

Young Adults in Residential and Outdoor Behavioral Health Programs: Preliminary Outcomes from the Practice Research Network of the National Association of Therapeutic Schools and Programs

Amanda Curtis

Jordan Briggs

Ellen Behrens

Westminster College

Abstract

This study explored the demographic characteristics and self-reported psychosocial and family functioning of young adult clients treated in multiple Outdoor Behavioral Health (OBH) and Residential Treatment Centers (RTC) that are member programs of the National Association of Therapeutic Schools and Programs (NATSAP). Data suggest that the demographics of the young adult population in NATSAP programs are similar to that of adolescent NATSAP programs. Furthermore, results were generally comparable with those previously reported with adolescent data because they showed that, overall, young adults in both OBH and RTC programs endorse statistically and clinically significant change from admit to discharge on the Outcome Questionnaire and the General Functioning scale of the Family Assessment Device. The reported gains made during treatment appear to be maintained at six months post-discharge. These results are considered preliminary given issues with attrition and the lack of a comparison group.

Keywords: Young Adults, Wilderness Therapy, Outdoor Behavioral Health, Residential Therapy, Outcomes, Family Functioning, Outcome Questionnaire 45.2, Family Assessment Device, NATSAP

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In the United States, at the age of 18, individuals shift in status from “adolescent” to “young adult” (Arnett, 2000). They are classified differently by nearly every system with which they interact, and are given more rights, opportunities, responsibilities, and independence - along with which comes a new-found pressure to succeed. Cultural, societal, and technological changes have required researchers to view young adulthood as its own developmental stage distinct from adolescence and adulthood (Adams, Knopf, & Park, 2014; Arnett, 2000; Neinstein & Irwin, 2013). This transitional period, called “emerging adulthood,” typically lasts from ages 18-25, and is characterized by the opportunity for independent exploration, identity formation, and a considerable amount of change and instability (Arnett, 2000).

Emerging adulthood is a life stage during which rates of substance abuse are highest, mental health issues are emerging, and access to health care and services decreases significantly (Adams et al., 2014; Arnett, 2005; Kessler et al., 2005; Neinstein & Irwin, 2013; Park, Mulye, Adams, Brindis, & Irwin, 2006; Pottick, Bilder, Vander Stoep, Warner, & Alvarez, 2008; Substance Abuse and Mental Health Services Administration, 2013). Adams et al. (2014) found that young adults ages 18-25 had a higher prevalence of substance abuse and mental health issues but lower treatment rates when compared to adults ages 26-34, putting this age group at heightened risk during this transitional time. In addition, Arnett (2000) found that the majority of Americans between the ages of 18 and 25 felt that they had not completely entered adulthood. The burden of untreated problems combined with increased independence, high pressure to succeed, and low access to developmentally-attuned services may negatively affect psychosocial functioning (Adams et al., 2014; Kessler et al., 2005; Neinstein & Irwin, 2013; Park et al., 2006; Pottick et al., 2008). Mental health and substance use problems during emerging adulthood may cause isolation, extreme behaviors, hopelessness, and burn-out, disrupting young adults’ employment opportunities, education, and social circles (Adams et al., 2014; Eaton et al., 2008; Park et al., 2006; Pottick et al., 2008). There are also disruptions in and reduction of treatment services for emerging adults; once an individual turns 18 they are often required to discharge from adolescent treatment programs. Until recently, comparable young adult programs were relatively difficult to find and limited in access and availability, leaving many vulnerable emerging adults without a clear path toward services (Adams et al., 2014; Neinstein & Irwin, 2013; Park et al., 2006; Pottick et al., 2008).

At first glance, young adult residential treatment centers (RTC) and outdoor behavioral health (OBH) programs seem to be comparable to adolescent RTC and OBH programs. However, further examination reveals that there are salient age-appropriate differences between adolescent and young adult programs. Perhaps the greatest difference between the program types is that young adult programs are populated with individuals that have provided legal consent to receive treatment. For adolescent programs in most states, parents/guardians provide the legal consent to receive treatment. The voluntary nature of young adult programs enables programs to approach the therapeutic process differently. For instance, unlike adolescent programs, some young adult programs are only staffed during

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the day. In addition, many of these programs encourage young adults to engage in off-site work or educational endeavors, during which times the young adults are generally operating independently, without supervision. More so than adolescent programs, young adult programs offer job skills training, work opportunities, and access to college courses (Treadway, 2017).

While research on RTC and OBH programs has grown substantially in recent decades, it has primarily focused on adolescent characteristics, programs, and outcomes (Roberts, Stroud, Hoag, & Combs, 2016; Treadway, 2017). The adolescent OBH and RTC research suggests that adolescents and/or their parents report significant improvement from the point of admission to the point of discharge for emotional, behavioral, academic, family, and substance abuse problems in RTC and OBH programs (Behrens, 2006; Behrens, 2011; Behrens, Santa, & Gass, 2010; Behrens & Satterfield, 2007; Bettmann, Tucker, Behrens, & Vanderloo, 2016; Russell, Gillis, & Lewis, 2008; Tucker, Norton, DeMille, & Hobson, 2016a; Tucker, Paul, Hobson, Karoff, & Gass, 2016b). Furthermore, the research suggests that adolescents maintain gains up to one year post-discharge (Behrens, 2011; Tucker et al., 2016a; Tucker, Smith, & Gass, 2014; Tucker, Zelov, & Young, 2011; Zelov, Tucker, & Javorski, 2013).

Recently, young adult RTC and OBH have received research attention (Bettmann et al., 2016; Hoag, Massey, Roberts, & Logan, 2013; Roberts et al., 2016; Roberts, Stroud, Hoag, & Massey, 2017; Russell, Gillis, & Heppner, 2016; Treadway, 2017). Preliminary research with young adults in RTC and OBH programs suggests that the findings are similar to those of adolescents in RTC and OBH programs (Hoag et al., 2013; Roberts et al., 2016; Roberts et al., 2017; Russell et al., 2016; Treadway, 2017).

This preliminary study explored the characteristics and treatment outcomes of young adults in multiple RTC and OBH programs. The research questions for this study were:

1. What are the demographic and clinical characteristics of young adults who are treated in OBH and RTC programs?
2. Do young adults in OBH and RTC programs report change on the Outcome Questionnaire 45.2 (OQ-45.2) and the General Functioning scale of the Family Assessment Device (GF-FAD) from the point of admission to the point of discharge, and across the times of admission, discharge and six months post-discharge?
3. Do young adults' self-reported changes vary among the OQ-45.2 subscales (Symptom Distress, Interpersonal Relationships, Social Role)?

Method

The data for this study were obtained from the National Association of Therapeutic Schools and Programs (NATSAP) Practice Research Network (PRN). The PRN is maintained in partnership with the University of New

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Hampshire (Young & Gass, 2008), whose institutional review board approved this study. The NATSAP PRN is an ongoing research initiative in which participating programs track client data at intake, discharge, and post-discharge. The data for this study were obtained from clients at 12 OBH and 10 RTC young adult programs between January of 2009 and February of 2017. The measures included the Outcome Questionnaire 45.2 (Lambert et al., 2004) and the General Functioning scale of the Family Assessment Device (Epstein, Baldwin, & Bishop, 1983). In addition to the standardized instruments, other data were collected through NATSAP PRN background questionnaires completed by program staff (e.g., primary reason for referral, gender) and clients (e.g., drug/alcohol use, sexual orientation, treatment history).

We aggregated the participating treatment programs into either the RTC or OBH group for analyses, because these categories are well established in the research corpus. However, it is important to note that the RTC category included both traditional RTC programs, that is young adult programs that have a campus to which young adults are generally confined, as well as transitional living programs. Transitional living programs are sometimes distinguished from RTC programs because young adult clients are not confined to the program facilities. This distinction is often important to young adults when selecting a program. However, for the purposes of the present study, it seemed appropriate to include transitional living programs in the RTC category because they have a considerable number of features that are consistent with RTC programs (e.g., physical facilities, multidisciplinary treatment, educational/vocational training, and milieu-based care).

It is important to note that young adults may attend more than one NATSAP program and, following a continuum of care, often transfer from an OBH program to an RTC program for longer-term care. This study did not track whether participants in this study attended more than one NATSAP program included in the PRN.

