 at intake, discharge and six months post-discharge to measure clinical dysfunction. The Y-OQ has been documented as an established valid and reliable measure (Holloway, 2004; Jones, 2004; Wells et al., 2003). Measuring a variety of behavioral and emotional issues, the Y-OQ 2.0 includes six subscales measuring: critical items, behavioral dysfunction, social problems, interpersonal relations, somatic distress, and interpersonal distress. In addition, a total score was calculated for each participant representing overall functioning. A Total Y-OQ score of 47 or higher represents marked dysfunction and is the clinical cut-off of the measure. In addition, decreases in Total scores of 18 or more can be considered reliable levels of clinical change (referred to as the Reliability Change Index (RCI) (OQ Measures, 2013). Similarly, clinical cutoffs and reliable change indices also exist for all six subscales.

In addition to using the YOQ 2.0, participants' and parents' perceptions of family functioning were evaluated using the FAD General Functioning (GF) scale at intake, discharge and six months post-discharge (Epstein, Baldwin, & Bishop, 1983). The FAD GF scale is a 12-item self-report questionnaire based on the McMaster Model of Family Functioning (MMFF). The GF scale is a representation of the entire 60-item questionnaire of the FAD and measures the overall level of family functioning. Kabacoff, Miller, Bishop, Epstein & Keitner (1990) noted that the FAD GF scale highly correlated with other items, supporting it as a single index of family functioning. The FAD GF scale uses a four-point Likert-type response format (strongly agree, agree, disagree, and strongly disagree). According to Ryan, Epstein, Keitner, Miller, & Bishop (2005) a score of 2.00 or above indicates problematic family functioning with higher scores suggesting lower family functioning.

### Sample

At intake, data were collected from 1389 youth entering into OBH programs participating in the NATSAP study. The majority of participants were male ( $n = 933$ , 67.8%) with the rest female ( $n = 433$ , 32.2%). The average age of participants was 16.3 years ( $sd = 1.2$ ) ranging in age from 12 to 18 years. In terms of length of treatment, stays ranged from 6 days to 298 days with an average length of stay 71.6 days ( $sd = 26.2$ ); however, less than 5% of the participants were in treatment for 40 days or

## OBH: THE IMPACT ON FAMILY FUNCTIONING

less with most (90%) staying between 41 and 120 days. Limited ethnicity data were collected, but of the data known ( $n = 777$ ), the majority of participants were Caucasian ( $n = 644$ , 82.9.2%). Thirty-two participants reported as Hispanic (4.1%), 21 as Asian (2.7%), 20 as African American (2.6%), 25 as Multi-Ethnic (3.2%) and 10 as Native American (1.3%). The rest reported as Mixed or Other races (3%). In terms of presenting issues, as with ethnicity, data were not reported on all 1389 youth; however, available data on the top three presenting issues reported at intake are presented in Table 1. As shown, the most common issues facing youth were alcohol and substance abuse issues (63.0%), depression and/or mood disorders (57.0%), oppositional issues (40.1%) and anxiety (37.8%) with most youth presenting with two or more predominant issues.

### Results

#### Changes in Y-OQ and FAD from Intake to 6 Months Post

To answer this study's first two research questions, a series of repeated measures ANOVA analyses were completed.

**All youth data.** Table 2 shows pre, post, and six months post discharge mean changes from youth self-reports on both the Y-OQ and FAD. On average, youth reported functioning above the Y-OQ clinical cut-offs suggesting significant dysfunction across all subscales and the Total Score at intake. At discharge and six months post-discharge, youth self-reported to be functioning below the clinical cut offs for Total Score and all subscales. In terms of the FAD at intake, on average all youth reported family functioning above 2.0 which reflects significant family distress; however, these means decreased at discharge and remained below 2.0 at six months post discharge. One way repeated measures ANOVA analyses revealed significant overall mean differences between intake, discharge and six months post –discharge for all youth as measured by the Y-OQ and the FAD ( $p < .001$ ) with post hoc analyses that found significant mean differences between Y-OQ Total score, the Y-OQ subscale scores, and the FAD scores at intake and discharge. Post-hoc analyses also revealed significant mean differences between scores at intake and six month post-discharge; however, for all scores except the Intrapersonal Distress and Interpersonal Relations, no significant mean differences were found between discharge and six month post discharge, suggesting that these scores remained stable from discharge to six months post, with the expectation of Intrapersonal Distress and Interpersonal Relations. Despite the statistically significant increase from discharge to six months post discharge for Intrapersonal Distress and Interpersonal Relations, the mean at six months post discharge was still below the clinical cutoff of 17 points and 3 points respectively. As shown by the partial eta2 values, 16.0% to 30.0% of the variance explained between the means is accounted for by time (See Table 2).

**Youth data by gender.** To investigate the role of gender in changes over time in youth self-report data, additional one way repeated measures ANOVA analyses were conducted for both males and females separately. As shown in Table 2, males in OBH programs, for the most part, reported Y-OQ intake scores above the clinical cut-offs, which then fell below these cut-offs at discharge and remain around those levels at six months post-discharge. Males reported FAD scores above 2.0 at intake, which decreased significantly at discharge, but remained above 2.0 and continued to fall at six months post-discharge (1.99). With-in subject ANOVA analyses for time revealed significant differences over time with 8.0 to 21.0% of the variances in means explained by time. The exception is in terms of Social Problems, males reported mean scores at discharge as well as six months post-charge above the clinical cut-off of 3.0; however they were still only at half the level of acuity as they were at intake. Pair wise post hoc comparisons showed significant differences between intake and discharge means for all Y-OQ scores and the FAD, as well as between intake and six months discharge. However, there were no significant mean differences between discharge and six months post discharge, suggesting changes remained stable from discharge to six months post discharge (See Table 2).

Similarly, as shown on Table 2 most females in OBH reported Y-OQ means above the clinical cut-offs at intake. It is important to note that females on average reported higher levels of dysfunction across all the Y-OQ scores compared to males. These scores then fell on average below the cut-offs at discharge with ANOVA analyses showing means changes over time considered statistically significant. Female YOQ scores remained fairly stable at six months post discharge with the exceptions of Total Score and Intrapersonal Distress changes. Although females reported significant improvements at discharge, their overall mental health functioning (Total Score) and Intrapersonal Distress was

## OBH: THE IMPACT ON FAMILY FUNCTIONING

significantly higher at six months post discharge as shown by post-hoc comparisons. Despite this increase, Total scores were below the clinical cut off of 47 at discharge and at six months post discharge. Levels of Intrapersonal Distress did increase to be above the cut-off of 17; however, they were still over 10 points less than their level of acuity at intake. FAD scores for females were above 2.0 at intake suggesting problematic family dysfunction, but decreased at discharge and remained below 2.0 at six months post discharge as well. Post hoc analysis revealed that significant changes in FAD scores were only found between intake to discharge, and intake to six months follow up, indicated that FAD scores, as reported by females, remained stable and below the level of significant family dysfunction.