Measures

The OQ-45.2 has been established as a valid and reliable measure of adult psychosocial functioning (Beckstead et al., 2003). It is a self-report inventory that has three scales measuring general functioning in interpersonal relationships, social role, and symptom distress. A total OQ-45.2 score of 63 or higher exceeds the clinical cut-off and reflects a problematic number of symptoms, interpersonal difficulties, and dissatisfaction with quality of life (Lambert et al., 1996). The OQ-45.2 uses a Reliable Change Index (RCI), which indicates the number of points needed to indicate a meaningful change in functioning. A change in the total score of 14 points or more is considered clinically reliable (Lambert et al., 1996).

Clinical cut-off and RCI scores are also available for the three subscales of the OQ-45.2. The Symptom Distress scale measures affective disorders, stress, and anxiety, has a clinical cut-off score of 36, and has an RCI of 10 points. The

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Interpersonal Relationship scale measures loneliness, conflict, and relationship difficulties, has a clinical cut-off score of 15, and has an RCI of 8 points. The Social Role scale measures difficulties in roles at work, school, and home, has a clinical cut-off score of 12, and has an RCI of 7 points (Lambert et al., 1996).

The GF-FAD is based on the McMaster Model of Family Functioning and measures overall family functioning via 12 self-report items, each of which uses a four-point Likert scale response format (Epstein et al., 1983). Kabacoff, Miller, Bishop, Epstein, and Keitner (1990) studied the GF-FAD and suggested it was an appropriate measure of general family functioning. The total score is calculated by averaging the 12 items, which results in a score range of 0-4. The clinical cut-off score for the scale is 2. Higher scores indicate worse client-reported levels of family functioning (Epstein et al., 1983).

Sample

The participants consisted of 450 young adults enrolled in RTC programs and 760 young adults enrolled in OBH programs who completed assessment measures at admit and discharge. Table 1 contains the number and percentages for each demographic category in both samples. Participants in the RTC sample were drawn from 10 RTC programs. The RTC sample was comprised primarily of White (84.4%) males (59.5%) with the average age of 21.2 years ($SD = 2.2$). Almost 70% of clients in the RTC programs were identified by program staff as having three or more initial diagnoses or presenting problems. The most common primary reason for referral was alcohol/substance abuse (71.2%).

Participants in the OBH sample were drawn from 12 OBH programs. The OBH sample was comprised primarily of Caucasian (87.8%) males (73.4%) with an average age of 20.3 ($SD = 1.95$). The primary reason for referral was alcohol/substance abuse (37.3%), depression/mood disorders (23.9%), and anxiety issues (20.9%).

Table 1. Demographic Data

<u>RTC Sample</u>			<u>OBH Sample</u>		
	<i>N</i>	%		<i>N</i>	%
Age ($M=21.18$; $SD=2.159$)	450		Age ($M=20.31$; $SD=1.952$)	760	
17		0%	17		0.50%
18		13.10%	18		20.80%
19		15.10%	19		19.70%
20		12.90%	20		18.00%
21		14.00%	21		14.30%
22		13.80%	22		12.00%
23		13.60%	23		6.30%

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24		10.20%	24		4.90%
25		7.30%	25		3.40%
Gender	437		Gender	756	
Male		59.50%	Male		73.40%
Female		40.50%	Female		26.50%
			Other		0.10%
Ethnicity	392		Ethnicity	735	
African American		1.50%	African American		1.00%
Asian American		1.50%	Asian American		3.10%
Hispanic		6.40%	Hispanic		3.30%
Native American		0.30%	Native American		0.40%
White		84.40%	White		87.80%
Other		5.90%	Other		4.50%
Primary reason for referral	382		Primary reason for referral	716	
Alcohol/Substance Abuse		71.20%	Alcohol/Substance Abuse		37.30%
Anxiety Issue		8.10%	Anxiety Issue		20.90%
Attention Issue (ADD/ADHD etc.)		0.80%	Attention Issue (ADD/ADHD etc.)		1.70%
Autism/Asperger's		2.10%	Autism/Asperger's		2.90%
Depression/Mood Disorder		13.60%	Depression/Mood Disorder		23.90%
Learning Disability		0.80%	Learning Disability		0.80%
Oppositional Defiance/Conduct Issues		0%	Oppositional Defiance/Conduct Issues		1.70%
Trauma Related Issues		1.60%	Trauma Related Issues		4.10%
Other		1.80%	Other		6.70%
3 or more Diagnoses	375		3 or more Diagnoses	703	
Yes		69.60%	Yes		67.70%
No		30.40%	No		32.30%

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Results

RTC Programs

Client demographics. Due to attrition, the sample size of participants in RTC programs who completed the OQ-45.2 at admit, discharge, and six months post-discharge was much smaller ($n = 70$) than the total RTC sample described above. The mean age of this smaller sample was 20.5 ($SD = 1.84$). Similar to the larger sample, the majority of participants were heterosexual (80.4%), male (58.6%), Caucasians (89.3%), and presented with three or more presenting problems (78.2%). The primary referral reason was alcohol/substance abuse (43.6%). Participants in this smaller sample of RTC participants were drawn from seven RTC programs, with the number of participants drawn from a program ranging from 1 to 24.

We conducted independent samples t-tests comparing the data of RTC survey non-completers (participants who completed measures at admit and discharge only) to RTC survey completers (participants who completed testing at admit, discharge, and six months post-discharge) to explore if there were systematic differences in outcomes between those who were included in this sample (survey completers) and those who were excluded from the sample due to attrition (survey non-completers). The t-tests indicated that there was no significant difference between OQ-45.2 admit scores for non-completers ($M = 72.69$, $SD = 25.07$) and survey completers ($M = 77.76$, $SD = 24.33$) in RTC programs; $t(448) = -1.56$, $p = .711$. T-tests also indicated that there was no significant difference between OQ-45.2 discharge scores between survey completers ($M = 55.0$, $SD = 22.45$) and survey non-completers ($M = 50.61$, $SD = 22.59$) in RTC programs; $t(448) = -1.496$, $p = .648$. Similarly, t-tests comparing the GF-FAD survey non-completers and survey completers indicated no significant difference at admit, $t(436) = -.658$, $p = .746$; nor upon discharge, $t(436) = 1.298$, $p = .374$. Therefore, it appears that this smaller sample, the survey completer group, is similar to the larger sample, the survey non-completer group, at least in terms of their self-reported psychosocial (OQ-45.2) and family (GF-FAD) at admission and discharge. Table 2 contains the number and percentages of each demographic category for the RTC survey completer and non-completer samples.

Table 2. Demographic Data for RTC Completer and Non-Completer Samples

RTC Survey Non-Completers			RTC Survey Completers		
	<i>N</i>	%		<i>N</i>	%
Age ($M=21.18$; $SD=2.159$)	450		Age ($M=20.50$; $SD=1.84$)	70	
18		13.1%	18		18.6%
19		15.1%	19		17.1%
20		12.9%	20		12.9%
21		14.0%	21		20.0%
22		13.8%	22		15.7%

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23		13.6%	23		11.4%
24		10.2%	24		2.9%
25		7.3%	25		1.4%
Gender	437		Gender	70	
Male		59.5%	Male		41.4%
Female		40.5%	Female		58.6%
Ethnicity	392		Ethnicity	56	
African American		1.5%	African American		1.8%
Asian American		1.5%	Asian American		1.8%
Hispanic		6.4%	Hispanic		3.6%
Native American		0.3%	Native American		0.0%
White		84.4%	White		89.3%
Other		5.9%	Other		3.6%
Primary reason for referral	382		Primary reason for referral	55	
Alcohol/Substance Abuse		71.2%	Alcohol/Substance Abuse		43.6%
Anxiety Issue		8.1%	Anxiety Issue		21.8%
Attention Issue (ADD/ADHD etc.)		0.8%	Attention Issue (ADD/ADHD etc.)		0.0%
Autism/Asperger's		2.1%	Autism/Asperger's		3.6%
Depression/Mood Disorder		13.6%	Depression/Mood Disorder		25.5%
Learning Disability		0.8%	Learning Disability		1.8%
Oppositional Defiance/Conduct Issues		0.0%	Oppositional Defiance/Conduct Issues		0.0%
Trauma Related Issues		1.6%	Trauma Related Issues		1.8%
Other		1.8%	Other		1.8%
3 or more Diagnoses	375		3 or more Diagnoses	55	
Yes		69.6%	Yes		78.2%
No		30.4%	No		21.8%