**Mother data for all youth.** Mothers' reported mean scores for their youth across time are shown in Table 3. Repeated measures ANOVAs revealed significant differences between means across time for all measures. Similar to youth data, mothers reported their youth to have high levels of clinical dysfunction above the clinical cut-offs at intake as measured by the Y-OQ, which significantly decreased to levels below the clinical cut-offs at discharge; however, mothers reported across all Y-OQ measures that these changes did not remain at six months post-discharge with all Y-OQ means scores increasing to above the clinical cut-offs. Pair wise post hoc analyses revealed significant differences between intake and discharge and intake and six months post discharge, but also significant differences between discharge and six months post-discharge. It is important to note intake scores were two times larger than six months post discharge scores. FAD improvements were also found and unlike the Y-OQ, these changes remained across time. According to the mothers' perspectives, however, signs of family dysfunction persisted across time with FAD scores remaining above 2.0. As shown by the partial eta2 values, 36.0% to 58.0% of the variance explained between the means is accounted for by time for YOQ Total Scores and Sub Scales, and 11.0% for FAD (See Table 2).

**Mother reports across gender.** Mother reports for male and female youth were similar to their report for all youths in terms of Y-OQ changes. As shown on Table 3, both males and females were above the clinical cut-offs at intake, dropped below this level at discharge, and for the most part were considered by their mothers to be above the clinical cut-offs at the six month post discharge. Post hoc comparisons showed significant mean mental health functioning improvements between intake and discharge, and intake and six months post discharge but significant mean increases in scores from discharge to six months post. In the area of Critical Items and Somatic for males, mothers' reports indicated that these means significantly increase, though to levels still below the clinical cut-off.

FAD scores as reported by mothers showed high levels of family dysfunction at intake for both males and females, with improvements at discharge; however, the scores remained above 2.0. For mothers with female youth, the repeated measures ANOVA found no significant differences across time. For mothers with male youth, these differences across time were significant with pair wise post hoc comparisons showing significant mean differences between intake and discharge and intake and six months post-discharge.

**Father data.** Table 4 shows father report means for scores across time for all youth as well as for male and female youth. Unlike mother reports, fathers did not report significant post six month regression across all means. For all youth, fathers reported significant mean decreases at discharge for all Y-OQ scores as shown by post hoc analyses, though youth's average Interpersonal Relations subscale score was still above the clinical cut off of 4.0 at discharge. At six months post-discharge, means for Total Score, Behavioral Dysfunction and Social Problems had significantly increased, though only Social Problems mean score was above the clinical cut off at six months post-discharge, and all means were significantly decreased from intake mean scores. Intrapersonal Distress, Interpersonal Relations, Critical Items, and Somatic subscale means did not get significantly worse from discharge to six months post-discharge; however, Intrapersonal Distress and Interpersonal Relations subscale mean scores increased above the clinical cut-off.

Fathers reported no significant improvements in family functioning on the FAD from intake to discharge. At six months post discharge, there was significant improvements in family functioning compared to both intake and discharge scores as shown by post hoc analyses. The total FAD score still remained above 2.0, suggesting continuing family dysfunction as perceived by fathers. As shown by the partial eta2 values, 32.0% to 51.0% of the variance explained between the means is accounted for by time for YOQ Total Scores and Sub Scales, and 13% to 37% for FAD (See Table 2).



## OBH: THE IMPACT ON FAMILY FUNCTIONING

**Father data across genders.** Also as shown on Table 4, father reports for their male and female children show some notable differences. According to fathers' reports for females, Total Y-OQ scores, and subscales of Interpersonal Relations, Intrapersonal Distress, and Social Problems decreased significantly at discharge and did not get significantly worse at six months post-discharge, but remained above the clinical cut-off throughout the study. Despite female youth's scores remaining above the clinical cut-off as reported by fathers, the decrease in mean scores from intake to discharge was significant for Y-OQ total score as well as all subscales except Somatic, and for total score and all subscales from intake to six months post-discharge. Fathers did not report any significant mean increases from discharge to six months post-discharge.

For male children, fathers reported that youth significantly improved at discharge to levels below the clinical cut offs in Total Y-OQ score and all subscales, yet unlike the father reports for female youth, these scores were significantly higher six months post discharge for the Total score, Behavioral Dysfunction, and Social Problems subscales with a level of Social Problems that was back above the clinical cut off at six months post discharge. Interpersonal Relations also regressed above the clinical cutoff from discharge to six months post discharge, but post hoc analysis did not find this change to be significant.

Differences between male and female FAD scores as reported by fathers are interesting in that for female youth, father's reported more significantly higher mean family dysfunction at discharge, than at intake, and increased dysfunction at six months post discharge that was also significantly different from intake as shown by post hoc analyses. In contrast, for male youth, fathers report no significant mean difference in FAD scores from intake to discharge, but significant improvements in terms of family functioning at six months post discharge. With the exception of mean FAD score for males at six months post discharge (1.99), and female mean FAD score at intake (1.97), all means are above the clinical cut-off of 2.0 as reported by fathers.

### Predictors of Changes in Family Functioning

To answer the last two research questions, linear regression analyses were performed. Yet, before running the regression analyses, correlation analyses were performed to explore the relationships between the variables and inspect for issues of multicollinearity. As shown in Table 5, there were several significant correlations between the variables. Age was significantly negatively correlated with lengths of treatment. Gender was positively significantly correlated with Youth Y-OQ Total change, Youth FAD change, and Mother YOQ Total reported change suggesting that females had larger changes than males. Y-OQ Total youth change was also significantly positively correlated with Youth FAD change and Mother Y-OQ Total score reported changes, hence as YOQ improvements increased so did family functioning and mother's perceptions of youth functioning. Youth FAD change was significantly positively correlated with Mother Y-OQ total change, Mother FAD change, Father Y-OQ Total reported change and Father FAD Change. Similarly Mother FAD change was significantly correlated with Mother Y-OQ Total reported change, Father Y-OQ change and Father FAD change. Father FAD change was also significantly positively correlated with Father Y-OQ Total reported change. It is worth highlighting that mother YOQ total change score and mother FAD change score, father YOQ total change score and father FAD change score, and youth YOQ total change and FAD change score are each positively correlated ( $p < .001$ ) indicating that as perceived functioning of the youth in treatment increases, family functioning as perceived by that individual; whether youth, mother, or father; also increases.

Multiple regression analyses were performed looking at how improvements in youth functioning impacted family functioning as measured by the FAD. Table 6 shows predictors of FAD improvement as reported by youth. In Table 6 Model 1 includes only youth data and according to youth, both length of treatment and YOQ Total change were predictors of FAD improvement. Shorter treatment lengths predicted larger FAD improvements, as did larger YOQ improvements. Model 2 looks at youth and mother data and finds that in addition to youth Y-OQ total score change, both mother Y-OQ total score change and mother reported FAD change were significant predictors of FAD change as reported by the youth; however in Model 3 neither Father's report of Y-OQ change in the youth or father's perception of change in family functioning were related to youth's reported FAD change. In addition, across the models less than 15% of the variance in FAD change as reported by youth can be accounted for by the independent variables as reflected by the Adjusted R<sup>2</sup> statistics (See Table 6). The study was also interested in what predicted mothers' and fathers' perceptions of changes in

## OBH: THE IMPACT ON FAMILY FUNCTIONING

family functioning as measured by the FAD. Table 7 looks at the mother data and shows that mothers' reported mean change in Y-OQ total scores for youth predicted their reported FAD changes. As youth improved as reported through their Y-OQ reports, so did family functioning. In addition, youth self-reported Y-OQ total score change was a significant predictor of mothers' mean change in FAD. Specifically, as youth reported improvement in the Y-OQ, mothers' perceptions of family functioning also increased. Table 8, shows the predictors of changes in family functioning as reported by fathers in the study. The only significant predictor of FAD change was fathers' mean Y-OQ total change in youth. Despite these findings in both Table 7 and Table 8, less than 12% of the variance in FAD change as reported by parents can be accounted for by the independent variables as shown by the Adjusted  $R^2$  scores.