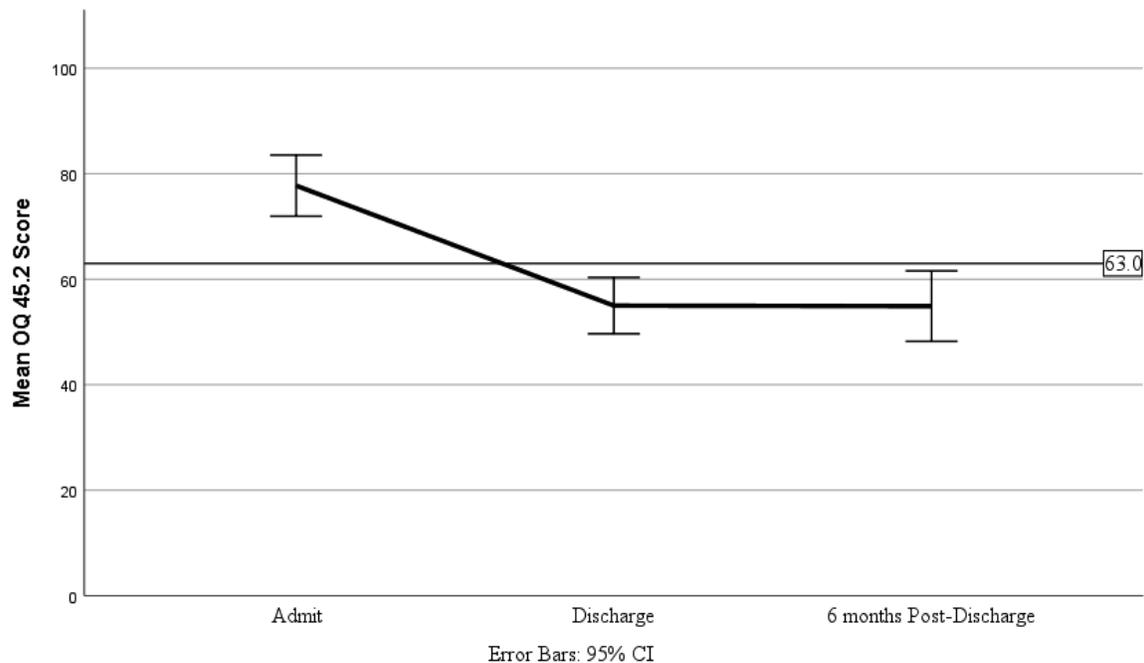
Note: Survey completers refers to participants who completed the OQ-45.2 at admit, discharge, and six months post-discharge. Survey non-completers refer to participants who completed the OQ-45.2 only at admit and discharge.

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OQ-45.2. A one-way repeated measures ANOVA was conducted to compare the effect of residential treatment on clients' OQ-45.2 scores at admit, discharge, and 6 months post-discharge. A significant effect was found. Table 4 presents F scores, partial etas, significant pairwise differences, means, standard deviations, and confidence intervals for the OQ-45.2 Total score at each time period in the RTC sample.

These results suggest that young adults in the RTC programs reported clinically reliable and statistically significant improvement from admit to discharge and that those improvements were maintained at six months post-discharge. At admission, their self-reported functioning was in the clinical range (exceeded the clinical cut-off score of 63), whereas at discharge and six months post-discharge their functioning was in the normal range, below the clinical cut-off score. A graphical representation of the means and 95% confidence intervals for the RTC samples' OQ-45.2 Total Scores at each time period are displayed in Figure 1.

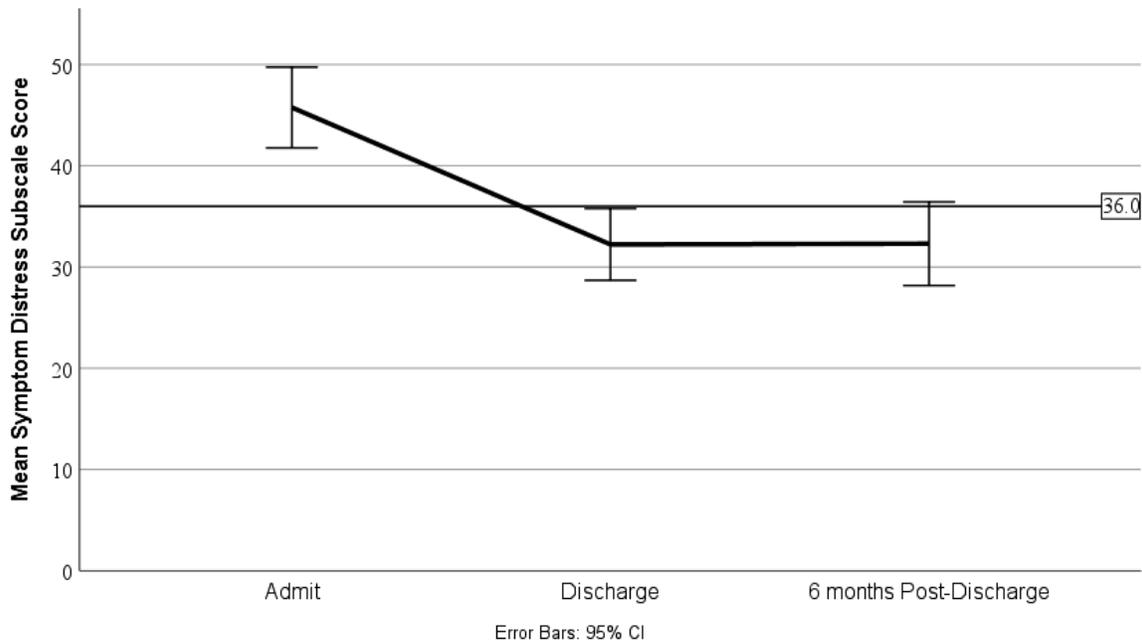
Figure 1. Line chart reflecting mean OQ-45.2 total scores over time for the RTC sample.



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OQ-45.2 Subscales. One-way repeated measures ANOVAs were conducted to compare each subscale's scores (Symptom Distress, SD; Interpersonal Relationships, IR; Social Roles, SR) on the OQ-45.2 at admit, discharge, and six months post-discharge for the RTC sample. For each subscale, there was a significant effect found. Figures 2-4 depict means and 95% confidence intervals for the each subscale's scores by time in the RTC sample. In addition, Table 4 presents *F* scores, partial etas, significant pairwise differences, means, standard deviations, and confidence intervals for each of the time periods and for each subscale, in the RTC sample.

Figure 2. Line chart reflecting mean Symptom Distress subscale score of RTC sample over time.



Taken together, the results from the repeated measures ANOVAs and subsequent t-tests for each of the OQ-45.2 subscales suggest that young adults in this RTC sample reported statistically significant improvement from admit to discharge in terms of symptom distress, interpersonal relationships, and social role functioning. Mean scores for each subscale moved from the clinical to the normal range by the point of discharge. The improvement during treatment was to a degree that was considered clinically reliable for the SD subscale (exceeded RCI), but not for the IR and SR subscales (did not exceed RCI).

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Figure 3. Line chart reflecting mean Interpersonal Relations subscale score of RTC sample over time.