### Discussion

Before discussing the findings from this study, it is important to highlight one of its major limitations. While this is the first study to look at the impact of OBH programming on overall psychological functioning as well as family functioning with a longitudinal design using data from the NATSAP PRN, this longitudinal approach greatly reduced the sample size due to a shortage of follow up data. Consequently, participant and parent attrition at six months post discharge significantly limits the ability to generalize outcomes at six months post discharge. While 1,014 youth had pre and post matched pairs of data, only 14.6% of those pairs had data for six months post discharge. Therefore, caution should be taken to consider these findings as representative of the larger population of OBH participants and their parents.

#### Y-OQ Changes over Time

The first research question asked how mental health functioning and family functioning changed for OBH adolescent participants from intake, to discharge, to six months post-discharge as reported by youth and their parents. In addition, a second research question was interested in whether there were differences by gender in changes across time.

**Youth Y-OQ changes over time.** In terms of the Y-OQ changes, youth self-reported overall improvements across all the Y-OQ scores, which were below the clinical cut-offs at discharge and remained at levels below the clinical cut-off or within the normative range of functioning at six months discharge. This is similar to previous findings, which showed youth in OBH programs reporting sustained changes after discharge (Bettmann et al., 2012; Lewis, 2012; Zelov et al., 2013). Lewis (2012) looked at the impact of OBH programs on disruptive behavior disorder symptoms as well as substance abuse and dependence symptoms in 166 youth and found that youth reported significant improvements at discharge, changes that were maintained both at three months and twelve months post discharge. Previous studies have also used the Y-OQ and found similarly that youth at discharge self-reported significant improvements with scores below the clinical cut-offs, which were maintained at six months post discharge (Bettmann et al., 2013; Zelov et al., 2013). Both of these studies however had smaller sample sizes (41 and 98, respectively) than this current study, hence this study builds upon this previous literature suggesting that OBH positively impacts the overall functioning as reported by youth in this study and that these changes were maintained over time.

In terms of gender differences across time as measured by the Y-OQ, female youth self-report higher levels of dysfunction at intake in comparison to their male peers across all of the Y-OQ scores. However, at discharge, female and male youth report functioning at a similar levels. Tucker et al. (2011) similarly found females to be more acute at intake, and then reported similar levels of psychological functioning as males at discharge, as measured by the Y-OQ. Similar to Tucker et al. (2011), on average change was maintained at six months post discharge as reported by youth except in two areas. In this study, females at six months post discharge had significantly larger scores for Intrapersonal Distress since discharge, and males seem to still report levels of possible concern in Social Problems at six months post discharge, which did improve since discharge (See Table 2). However, the score for males' Social Problems and females' Intrapersonal Distress were not far above but essentially at the clinical cut-off level of 3 for Social Problems and 17 for Intrapersonal Distress. It is also important to note however, that these levels are far below the levels at which youth entered OBH treatment; hence these scores do not show regression to baseline functioning in the youth in this study. From the perspective of youth in this study, on average, youth maintained positive healthy functioning six months after treatment.



## OBH: THE IMPACT ON FAMILY FUNCTIONING

**Mother and father Y-OQ changes over time.** As seen in Tables 3 and 4, as compared to youth YOQ self-reports, mothers and fathers perceived their children as more dysfunctional at intake with mothers reporting females more acute than males. While fathers report higher levels of dysfunction at intake compared to youth reports, their reports did not show any gender differences at intake in that level of dysfunction. This finding is consistent with other studies exploring differences between youth and parental reports of mental health functioning at intake and discharge. Tucker et al. (2011) and Russell (2003) found that parents reported higher levels of dysfunction than youth at intake, as measured by YOQ. "Based on this, it appears common for parents to see youth as more acute than they view themselves. This was not surprising considering in many instances parents played a key role in youth attending these programs, due to their concern for their child and their behaviors" (Tucker et al., 2011, p. 22). Many times youth who attend OBH programs are transported to the program against their will or without knowledge as to where they are going. These findings build upon other research suggesting how acute these youth are in their parents' eyes which helps to understand why parents may feel that transport is the last viable option (Tucker, Bettmann, Norton, & Comart, 2015).

At discharge, youth and their mothers seem to be aligned regardless of gender, yet it seems that fathers reported less improvement in their youth at discharge. However when looking more in depth at gender differences, these differences in fathers' reports seem to stem from their poorer ratings of females. Fathers of female clients report their daughters to be functioning not below the clinical cut off like mother and youth reports, but above the clinical cut off levels at discharge for four out of the six Y-OQ measures (see Table 4). This was not the same for fathers of male participants who reported similar improvements for their sons compared to mother and youth reports.

At six months post discharge, this pattern changed. While mothers reported significant improvements for youth at discharge regardless of gender, at six months post-discharge mothers with male children as well as mothers with female children reported regression as measured in the Y-OQ. Mothers of female youth reported significant regression in functioning across all the Y-OQ measures and mothers of males across five of the seven Y-OQ measures. Fathers of females did not report significant regression at six month post discharge, but maintained levels from discharge to post discharge. Still their daughters were functioning at clinical levels above the cut-offs in five out of seven areas. Hence mothers and fathers are more aligned at post-discharge in their views of their daughters.

Fathers of male participants however, did differ from mothers of male participants in their post-discharge reports. According to father reports, sons were functioning in the healthy range in all areas except Social Problems and Interpersonal Relations. Scores above the clinical cutoff suggest that fathers perceive youth to exhibit relational difficulties with family, adults and/or peers (cooperativeness, defiance, communication with others, etc.) as well as "breaking social morals" such as running away from home, truancy, substance use, sexual problems, and somatic symptoms (Burlingame, Wells, Lambert & Cox, 2004, p. 240). On the contrary, mothers with male participants only reported two areas (Critical Items, Somatic) of healthy functioning at discharge for their sons. This indicates that mothers perceived maintenance of improved clinical change related to somatic symptomology (headaches, nausea, dizziness, etc.) and critical items that would require professional clinical attention (hallucinations, suicidal ideation, mania, eating disorders, etc.) for male youth at six months post discharge (Burlingame, Wells, Lambert & Cox, 2004). This discrepancy suggests that this sample of mothers perceive youth to be at a higher level of clinical dysfunction than that perceived by fathers. In addition, parent reports are quite different than youth reports at six month post-discharge, who reported general maintenance of change.

It is unclear why there are such large discrepancies between youth, mothers, and fathers especially in terms of long term clinical change. What is interesting is that previous research has consistently found females to do better than males in OBH programs (Magle-Haberek et al., 2012; Tucker et al., 2011; Tucker et al., 2014) however when parents are included in the research, these differences as shown in this study do not seem to be present. In fact, at six months post discharge females, as reported by parents, are functioning worse than males on average, a finding not consistent in the female youth self-reports. Research suggests that discrepancies between parent and youth reports are not uncommon nor should they be seen as something that impacts a study's validity (Achenbach, McConaughy, & Howell, 1987). In fact, research shows that discrepancies across informants are consistent with the theory that aspects of youth behavior may not be the same across all environments. The different types of relationships adults have with youth may influence their perception and assessment of problem

## OBH: THE IMPACT ON FAMILY FUNCTIONING

behaviors, and individual factors may have an impact on mental health assessment (Achenbach et al., 1987).

Generally speaking, as youth progress through adolescence, they spend less time with their parents and more time outside of the home. As a result, the symptom ratings of parents with older children may be based on less actual contact time with the youth, which may lead to a skewed assessment (Tarullo & Richardson, 1995). In addition, research has shown there to be gender-based differences in assessment with daughters showing greater discrepancies with parents than sons (Carlston & Ogles, 2009).

This was especially evident in this study where both fathers and mothers reported more significant differences than their daughters in terms of functioning at six months post-discharge. Reasons for this are unclear; however it has been suggested that females may exhibit more internalizing symptoms which are harder to see and report while males may exhibit more externalizing behaviors which are more visible for parents to report (Kolko & Kazdin, 1993; Schroeder, Hood, & Hughes, 2010; van der Ende et al., 2012). To fully understand the reason for these discrepancies more research is needed with larger sample sizes to fully know if these are true differences between youth and their parents or more due to sampling error and the effect of attrition.

### FAD Changes

In terms of the FAD changes, overall it appears that youth reported high levels of family dysfunction at intake with significantly lower levels at discharge and post-discharge; however, there were clear differences across genders in terms of family functioning. Females reported a higher level of family dysfunction than males at intake, which significantly decreased at discharge, and increased at six months post discharge, though remained just below the clinical cut-off of two. Males reported lower FAD scores than females at intake, which significantly decreased at discharge but remained at a problematic level of family functioning, and remained stable at six months post discharge. These findings suggest that at six months post discharge all families, according to youth and regardless of gender, were still at levels close to being of concern.

Mother FAD scores, regardless of gender, suggest that mothers perceived an improvement in family functioning from intake to discharge yet these scores remained problematic above 2.0 at discharge and post discharge. Mother reported FAD scores show an alignment between perceptions of change in family functioning between mothers and their male youth in treatment, as well as mothers and their female youth in treatment. Both mothers and daughters indicate high levels of family dysfunction at intake, decreases at discharge, and increases at six months post discharge. Both mothers and sons in OBH treatment report family functioning above the clinical cut off at intake, decreases at discharge that remain at or minimally above the clinical cutoff, and very minimal decreases at six months post discharge that remain hovering just above the clinical cut-off for mothers and just below for male youth. The main difference is that mothers of female youth reported much higher levels of family dysfunction in their female children at six months post discharge (2.20 compared to 1.97).

Fathers reported a minimal increase in FAD scores from intake (2.15) to discharge (2.16) indicating no change in family functioning as a result of OBH treatment. A different picture appears when looking at these findings by gender. Fathers of male participants reported no change in FAD scores from intake to discharge suggesting that fathers perceived no impact on family functioning upon discharge of their sons from OBH programming and that family functioning remained at a problematic level. At six months post discharge, fathers reported an improvement in family functioning as indicated by a decreased FAD score at six months post discharge to one-hundredth of a point below the clinical cut-off (1.99). For female youth, fathers reported FAD scores at intake both lower than males and below 2.0, indicating a healthy level of family functioning at intake. At discharge, fathers reported FAD score increased to a problematic level of family functioning (2.10), and further increased at six months post discharge (2.17). These scores indicate fathers' perception of deterioration in family functioning following their daughters' participation in OBH programming. This perception by fathers is similar to mothers in that all scores following OBH treatment remain above 2.0; however, both mothers and female youth perceive a statistically significant improvement in family functioning as reported by FAD scores from intake to discharge as well as from intake to six months post discharge, whereas fathers perceive a statistically significant deterioration in family functioning from intake to discharge and intake to six months post discharge.

This study indicates that greater attention is needed to support families as youth transition out of OBH

## OBH: THE IMPACT ON FAMILY FUNCTIONING

treatment. These findings are similar to other research which shows that changes and improvements in mental health functioning do not necessarily transfer to increases in family cohesion or functioning (Harper, Russell, Cooley & Cupples, 2007). It is unclear the nature of these discrepancies between youth and parents, especially fathers. It could be that fathers truly did perceive OBH programming to have no impact on the family system. Conversely, perhaps fathers developed an increased awareness of family functioning as a result of OBH treatment, which may have brought issues of family functioning to the surface through family work increasing their understanding of the true level of functioning in the family. A limitation of this study is that data does not reveal if the youth within this sample transitioned home or to another level of care, and therefore does not consider how post discharge placement outside of the home might impact FAD scores at six months post discharge. Family functioning could be seen radically different depending on if the child was at home or at another program not living with parents. Harper et al. (2007) stress how transition planning and aftercare services are “critical” to retain the positive improvements of intermediate programs like OBH and OBH programs should “invest available resources to enhance the capacity of families to maintain emotional and behavioral change initiated during the intervention” (p. 126).

Finally, both mother and youth reports indicate that the trajectory of change in family functioning as measured by the FAD is quite different for families with male youth in treatment as opposed to families with female youth in OBH treatment. Given these different patterns in changes in family functioning by gender, particularly a noticeable decline in family functioning in families of female youth at six months post discharge as perceived by mothers, youth, and fathers alike, it seems critical to further examine differences in gender in the treatment process not only in individual therapy, but also in the therapeutic approach with the family. While prior research has illuminated differences by gender in individual outcomes in OBH treatment (Magle-Haberek et al., 2012; Tucker et al., 2011; Tucker et al., 2014), the difference in changes in family function by gender indicates that the therapeutic approach must take gender into account not only in individual treatment, but also in family treatment both during OBH treatment and in aftercare considerations and recommendations.

### Predictors of Change in Family Functioning

Predictors of change in family functioning that emerge from this analysis show some compelling differences in perceptions between youth, mothers, and fathers. It is important to note that unlike our previous analysis of change at three points of time, our regression analysis looked only at changes between intake and discharge; hence our issues of attrition were minimized. In fact, parents of 580 of the 1014 youth for which we have intake and discharge data provided discharge data on their children (57.2%); giving us a better picture of the relationship between parent and youth perspectives at least up until discharge from OBH programs.