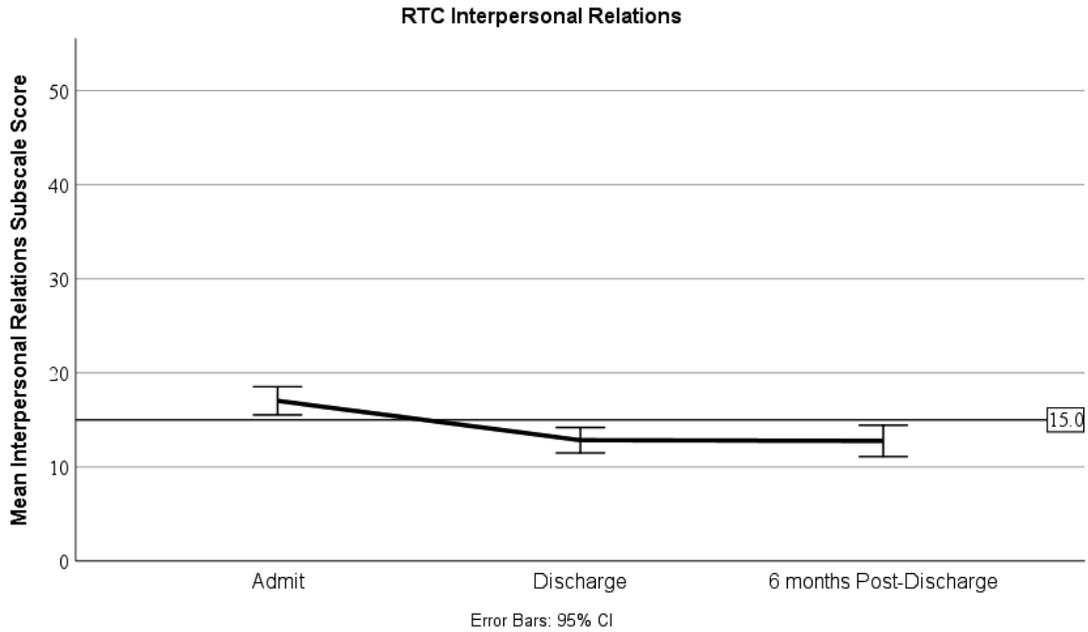
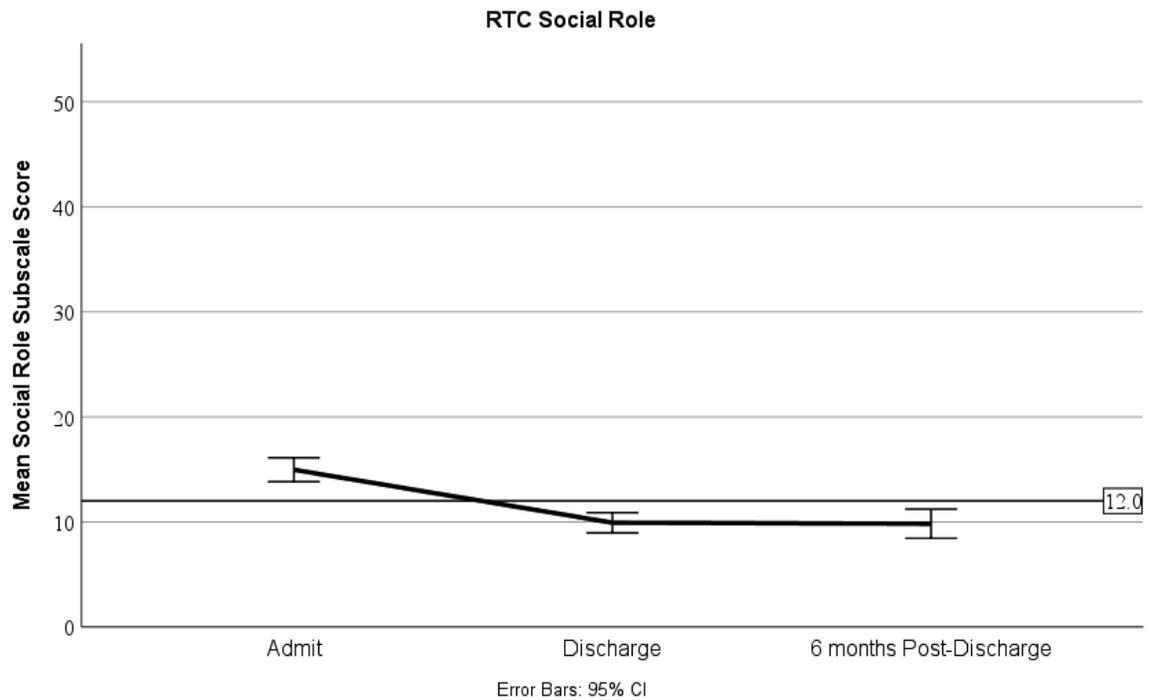


Figure 4. Line chart reflecting mean Social Role subscale score of RTC sample over time.

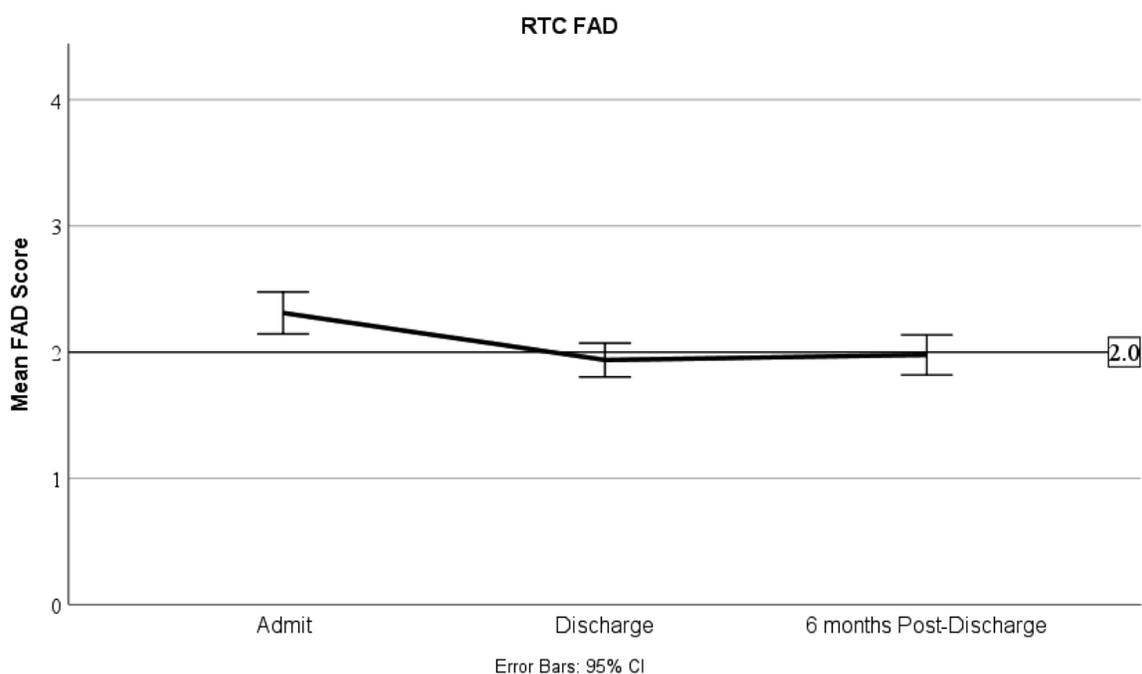


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Of additional interest are the reported changes from discharge to six months post-discharge; that is, changes young adults reported after leaving the program. T-tests data indicate that there was no increase in reported problems between discharge and post-discharge on the subscales. In fact, the scores at discharge and six months post-discharge were nearly identical. Participants' self-reported functioning remained in the normal range, below the clinical cut-off scores, for each of the subscales during the six months after discharge.

General Functioning Scale of the Family Assessment Device. A one-way repeated measures ANOVA was conducted to compare the effect of residential treatment on clients' GF-FAD scores at admit, discharge, and six months post-discharge. A significant effect was found. Figure 5 depicts means and 95% confidence intervals for the GF-FAD subscale scores by time in the RTC Sample. In addition, Table 4 presents F scores, partial etas, significant pairwise differences, means, standard deviations, and confidence intervals for each of the time periods and for the GF-FAD, in the RTC sample.

Figure 5. GF-FAD scores by time for RTC sample.



These results suggest that young adults in residential treatment centers reported that family functioning at admission was within the clinical range (exceeded the clinical cut-off score of 2). In addition, they reported statistically significant improvement between admit and discharge on their family functioning which placed the mean scores below the clinical cut-off at discharge. However, it is noteworthy that the confidence interval extends above the clinical cut-off at discharge. In addition, based on t-tests results, these outcomes are generally maintained at six months post-discharge and mean scores remain below the clinical cut-off. Again however, the confidence interval extends above the clinical cut-off at the time of six months post-discharge.