Predictors of FAD improvement at discharge as reported by youth include length of treatment, YOQ total score changes per youth, YOQ total score changes per mothers, and FAD score changes per mothers. Fathers’ reported perception of YOQ total change and FAD change are not predictors of youth perceived FAD improvement. Predictors of FAD improvement as reported by mothers include YOQ total score change per mother and per youth, while the only predictor of FAD improvement as reported by fathers is YOQ total score change per fathers. For mothers, fathers, and youth, their self-reported perception of YOQ total change predict their self-reported perception of FAD change, indicating that as the father, mother, or youth observe positive changes in the youth’s individual functioning, improvements in family functioning will also be observed. This is supported by previous research which has found family functioning and mental health symptomologies are linked. Rawatalal, Kliever and Pilljay (2015) investigated the link between depressive symptoms in adolescents and perceived family functioning and found that higher levels of youth reported family dysfunction were associated with depressive symptoms in youth. In this study, parents’ perspectives also revealed an association between higher levels of parent reported family dysfunction and higher levels of internalizing symptoms in youth.

Despite this, parents and youth do not necessarily align in their views of changes in family functioning. For example, youth reported YOQ change, and not youth reported FAD change, predicted mothers’ reported FAD change. For fathers, neither youth reported FAD change nor youth reported YOQ total change predicted FAD improvement from the perspective of fathers. Thus, in practice, parents and youth may feel very differently about changes in functioning within the family system as well as experience changes differently. It is critical to note that across the models less than 15% of the

## OBH: THE IMPACT ON FAMILY FUNCTIONING

variance in FAD change as reported by youth and less than 12% of the variance in FAD change as reported by mothers and fathers can be accounted for by the independent variables as reflected by the Adjusted R<sup>2</sup> statistics (See Table 6). Hence, change in the family system is quite complex, and there are other remaining unexplained factors that influence changes in family functioning. It seems that youth and mothers' perceptions of family change are more likely to be aligned than youth and fathers. This difference calls for much needed further investigation into the role of fathers in family systems prior to and up to intake as well as the ways in which OBH therapists engage fathers throughout the treatment process. Further research is needed to better understand how fathers are engaged in the process and how that can relate to youth improvements and increased family functioning.

Additionally, the fact that shorter treatment length was a predictor of youth reported FAD improvement calls into question the potential for longer treatment length to pose an obstacle to improved family functioning. Given that length of treatment is not a predictor of FAD improvement per mothers' and fathers' reports, one possible explanation for this might be that a longer period of time apart from parents could leave youth feeling disconnected from their parent(s), particularly after going through such an intensive experience as an OBH program. In fact, previous research on OBH has found it to negatively impact the youth – parent attachment, even though youth reported significant mental health improvements post OBH participation (Bettmann & Tucker, 2011). In Bettmann and Tucker's study (2011) OBH youth perceived their mothers and fathers to be significantly less sensitive and responsive to their emotional states and youth were less trusting by the end of treatment that parents would understand their needs and desires (Bettmann & Tucker, 2011). In our study, we did not compare transported and non-transported youth; however, this too may add to the level of disconnect youth may feel from their parents. In contrast, for parents, a youth's time in an OBH program may provide a respite from the mounting stressors of parenting a child with significant behavioral and/or mental health challenges (Harper & Russell, 2008) which may impact their own perspectives of family functioning differently than youth. Clearly more research is needed in this area.

Finally, when discussing changes in family functioning, it is important to highlight the diversity in the ways that families are engaged in OBH programs. Russell, Gillis, & Lewis (2008) found that OBH programs involve families on different levels through family sessions, psycho-educational family groups, parent/family support groups, parent seminars, and online support services; however, these vary by program without any clear model of family engagement. This study looked uniformly at all programs without addressing programmatic differences in family therapy and the ways families are engaged in the OBH treatment process. Further research is needed to address the differential impacts of programmatic differences in family involvement including the dosage of family therapy, medium (telephone, in person, letter writing, etc.), timing within the treatment process, and style and focus of family therapy sessions. These differences would logically impact family functioning differently; hence future research is needed to look in more depth at how family is used and how different types of family engagement impact both family functioning as well as youth mental health improvements. In fact, strong working alliances between parents and clinicians may be key to long term maintenance of change for youth (Harper et al., 2007) and engaging the family while youth are in out of home care is significantly related to increased positive long term outcomes for youth (Nickerson, Brooks, Colby, Rickert, & Salamone, 2006). Hence, not only understanding OBH's engagement with family but finding ways to intentionally bolster this alliance and make the family a larger focus in OBH programs could be crucial for promoting lasting change in youth participants and their families (Tucker, Widmer, Faddis, Randolph, & Gass, in press).

### Limitations and Next Steps

This study attempted to look at the impact of OBH on youth outcomes and family functioning as measured by youth, mothers and fathers, and despite some of its promising findings, it also has several limitations that are important to highlight. First, similar to other studies evaluating the impact of OBH programs, due to a lack of a comparable comparison group that did not receive OBH treatment, there are threats to the internal validity of the study. Put simply, our confidence that changes reported are due to the treatment and not other factors like events in youth's lives or maturation is limited. In addition, we did not look at the setting of youth at six months following OBH treatment and their engagement in treatment. Hence, in terms of measuring family functioning, we are unable to distinguish between lack of impact or negative impact of OBH treatment versus a heightened awareness to previously unseen dysfunction within the family system as a result of therapeutic work

## OBH: THE IMPACT ON FAMILY FUNCTIONING

done in treatment by both youth and parents. Put together, these two limitations significantly cloud our ability to better understand the regression of family functioning as reported by the parents. Future research is needed perhaps with additional measures of family functioning in order to triangulate these findings as well as a qualitative exploration of how OBH impacts the family from the youth and parent perspective.

Finally, in an attempt to meet previous criticism of OBH research in its lack of longitudinal outcomes (Russell, 2003; 2005) this study investigated change over time for youth participants. Unfortunately, due to high attrition, this became a major limitation to our study. Russell (2003) highlights how longitudinal research with OBH participants can be difficult due to the likelihood that youth go on to other after care programs like therapeutic boarding schools and residential treatment centers; however, OBH programs must do a better job at collecting this data. At the program level, bolstering follow up data necessitates an intentional commitment of resources. There are multiple ways this may be possible for OBH programs. This can take the form of internally focused efforts, such as devoting personnel time to increasing research follow up. As shown by Massey and Hoag (2013), consistently getting follow up data involves time from programs dedicated with that as its sole focus. In addition, it may be possible to incentivize family participation in research studies. Finally programs may need to seek support from external research specialists, depending on the specific needs, capacities, and resources of the program. These efforts are critical to having a sufficient base of data on OBH for researchers to create meaningful analyses that can inform best practices towards better outcomes for youth and their families.