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OBH Programs

Client demographics. There were 217 OBH clients in the sample who completed the OQ-45.2 at admit, discharge, and six months post-discharge; this group was considered the survey completers. The average age of the OBH survey completer sample was 20.4 ($SD = 1.96$). The majority of clients were heterosexual (86.9%) White (89%) males (65.9%) with three or more presenting problems (72.2%). The primary referral reasons were alcohol/substance abuse (36%), depression/mood disorder (25.7%), and anxiety issues (20.6%). We conducted independent samples t-tests comparing the data of OBH survey non-completers (participants who completed measures at admit and discharge only) to OBH survey completers (participants who completed testing at admit, discharge, and 6-months post-discharge) to explore if there were systematic differences in outcomes between those who were included in this sample (survey completers) and those who were excluded from the sample due to attrition (survey non-completers). The t-tests indicated that there was no significant difference between OQ-45.2 admit scores for non-completers ($M = 75.78$, $SD = 25.78$) and survey completers ($M = 79.89$, $SD = 23.95$) in OBH programs; $t(758) = -2.024$, $p = .060$, $CI [-8.09, -0.12]$. T-tests also indicated that there was no significant difference between OQ-45.2 discharge scores between survey completers ($M = 45.52$, $SD = 23.00$) and survey non-completers ($M = 46.44$, $SD = 22.44$) in OBH programs; $t(758) = -0.509$, $p = .596$. Similarly, t-tests comparing the GF-FAD survey non-completers and survey completers indicated no significant difference at admit; $t(727) = 1.442$, $p = .150$; nor upon discharge; $t(727) = 0.80$, $p = .424$. Therefore, it appears that this smaller sample, the survey completer group, is similar to the larger sample, the survey non-completer group, at least in terms of their self-reported psychosocial (OQ-45.2) and family functioning (GF-FAD) at admission and discharge. Table 3 contains the number and percentages of each demographic category for the OBH survey completer and non-completer samples.

Table 3. Demographic Data for OBH Completer and Non-Completer Samples

<u>OBH Survey Non-Completers</u>			<u>OBH Survey Completers</u>		
	<i>N</i>	%		<i>N</i>	%
Age ($M=20.31$; $SD=1.952$)	760		Age ($M=20.39$; $SD=1.96$)	217	
17		0.50%	17		0.0%
18		20.80%	18		20.30%
19		19.70%	19		17.10%
20		18.00%	20		20%
21		14.30%	21		16.60%
22		12.00%	22		11%
23		6.30%	23		5.50%
24		4.90%	24		4.60%

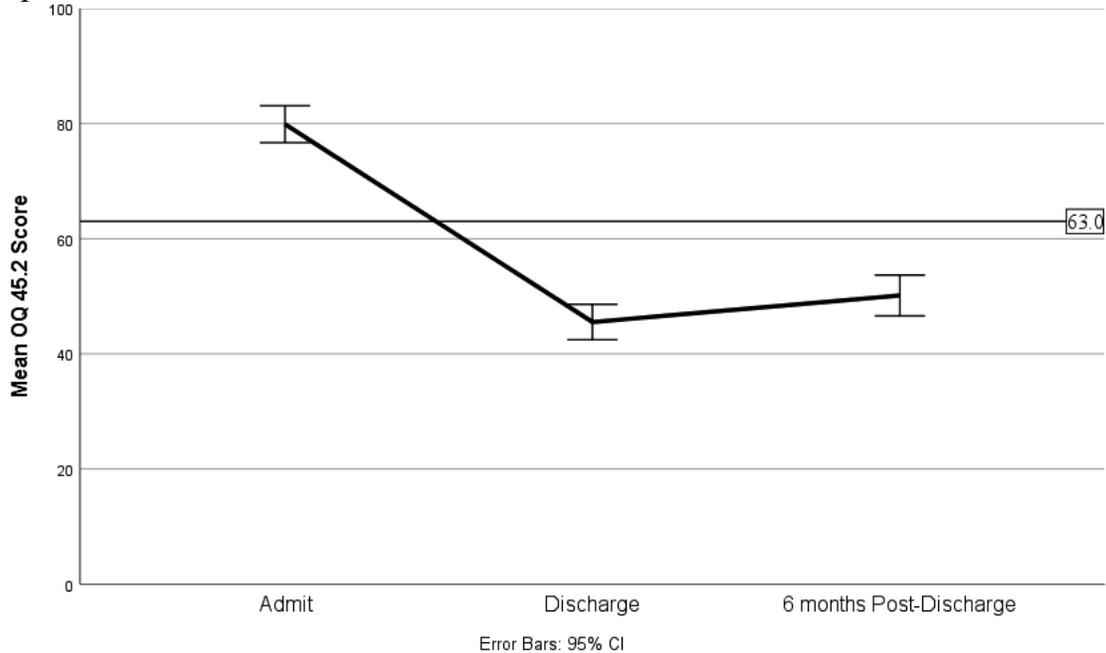
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25		3.40%	25		4.60%
Gender	756		Gender	217	
Male		73.40%	Male		65.90%
Female		26.50%	Female		34.10%
Other		0.10%	Other		0.00%
Ethnicity	735		Ethnicity	209	
African American		1.00%	African American		0.0%
Asian American		3.10%	Asian American		2.40%
Hispanic		3.30%	Hispanic		4.30%
Native American		0.40%	Native American		0.00%
White		87.80%	White		89.00%
Other		4.50%	Other		4.30%
Primary reason for referral	716		Primary reason for referral	214	
Alcohol/Substance Abuse		37.30%	Alcohol/Substance Abuse		36.00%
Anxiety Issue		20.90%	Anxiety Issue		20.60%
Attention Issue (ADD/ADHD etc.)		1.70%	Attention Issue (ADD/ADHD etc.)		0.50%
Autism/Asperger's		2.90%	Autism/Asperger's		3.70%
Depression/Mood Disorder		23.90%	Depression/Mood Disorder		25.70%
Learning Disability		0.80%	Learning Disability		0.90%
Oppositional Defiance/Conduct Issues		2%	Oppositional Defiance/Conduct Issues		0.50%
Trauma Related Issues		4.10%	Trauma Related Issues		4.70%
Other		6.70%	Other		7.50%
3 or more Diagnoses	703		3 or more Diagnoses	212	
Yes		67.70%	Yes		72.20%
No		32.30%	No		27.80%

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OQ-45.2. A significant effect was found using a one-way repeated measures ANOVA to compare the effect of OBH treatment on client's OQ-45.2 scores at admit, discharge, and six months post-discharge. Figure 6 depicts means and 95% confidence intervals for the OQ-45.2 Total scores by time in the OBH sample. In addition, Table 4 presents *F* scores, partial etas, significant pairwise differences, means, standard deviations, and confidence intervals for the total OQ-45.2 scores at each of the time periods in the OBH sample.

Figure 6. Line chart reflecting mean total OQ-45.2 scores over time for the OBH sample.



These results suggest that young adults in this OBH sample reported clinically reliable and statistically significant psychosocial improvement from admit to discharge. While there was a statistically significant increase in psychosocial symptoms between discharge and post-discharge, the increases were not clinically reliable, because they did not exceed the RCI value of 14. At admission, young adults' self-reported functioning was in the clinical range (clinical cut-off is 63), but at discharge and post-discharge their functioning was in the normal range and well below the clinical cut-off score.

OQ-45.2 Subscales. One-way repeated measures ANOVAs were conducted to compare each subscale scores (SD, IR, SR) on the OQ-45.2 at admit, discharge, and six months post-discharge for the OBH sample. There was a significant effect found for each subscale. Figures 7-9 depict means and 95% confidence intervals for the each subscale's scores by time in the OBH sample. In addition, Table 4 presents *F* scores, partial etas, significant pairwise differences, means, standard deviations, and confidence intervals for each of the time periods and for each subscale in the OBH sample.

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Figure 7. Line chart reflecting mean Symptom Distress score over time for the OBH sample.

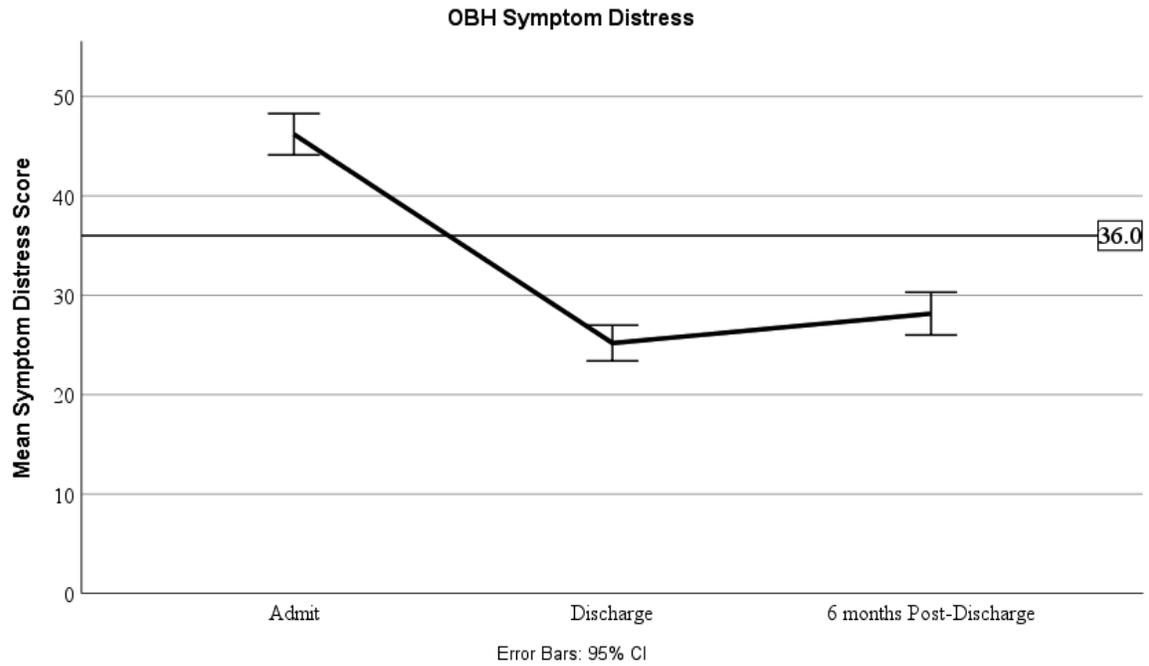
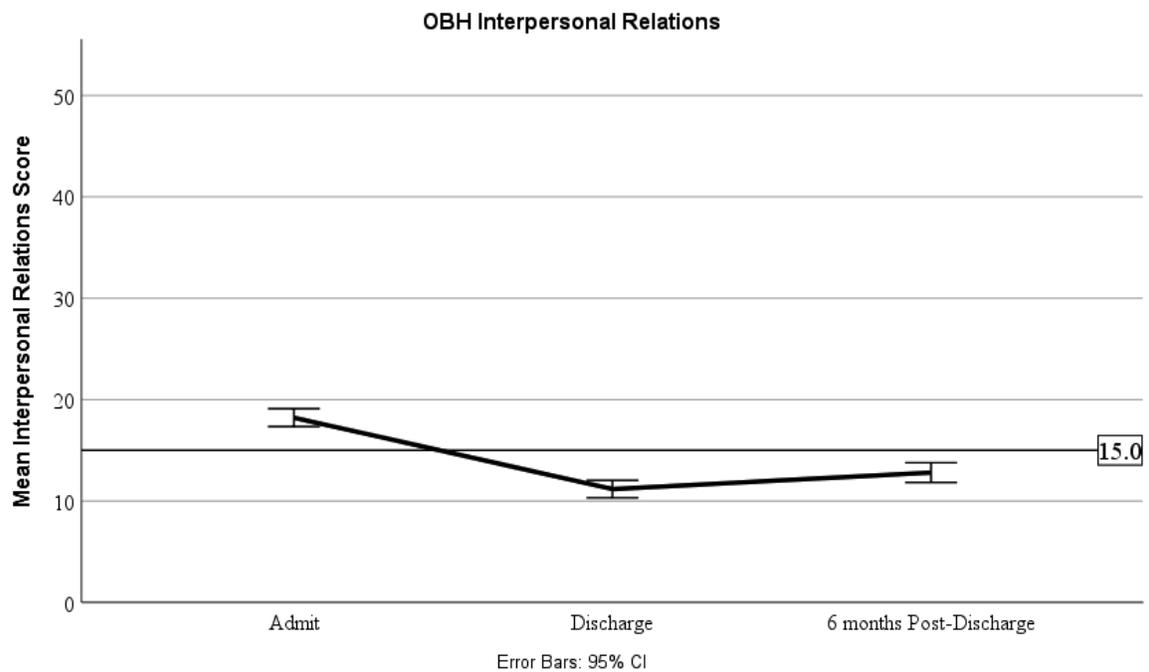
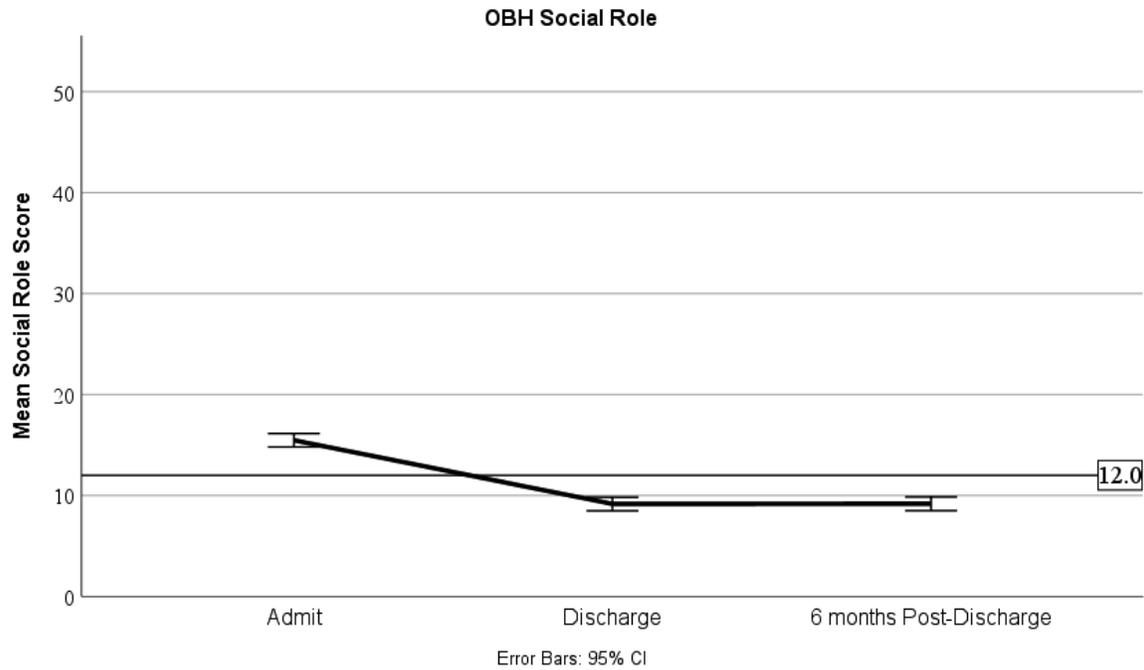


Figure 8. Line chart reflecting mean Interpersonal Relations score over time for the OBH sample.



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Figure 9. Line chart reflecting mean Social Role score over time for the OBH sample.



Taken together, the results from the repeated measures ANOVAs and subsequent t-tests for each of the OQ-45.2 subscales suggest that young adults in this OBH sample reported statistically significant improvement from admit to discharge in terms of symptom distress, interpersonal relationships, and social role functioning. Mean scores for each subscale moved from the clinical to the normal range by the point of discharge. The improvement during treatment was to a degree that was considered clinically reliable for the SD subscale (exceeded RCI), but not for the IR and SR subscales (did not exceed RCI).