# OBH: THE IMPACT ON FAMILY FUNCTIONING

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## OBH: THE IMPACT ON FAMILY FUNCTIONING

**Table 1**

Presenting Issues of Wilderness Participants (N = 865)\*

Issue	n	%
Alcohol and Substance Abuse	545	63.0
Depression/Mood Disorder	493	57.0
Oppositional Defiant Disorder/ Conduct Disorder (ODD/CD)	347	40.1
Anxiety	323	37.3
Attention Issues (ADHD/ADD)	188	21.7
Trauma	143	16.5
Learning Disabilities	46	5.3
Autism	18	2.1
Other	430	49.7

\* NOTE: 92.1% of participants had 2 or more presenting issues, 77.0% had 3 or more

# OBH: THE IMPACT ON FAMILY FUNCTIONING

Table 2

Youth Self Report Mean Scores at Admission, Discharge and Six Months Post Discharge

	M <sub>Admission</sub> (SD)	M <sub>Discharge</sub> (SD)	M <sub>Sixmonthpost</sub> (SD)	F	Partial Eta <sup>2</sup>
Y-OQ 2.0 All Youth Self Report (N = 148)					
Total Score	<b>64.61</b> (34.6) <sup>a,b</sup>	33.28 (30.2) <sup>a</sup>	38.26 (33.2) <sup>b</sup>	61.84***	.30 <sup>#</sup>
Critical Items	<b>8.18</b> (6.1) <sup>a,b</sup>	5.29 (5.1) <sup>a</sup>	4.98 (4.6) <sup>b</sup>	27.21***	.16 <sup>#</sup>
Behavioral Dysfunction	<b>13.64</b> (7.4) <sup>a,b</sup>	8.72 (6.9) <sup>a</sup>	9.59 (7.3) <sup>b</sup>	33.89***	.19 <sup>#</sup>
Social Problems	<b>7.17</b> (6.2) <sup>a,b</sup>	2.64 (4.9) <sup>a</sup>	2.71 (4.7) <sup>b</sup>	52.52***	.26 <sup>#</sup>
Interpersonal Relations	<b>4.82</b> (5.8) <sup>a,b</sup>	0.76 (4.8) <sup>a,c</sup>	1.67 (5.4) <sup>b,c</sup>	33.91***	.19 <sup>#</sup>
Somatic	<b>7.43</b> (5.1) <sup>a,b</sup>	4.45 (3.8) <sup>a</sup>	4.43 (4.3) <sup>b</sup>	43.88***	.23
Intrapersonal Distress	<b>23.36</b> (12.9) <sup>a,b</sup>	11.43 (10.4) <sup>a,c</sup>	14.89 (12.3) <sup>b,c</sup>	61.01***	.29 <sup>#</sup>
FAD All Youth Self Report (N = 84)	2.41 (0.6) <sup>a,b</sup>	1.93 (0.5) <sup>a</sup>	1.98 (0.6) <sup>b</sup>	26.15***	.24
Y-OQ 2.0 Males Self Report (n = 96)					
Total Score	<b>57.83</b> (31.1) <sup>a,b</sup>	34.96 (31.2) <sup>a</sup>	37.07 (32.6) <sup>b</sup>	23.92***	.21 <sup>#</sup>
Critical Items	<b>6.81</b> (5.4) <sup>a,b</sup>	5.10 (5.1) <sup>a</sup>	4.57 (4.6) <sup>b</sup>	8.18**	.08 <sup>#</sup>
Behavioral Dysfunction	<b>12.56</b> (6.9) <sup>a,b</sup>	9.17 (7.2) <sup>a</sup>	9.81 (7.1) <sup>b</sup>	10.81***	.10
Social Problems	<b>7.01</b> (5.9) <sup>a,b</sup>	<b>3.24</b> (5.2) <sup>a</sup>	<b>3.01</b> (4.8) <sup>b</sup>	26.21***	.22
Interpersonal Relations	<b>4.16</b> (5.4) <sup>a,b</sup>	1.20 (5.1) <sup>a</sup>	1.85 (5.5) <sup>b</sup>	12.47***	.12
Somatic	<b>6.75</b> (4.6) <sup>a,b</sup>	4.49 (3.9) <sup>a</sup>	3.98 (3.8) <sup>b</sup>	22.63***	.19 <sup>#</sup>
Intrapersonal Distress	<b>20.54</b> (11.7) <sup>a,b</sup>	11.76 (10.3) <sup>a</sup>	13.84 (12.0) <sup>b</sup>	22.28***	.19 <sup>#</sup>
FAD Males Self report (n = 55)	2.28 (.55) <sup>a,b</sup>	2.01 (.54) <sup>a</sup>	1.99 (.56) <sup>b</sup>	8.02**	.13
Y-OQ 2.0 Females Self Report (n = 51)					
Total Score	<b>78.43</b> (36.6) <sup>a,b</sup>	30.63 (28.4) <sup>a,c</sup>	41.06 (33.3) <sup>b,c</sup>	48.62***	.49
Critical Items	<b>10.82</b> (6.6) <sup>a,b</sup>	5.67 (5.1) <sup>a</sup>	5.84 (4.6) <sup>b</sup>	25.88***	.34
Behavioral Dysfunction	<b>15.76</b> (7.8) <sup>a,b</sup>	7.90 (6.5) <sup>a</sup>	9.14 (7.7) <sup>b</sup>	30.64***	.38 <sup>#</sup>
Social Problems	<b>7.65</b> (6.7) <sup>a,b</sup>	1.59 (4.1) <sup>a</sup>	2.20 (4.6) <sup>b</sup>	28.94***	.37
Interpersonal Relations	<b>6.25</b> (6.2) <sup>a,b</sup>	-0.04 (4.1) <sup>a</sup>	1.39 (5.3) <sup>b</sup>	26.88***	.35
Somatic	<b>8.80</b> (5.6) <sup>a,b</sup>	4.45 (3.7) <sup>a</sup>	5.33 (5.0) <sup>b</sup>	24.02***	.32
Intrapersonal Distress	<b>29.14</b> (13.1) <sup>a,b</sup>	11.06 (10.7) <sup>a,c</sup>	<b>17.16</b> (12.6) <sup>b,c</sup>	53.3***	.52
FAD Females Self report (n = 29)	2.67 (.61) <sup>a,b</sup>	1.76 (.48) <sup>a</sup>	1.97 (.74) <sup>b</sup>	24.67***	.47

\*\*p < .01, \*\*\*p < .001, <sup>a-c</sup> significant pairwise mean differences (p < .05)