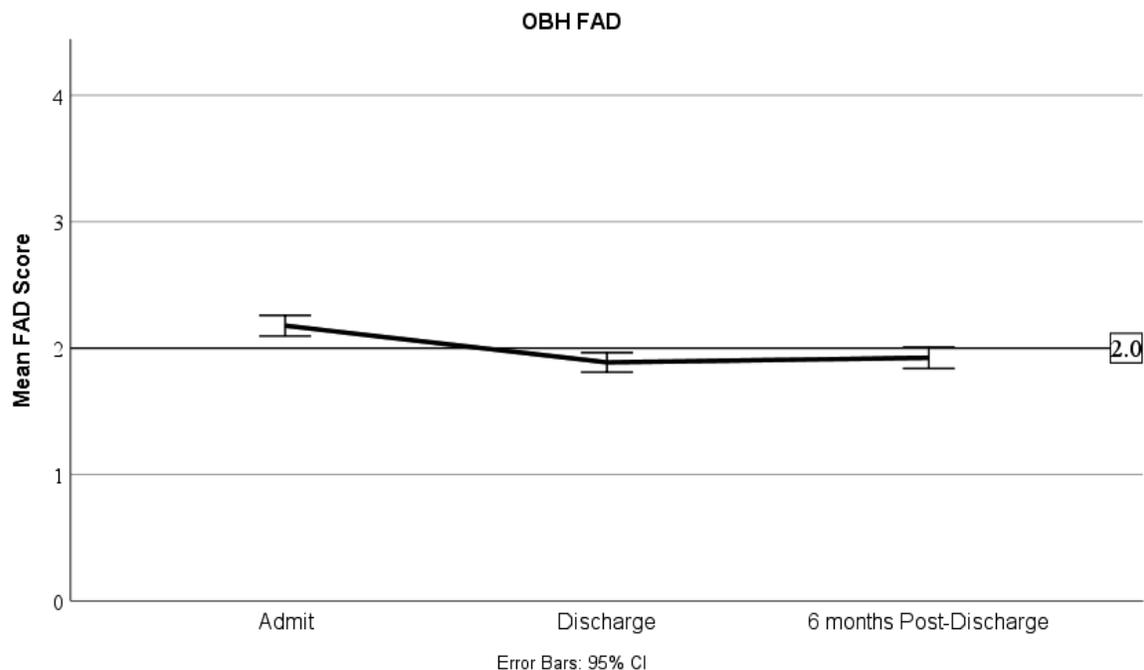
Of additional interest are the reported changes from discharge to six months post-discharge; that is, changes young adults report after leaving the program. Data indicate that there was an increase in reported symptoms between discharge and post-discharge only on the SD and IR subscales, however those increases were not of a magnitude that would be considered clinically reliable (were below the RCI for each scale and were relatively small). Furthermore, despite this increase in symptom-based and interpersonal problems post-discharge, participants' self-reported functioning remained in the normal range, below the clinical cut-off scores, for each of the subscales during the six months after discharge.

Family Assessment Device. A one-way repeated measures ANOVA was conducted to compare the OBH samples' GF-FAD scores at admit, discharge, and six months post-discharge. There was a significant effect found. Figure 10 depicts means and 95% confidence intervals for the GF-FAD subscale scores by time in

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the OBH Sample. Paired samples t-tests were used to make post hoc comparisons between time periods. Table 4 presents those data along with the means, standard deviations, confidence intervals, and *F* scores for the GF-FAD scores over time in the OBH sample.

Figure 10. *GF-FAD scores by time for OBH sample.*



These results suggest that young adults in this OBH sample reported statistically significant improvement in their family functioning between admit and discharge and that the reported improvement results in scores that are below the clinical cut-off at discharge (clinical cut-off = 2). In addition, these outcomes are maintained at six months post-discharge and remain below the clinical cut-off.

Discussion

This study is the first to analyze the NATSAP PRN data for young adult participants. Its primary contribution to the research is derived from the multi-site samples. The data from the demographic portion of the study was based on young adults from 10 RTC and 12 OBH programs and the data from the smaller, outcomes sample was based on young adults from seven RTC and nine OBH programs. The multi-site samples allowed us to apply findings beyond any one program to the broader, RTC and OBH, levels of care for young adults.

Demographic data for young adult samples on the NATSAP PRN were similar with that of adolescent samples from the NATSAP PRN. In fact, most adolescent studies reported similar ratios of males to females, profiles of ethnicity, as well as numbers and rates of presenting problems (Behrens, 2011; Tucker et al., 2011; Tucker et al., 2014; Tucker et al., 2016a; Tucker et al., 2016b;

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	M_{Admit} (SD) [CI]	$M_{Discharge}$ (SD) [CI]	$M_{6monthPost}$ (SD) [CI]	F	Partial η^2
RTC OQ-45.2 (N= 70)					
Total ^{a,c}	77.76 (24.3) [71.96, 83.56]	55.0 (22.4) [49.65, 60.35]	54.9 (28.0) [48.22, 61.58]	36.00***	0.514
Symptom Distress ^{a,c}	45.76 (16.7) [41.77, 49.75]	32.23 (14.9) [28.69, 35.77]	32.3 (17.3) [28.17, 36.43]	29.72***	0.466
Interpersonal	17.03 (6.3) [15.53, 18.52]	12.84 (5.7) [11.48, 14.20]	12.77 (7.0) [11.10, 14.44]	15.5***	0.313
Relations ^{a,c}	14.97 (4.8) [13.83, 16.11]	9.93 (4.1) [8.96, 10.90]	9.83 (5.8) [8.45, 11.21]	45.26***	0.571
Social Role ^{a,c}					
RTC FAD (N= 57) ^{a,c}	2.31 (.62) [2.15, 2.48]	1.94 (.497) [1.81, 2.07]	1.97 (.59) [1.81, 2.13]	12.96***	0.32
OBH OQ-45.2 (N= 217)					
Total ^{a,b,c}	79.89 (23.95) [76.69, 83.09]	45.52 (23) [42.44, 48.60]	50.13 (26.47) [46.59, 53.68]	204.00***	0.655
Symptom Distress ^{a,b,c}	46.19 (15.55) [44.11, 48.27]	25.18 (13.42) [23.39, 26.98]	28.15 (16.1) [25.99, 30.30]	213.13***	0.665
Interpersonal	18.22 (6.6) [17.34, 19.10]	11.18 (6.42) [10.32, 12.03]	12.8 (7.25) [11.83, 13.77]	117.45***	0.522
Relations ^{a,b,c}	15.57 (5.01) [14.80, 16.15]	9.16 (5.02) [8.49, 9.83]	9.18 (5.06) [8.51, 9.86]	131.17***	0.55
Social Role ^{a,c}					
OBH FAD (N= 179) ^{a,c}	2.17 (.53) [2.09, 2.25]	1.88 (.51) [1.80, 1.95]	1.91 (.55) [1.83, 1.99]	34.84***	0.282

*** $p < .001$, ^a significant pairwise mean difference between admit and discharge ($p < .05$), ^b significant pairwise mean difference between discharge and six months post-discharge ($p < .05$), ^c significant pairwise mean difference between admit and six months post-discharge ($p < .05$)

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

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Zelov et al., 2013). This finding suggests that, in many ways, the demographic profile of adolescent and young adult clients in NATSAP programs is similar. The finding that young adults in RTC programs have high rates of substance abuse problems suggests that such programs are uniquely positioned to address substance abuse issues. This finding is consistent with other studies of young adults' presenting problems (Bettmann et al., 2016; Hoag et al., 2013; Roberts et al., 2016) which likewise found high rates of substance abuse problems in their samples of young adults. Few studies have explored substance abuse outcomes in young adult OBH and RTC programs; this is an area that needs to be further researched for this population.

The study's results suggest that young adults' self-reported outcomes in both RTC and OBH programs reflect positive trends. Young adults report statistically and clinically significant improvements in psychosocial functioning between the point of admission and the point of discharge. Specifically, young adults in both types of programs begin treatment with problems that reportedly exceed clinical cut-off scores and, by the point of discharge, those problems reportedly decrease significantly and in clinically reliable ways, to levels within the normal range. In addition, gains made during treatment seem to be generally maintained up to six months post-discharge. One finding is of interest: during the six months after discharge, young adults in OBH programs may see a significant, but not clinically substantial, increase in psychosocial problems, whereas young adults in RTC programs show virtually no increase in problems at all. It is possible that participants in OBH programs, because they tend to have shorter lengths of stay than participants in RTC programs, might see a slight increase in psychosocial problems after discharge. However, that change is likely to be subtle, at least at the point of six months after discharge. It is important to bear in mind that participants' scores remain in the normal range of functioning at six months post-discharge for both the OBH and RTC programs. Other than the slight difference found between the OBH and RTC samples post-discharge, the trends in this study are consistent with those found in other OBH young adult samples (Hoag et al., 2013; Roberts et al., 2016; Roberts et al., 2017) as well as in samples of OBH and RTC adolescents (Behrens, 2011; Tucker et al., 2011; Zelov et al., 2013).