**Bold** scores represent scores above the clinical cut-off as normed by instrument developers

**#** Indicates that sphericity was violated and that a Greenhouse-Geisser correction was used.



# OBH: THE IMPACT ON FAMILY FUNCTIONING

**Table 3**

Mother Report Mean Scores at Admission, Discharge and 6 Months Post Discharge

	M <sub>Admission</sub> (SD)	M <sub>Discharge</sub> (SD)	M <sub>6monthpost</sub> (SD)	F	Partial Eta <sup>2</sup>
Y-OQ 2.0 Mother Report for All Youth (N = 203)					
Total	<b>97.76</b> (28.4) <sup>ab</sup>	32.81 (32.2) <sup>ac</sup>	<b>49.70</b> (37.7) <sup>bc</sup>	277.29***	.58
Critical Items	<b>8.50</b> (5.1) <sup>ab</sup>	3.27 (3.5) <sup>ac</sup>	<b>4.76</b> (4.5) <sup>bc</sup>	112.84***	.36 <sup>#</sup>
Behavioral Dysfunction	<b>22.15</b> (7.1) <sup>ab</sup>	8.58 (8.4) <sup>ac</sup>	<b>12.85</b> (8.9) <sup>bc</sup>	230.76***	.53
Social Problems	<b>12.27</b> (5.8) <sup>ab</sup>	1.96 (4.2) <sup>ac</sup>	<b>4.69</b> (5.6) <sup>bc</sup>	237.81***	.54
Interpersonal Relations	<b>15.06</b> (5.9) <sup>ab</sup>	3.14 (6.3) <sup>ac</sup>	<b>5.86</b> (7.5) <sup>bc</sup>	245.29***	.55
Somatic	<b>7.92</b> (4.9) <sup>ab</sup>	3.00 (3.5) <sup>ac</sup>	4.09 (4.0) <sup>bc</sup>	130.88***	.39
Intrapersonal Distress	<b>31.86</b> (10.4) <sup>ab</sup>	12.87 (11.7) <sup>ac</sup>	<b>17.46</b> (12.9) <sup>bc</sup>	198.19***	.50
FAD Mother Report for All Youth (N = 110)	2.28 (.44) <sup>ab</sup>	2.09 (.47) <sup>a</sup>	2.08 (.52) <sup>b</sup>	13.42***	.11
Y-OQ 2.0 Mother Report for Males (N = 156)					
Total Score	<b>95.23</b> (26.4) <sup>ab</sup>	33.46 (31.9) <sup>ac</sup>	<b>48.63</b> (36.08) <sup>bc</sup>	205.81***	.57
Critical Items	<b>8.02</b> (4.8) <sup>ab</sup>	3.30 (3.6) <sup>ac</sup>	4.58 (4.5) <sup>bc</sup>	73.64***	.32 <sup>#</sup>
Behavioral Dysfunction	<b>22.06</b> (6.9) <sup>ab</sup>	9.03 (8.3) <sup>ac</sup>	<b>12.86</b> (8.8) <sup>bc</sup>	173.29***	.52
Social Problems	<b>11.95</b> (5.6) <sup>ab</sup>	2.09 (4.2) <sup>ac</sup>	<b>4.77</b> (5.6) <sup>bc</sup>	170.49***	.52
Interpersonal Relations	<b>14.69</b> (5.4) <sup>ab</sup>	3.34 (6.3) <sup>ac</sup>	<b>5.83</b> (7.4) <sup>bc</sup>	178.28***	.54
Somatic	<b>7.29</b> (4.6) <sup>ab</sup>	2.72 (3.4) <sup>ac</sup>	3.66 (3.6) <sup>bc</sup>	89.31***	.37
Intrapersonal Distress	<b>31.22</b> (10.3) <sup>ab</sup>	12.98 (11.8) <sup>ac</sup>	<b>16.94</b> (12.5) <sup>bc</sup>	143.44***	.48
FAD Mother Report with Male Child (n = 87)	2.28 (.44) <sup>ab</sup>	2.09 (.45) <sup>a</sup>	2.05 (.51) <sup>b</sup>	14.19**	.14
Y-OQ 2.0 Mother Report for Females (N = 44)					
Total Score	<b>107.82</b> (33.8) <sup>ab</sup>	29.91 (34.21) <sup>ac</sup>	<b>53.95</b> (44.22) <sup>bc</sup>	69.99***	.62
Critical Items	<b>10.48</b> (5.8) <sup>ab</sup>	3.16 (3.1) <sup>ac</sup>	<b>5.57</b> (5.0) <sup>bc</sup>	43.24***	.50
Behavioral Dysfunction	<b>22.59</b> (7.8) <sup>ab</sup>	6.75 (8.9) <sup>ac</sup>	<b>12.82</b> (9.7) <sup>bc</sup>	55.56***	.56
Social Problems	<b>13.36</b> (6.7) <sup>ab</sup>	1.52 (4.6) <sup>ac</sup>	<b>4.66</b> (5.9) <sup>bc</sup>	63.58***	.60
Interpersonal Relations	<b>16.43</b> (7.7) <sup>ab</sup>	2.25 (6.3) <sup>ac</sup>	<b>5.95</b> (8.4) <sup>bc</sup>	63.40***	.60
Somatic	<b>10.36</b> (5.2) <sup>ab</sup>	4.02 (4.3) <sup>ac</sup>	<b>5.73</b> (4.8) <sup>bc</sup>	43.30***	.50
Intrapersonal Distress	<b>34.59</b> (10.4) <sup>ab</sup>	12.20 (11.5) <sup>ac</sup>	<b>19.23</b> (14.6) <sup>bc</sup>	55.22***	.56
FAD Mother Report with Female Child (n = 23)	2.29 (.47)	2.01 (.56)	2.20 (.61)	2.36	.11

\*\*p < .01, \*\*\*p < .001, <sup>ac</sup> significant pairwise mean differences (p < .05)