The relationship between psychosocial functioning and treatment was present across all three subtypes of psychosocial outcomes: Symptom Distress, Interpersonal Relationships, and Social Roles. However, among the subscales, OBH and RTC treatment seemed to have the strongest relationship with decreased symptomatic distress (i.e., depression, anxiety, stress). While each subscale of the OQ-45.2 indicated statistically significant decreases between admit and discharge in both program types, the Symptom Distress subscale was the only one to show clinically reliable change during that time frame. Though there is a significant reduction in problems with interpersonal relationships and social roles in both program types during treatment, the change in those areas, while placing young adults in the normal range, did not meet the required threshold to be considered clinically significant (Lambert et al., 2004). This finding is comparable to other young adult studies conducted at OBH programs (Bettmann et al., 2016; Roberts et al., 2017). Roberts and colleagues (2017)

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theorized that young adults' symptoms of anxiety and/or depression may improve more than social roles and interpersonal relationships, because OBH programs systematically incorporate physical activity, healthy diet, structured schedules, and a supportive environment (Roberts et al., 2017), which are associated in the literature with improved symptomatology (Lopresti, Hood, & Drummond, 2013). It has been noted that RTC young adult programs have similar features (Treadway, 2017), so it seems reasonable to theorize the same for those programs. Furthermore, it is likely that reliable improvements with social roles (e.g., difficulties at work, school, and home environments) and interpersonal relationships (e.g., loneliness, conflict, and romantic/family relationships) require more time and treatment for reliable change to occur than do diagnostic symptoms. Compared to symptom distress, social roles and interpersonal relationships are complex constructs that are dependent upon interpersonal changes that may not be as amenable to change during RTC or OBH treatment. That said, some studies have found that improvements in close interpersonal relationships, such as those with parents and romantic partners, are positively correlated and contemporaneous with improvements in mental health symptoms (Bettmann et al., 2016; Frey, Beesley, & Miller, 2006; Lapsley & Edgerton, 2002; Mallinckrodt & Wei, 2005). The connections among young adults' symptomatic, social role, and relationship changes, while in OBH and RTC programs, needs to be clarified in future research.

The GF-FAD results were also noteworthy. In both RTC and OBH programs, clients reported statistically significant improvement in family functioning, with mean scores moving from above to below the clinical cut-off from admission to discharge. Furthermore, reported treatment gains were maintained for both RTC and OBH programs up to six months post-discharge. The GF-FAD results suggest that clients acknowledged improved functioning in their family unit during the course of treatment and that those gains were maintained after treatment. An important caveat is that in the RTC group, the upper limit of the confidence interval exceeded the clinical cut-off at discharge and post-discharge, suggesting that though, on average, there was improvement in family functioning at discharge and post-discharge, some in the RTC group reported family functioning that was slightly in the clinical range at those times. Overall, these changes in clients' reports of family functioning are comparable to those found by Tucker and colleagues (2016b), based on NATSAP PRN adolescent OBH and RTC sample, as well as Bettmann and colleagues (2016), based on a young adult OBH sample.

It is important to draw attention to the large standard deviation scores for the group means on each measure and at each time period. Large variances in scores suggest that there is wide variability on the outcomes among the participants in the group. Therefore, though the data suggest that the OBH and RTC groups have favorable outcomes, such outcomes were not achieved for all of the participants. Indeed, future studies might consider exploring outcome variability within samples of young adults in RTC and OBH programs, an issue that has received scant research attention and is certainly worth continuing given the clinical implications (Roberts et al., 2017).

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As noted above, a widely accepted notion is that many adolescents and young adults attend more than one NATSAP program and that, in particular, clients frequently transfer from an OBH program to an RTC program for longer-term care. Unfortunately, at present, it is not possible to track the outcomes of clients who attend more than one program in the NATSAP PRN database. Because we are unable to track individuals who move either from adolescent to young adult treatment or from OBH to RTC treatment, the degree to which the outcomes vary for groups that transfer across programs is not known. The Outdoor Behavioral Health Center's research scientists and the NATSAP research committee are exploring protocols that will enable researchers to follow the "Golden Thread" of treatment, that is, to link data when participants attend more than one OBH and/or RTC program (Personal communication, M. Gass, January 27, 2017). A Golden Thread that facilitates tracking of participants throughout the NATSAP PRN would enable researchers to answer questions about outcome changes within individuals as they move through multiple programs and may give us insight into NATSAP programs conceptualized as a continuum of care.

This study is the first to explore young adult treatment outcomes using the data in the NATSAP PRN, data that includes clients from about half of NATSAP-affiliated young adult programs. Given that its results are generally consistent with the studies published using data from individual OBH programs (Bettmann et al., 2016; Hoag et al., 2013; Roberts et al., 2016; Roberts et al., 2017; Russell et al., 2016), it lends increased support to the notion that outcomes for young adults in OBH and RTC programs tend to be favorable and tend to persist. Certainly, this research can be further strengthened with more robust experimental designs, such as those provided by the use of comparison groups. In addition, future studies would do well to explore demographic and process factors that predict outcomes in young adult treatment. Some studies have explored this with adolescent samples (e.g., Tucker et al., 2014), and others have explored this with young adult samples (e.g., Hoag et al., 2013; Roberts et al., 2016). Although Roberts and colleagues (2016), in their study of young adult OBH outcomes, did not find a relationship between select demographic variables (i.e., age, gender, diagnosis) and treatment outcome, nor between select process factors (i.e., length of stay, therapist assignment) and treatment outcome, they concluded that additional research is needed to improve our understanding of the type of clients and aspects of treatment that may best predict healthy outcomes. A more systematic study of demographic and process factors would certainly enrich our understanding of which types of clients and treatment approaches predict outcomes for young adults in NATSAP programs.

Limitations

As is common in long-term clinical outcome studies, this study saw a sharp decline in responses at the point of post-discharge (Behrens, 2011; Russell, 2003; Zelov et al., 2013). Attrition is one of the major methodological problems in longitudinal research (Combs, 2016; Estrada, Woodcock, & Schultz, 2014). It can limit the generalizability of findings, especially when participants who stay in a study differ from those who drop out. The present study began with 1,210

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young adults, but ended at six months post-discharge with only 287 individuals who responded to all measures at admit, discharge, and post-discharge. Though t-tests suggested that our smaller sample was comparable to the larger sample, at least in terms of functioning at the point of admission and discharge, we are not clear on how attrition may have influenced the study results. Attrition is particularly salient for the young adult population which may be harder to retain in long-term studies because they are more likely than their adolescent counterparts to be mobile and to live away from their parents after discharge. Combs (2016) provided some suggestions for obtaining higher response rates with this population, including contacting participants multiple times for post-discharge measures and tracking participants who are admitted to other programs after discharge.

This study is limited by its racially homogenous sample. It is likely that the predominantly White sample is reflective of the larger population of young adults in NATSAP programs, because this racial/ethnic make-up has been repeatedly found in the body of research related to NATSAP programs (e.g., Behrens, 2011; Bettmann et al., 2016; Russell, 2005; Tucker et al., 2016a; Tucker et al., 2016b). Therefore, it is important to bear in mind that these findings (as well as the population of clients served in NATSAP programs) apply primarily to white young adult clients. Future studies would do well to systematically study ethnic minority participants' outcomes in NATSAP programs.

This study used only self-report data from the young adult clients. It would be beneficial to collect reports from individuals close to the participants, such as parents or significant others, as well as clinical staff. Additional sources of data would benefit the research by giving an alternate view of outcomes in young adult RTC and OBH treatment.

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