**Bold** scores represent scores above the clinical cut-off as normed by instrument developers

# Indicates that sphericity was violated and that a Greenhouse-Geisser correction was used.

# OBH: THE IMPACT ON FAMILY FUNCTIONING

**Table 4**

Father Report Mean Scores at Admission, Discharge and 6 Months Post Discharge

	<i>M<sub>Admission</sub></i> ( <i>SD</i> )	<i>M<sub>Discharge</sub></i> ( <i>SD</i> )	<i>M<sub>6months</sub></i> ( <i>SD</i> )	<i>F</i>	<i>Partial Eta<sup>2</sup></i>
Y-OQ 2.0 Father Report for All Youth ( <i>N</i> = 85)					
Total Score	<b>89.59</b> (30.0) <sup>a,b</sup>	39.07 (32.4) <sup>a,c</sup>	<b>46.36</b> (36.8) <sup>b,c</sup>	88.60***	.51 <sup>#</sup>
Critical Items	<b>7.53</b> (3.9) <sup>a,b</sup>	3.91 (3.3) <sup>a</sup>	4.44 (4.0) <sup>b</sup>	39.20***	.32 <sup>#</sup>
Behavioral Dysfunction	<b>20.64</b> (7.7) <sup>a,b</sup>	9.62 (8.5) <sup>a,c</sup>	11.60 (8.8) <sup>b,c</sup>	79.49***	.49 <sup>#</sup>
Social Problems	<b>11.28</b> (5.6) <sup>a,b</sup>	2.93 (5.7) <sup>a,c</sup>	<b>4.26</b> (5.9) <sup>b,c</sup>	73.53***	.47 <sup>#</sup>
Interpersonal Relations	<b>13.18</b> (6.6) <sup>a,b</sup>	<b>4.29</b> (6.4) <sup>a</sup>	<b>5.05</b> (7.3) <sup>b</sup>	70.34***	.46 <sup>#</sup>
Somatic	<b>6.92</b> (4.4) <sup>a,b</sup>	3.67 (3.4) <sup>a</sup>	3.89 (3.5) <sup>b</sup>	39.60***	.32 <sup>#</sup>
Intrapersonal Distress	<b>30.05</b> (10.4) <sup>a,b</sup>	14.65 (11.0) <sup>a</sup>	<b>17.13</b> (12.2) <sup>b</sup>	66.23***	.44 <sup>#</sup>
FAD Father Report ( <i>N</i> = 50)	2.15 (0.4) <sup>b</sup>	2.16 (0.5) <sup>c</sup>	2.01 (0.5) <sup>b,c</sup>	3.01*	.06
Y-OQ 2.0 Father Report for Males ( <i>n</i> = 66)					
Total Score	<b>89.38</b> (27.6) <sup>a,b</sup>	35.88 (31.6) <sup>a,c</sup>	43.48 (36.3) <sup>b,c</sup>	86.04***	.57 <sup>#</sup>
Critical Items	<b>7.24</b> (4.0) <sup>a,b</sup>	3.48 (3.1) <sup>a</sup>	3.88 (3.5) <sup>b</sup>	37.15***	.36 <sup>#</sup>
Behavioral Dysfunction	<b>20.83</b> (7.2) <sup>a,b</sup>	9.06 (8.4) <sup>a,c</sup>	11.56 (9.1) <sup>b,c</sup>	72.68***	.53 <sup>#</sup>
Social Problems	<b>11.65</b> (5.1) <sup>a,b</sup>	2.47 (4.2) <sup>a,c</sup>	<b>3.95</b> (5.9) <sup>b,c</sup>	75.21***	.54 <sup>#</sup>
Interpersonal Relations	<b>13.39</b> (5.8) <sup>a,b</sup>	3.94 (6.3) <sup>a</sup>	<b>4.71</b> (7.4) <sup>b</sup>	69.06***	.52 <sup>#</sup>
Somatic	<b>6.59</b> (4.4) <sup>a,b</sup>	3.02 (3.0) <sup>a</sup>	3.47 (2.9) <sup>b</sup>	41.78***	.39 <sup>#</sup>
Intrapersonal Distress	<b>29.67</b> (10.2) <sup>a,b</sup>	13.91 (11.0) <sup>a</sup>	15.91 (12.2) <sup>b</sup>	58.76***	.48 <sup>#</sup>
FAD Father Report with Male Child ( <i>N</i> = 44)	2.17 (0.4) <sup>b</sup>	2.17 (0.5) <sup>c</sup>	1.99 (0.5) <sup>b,c</sup>	3.98*	.09
Y-OQ 2.0 Father Report for Females ( <i>n</i> = 19)					
Total Score	<b>89.11</b> (39.1) <sup>a,b</sup>	<b>49.06</b> (34.0) <sup>a</sup>	<b>52.39</b> (34.7) <sup>b</sup>	9.10**	.35
Critical Items	<b>8.22</b> (3.7) <sup>a,b</sup>	5.00 (3.3) <sup>a</sup>	<b>5.67</b> (4.3) <sup>b</sup>	4.80*	.22
Behavioral Dysfunction	<b>19.72</b> (9.9) <sup>a,b</sup>	11.72 (9.2) <sup>a</sup>	11.28 (7.9) <sup>b</sup>	9.23**	.35
Social Problems	<b>10.22</b> (7.2) <sup>a,b</sup>	<b>4.78</b> (5.9) <sup>a</sup>	<b>5.06</b> (6.1) <sup>b</sup>	5.94**	.26
Interpersonal Relations	<b>12.11</b> (9.2) <sup>a,b</sup>	<b>5.61</b> (7.3) <sup>a</sup>	<b>5.61</b> (6.6) <sup>b</sup>	6.44**	.72
Somatic	<b>7.83</b> (4.3) <sup>b</sup>	<b>5.44</b> (3.2)	4.78 (4.2) <sup>b</sup>	4.28*	.20
Intrapersonal Distress	<b>31.00</b> (11.4) <sup>a,b</sup>	<b>16.50</b> (10.6) <sup>a</sup>	<b>20.00</b> (10.1) <sup>b</sup>	9.44**	.36
FAD Father Report with Female Child ( <i>N</i> = 6)	1.97 (0.4) <sup>a,b</sup>	2.10 (0.4) <sup>a</sup>	2.17 (0.5) <sup>b</sup>	1.91	.28

\**p* < .05, \*\**p* < .01, \*\*\**p* < .001, <sup>a-c</sup> significant pairwise mean differences (*p* < .05)

**Bold** scores represent scores above the clinical cut-off as normed by instrument developers

**#** Indicates that sphericity was violated and that a Greenhouse-Geisser correction was used.

# OBH: THE IMPACT ON FAMILY FUNCTIONING

**Table 5**

Correlations Table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Age	1								
(2) Gender (Male = 0)	-.04	1							
(3) Length of Treatment	-.12***	-.04	1						
(4) Youth YOQ Total Change	.05	.14***	-.04	1					
(5) Youth FAD Change	.03	.16***	-.08*	.35***	1				
(6) Mother YOQ Total Change	-.01	.13**	.01	.19***	.22***	1			
(7) Mother FAD Change	-.06	.05	-.08	.03	.21***	.32***	1		
(8) Father YOQ Total Change	-.05	.06	-.04	.12	.22**	.48***	.27**	1	
(9) Father FAD Change	-.05	.01	.06	-.01	.19**	.18	.34**	.37***	1

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

**Table 6**

Predictors of FAD Improvement as Reported by Youth

Independent Variables	Model 1 $\beta$ (N = 1014)	Model 2 $\beta$ (N = 384)	Model 3 $\beta$ (N = 196)
Gender (Male = 0)	.106	.014	-.011
Age	.011	.030	-.033
Length of Treatment	-.071*	.025	.044
YOQ Total Score Change Youth	.332***	.306***	.305***
YOQ Total Score Change Mother		.107*	
FAD Change Mother		.163**	
YOQ Total Score Change Father			.139
FAD Change Father			.127
R <sup>2</sup> (adjusted R <sup>2</sup> )	.140 (.137)	.158 (.145)	.148 (.121)
F	41.17***	11.80***	5.47***

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

## OBH: THE IMPACT ON FAMILY FUNCTIONING

**Table 7**

Predictors of FAD Improvement as Reported by Mothers

Independent Variables	Model 1 $\beta$ (N = 486)	Model 2 $\beta$ (N = 384)
Gender (Male = 0)	.008	.023
Age	-.064	-.058
Length of Treatment	.058	.076
YOQ Total Score Change Mother	.271***	.288***
YOQ Total Score Change Youth		.168**
FAD Change Youth		-.099
$R^2$ (adjusted $R^2$ )	.082 (.074)	.131 (.118)
$F$	10.78***	9.51***

\*\*p < .01, \*\*\*p < .001

**Table 8**

Predictors of FAD Improvement as Reported by Fathers

Independent Variables	Model 1 $\beta$ (N = 250)	Model 2 $\beta$ (N = 196)
Gender (Male = 0)	.004	-.007
Age	.032	-.012
Length of Treatment	.022	.068
YOQ Total Score Change Father	.340***	.339***
YOQ Total Score Change Youth		.127
FAD Change Youth		-.084
$R^2$ (adjusted $R^2$ )	.116 (.101)	.148 (.121)
$F$	7.99***	5.49***

\*\*p < .01, \*\*\*p < .001