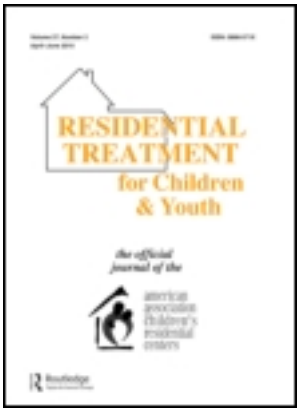

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Effects of Program Differences With Wilderness Therapy and Residential Treatment Center (RTC) Programs

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Effects of Program Differences With Wilderness Therapy and Residential Treatment Center (RTC) Programs

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Organizations within the National Association of Therapeutic Schools and Programs differ on a variety of programmatic attributes. The purpose of this research was to examine the relationship between individual characteristics, programmatic use of adventure therapy, and YOQ-30 scores of participants attending Outdoor Behavioral Healthcare and Residential Treatment Centers (RTCs). No statistical relationship was found between length of treatment and type of program as measured by client scores, while gender, involvement in individual adventure therapy, percentage of time spent on expedition, and admission scores were significantly related to changes in client scores. Characteristics associated with recovery in both treatment environments are discussed.

KEYWORDS outdoor behavioral healthcare, residential treatment centers, length of treatment, adventure therapy, wilderness therapy

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A REVIEW OF NATSAP PROGRAMS

In 1999 the National Association of Therapeutic Schools and Programs (NATSAP) was created "as a national resource for programs and professionals assisting young people beleaguered by emotional and behavioral difficulties" (NATSAP, 2011, p. 1). Its members included a group of private residential treatment centers (RTCs), therapeutic boarding schools, and wilderness therapy programs. Although NATSAP is comprised of a variety of programs, one commonality exists: these programs face increasing pressure to not only provide evidence of efficacy (Young & Gass, 2010), but also a clearer understanding of how they are creating change (Gillis, Gass, & Russell, 2008). In addition to this challenge, confusion over definitions of services confounds the pool of literature as it fails to distinguish between seemingly similar programs with vastly differing philosophical underpinnings. This is especially true for programs who report the use of adventure therapy as part of their treatment process. Adventure therapy is the prescriptive use of challenging experiences, often through adventure activities in natural settings, provided with a mental health professional designed to assess and assist individuals, families, or groups to strengthen functional behaviors and/or reduce dysfunctional behaviors (Gass, Gillis & Russell, 2012). In the NATSAP programs it is unclear to what extent these techniques are used, and how that impacts outcomes (Tucker & Rheingold, 2010).

Such increasing pressures encourage greater oversight and research looking at what these programs are doing to be effective with specific populations. In addition, financial pressure from insurance agencies and private payers continue to encourage the industry to consider the importance of length of treatment, and assess whether there are more cost-effective ways to create meaningful change. Authors researching both the private residential treatment center (RTC) industry as well as the Outdoor Behavioral Healthcare (OBH) industry have encouraged future research to investigate not only client outcomes, but also the relationship of these outcomes to programmatic characteristics (Gillis et al., 2008; Young & Gass, 2010). In response to this call to action, this research focused on the impact of length of treatment at OBH and RTCs on adolescent outcome measures, as well as investigated what programmatic and individual characteristics were related to successful outcomes in these two treatment settings.

Residential Treatment Centers

An increasing body of literature is calling for a distinction between publicly funded residential treatment and private pay residential treatment. Young and Gass (2010) found the characteristics of incoming clients to private residential treatment facilities to be primarily white adolescents, both male and female, whose families tend to have the financial means to afford

these services. Behrens and Satterfield (2006) noted the population most commonly served by publicly funded residential treatment centers was characterized as primarily male, ethnic minority, and lower socioeconomic status. Based on this distinction between populations served and services offered, the authors asserted that private residential treatment programs were different enough from public residential treatment programs, to warrant separate bodies of research.

In one of the largest investigations of the impact of private residential treatment programs, Behrens and Satterfield's (2006) study of 993 youth revealed significant positive changes in youth functioning between the admission and discharge scores from both parent and self-reported measures. In addition to demonstrating significant behavioral gains, Behrens and Satterfield reported clinical recovery by defining a cutoff point and a change index. If participants' discharge scores changed by more than a specified score and dropped below a specific cutoff score, they were considered recovered. The authors noted that 66% of males and 78% of females self-reported scores that categorized themselves as "recovered." After predictors of change in outcome scores were analyzed, the authors stated, "change in functioning during treatment does not depend on age, gender, ethnicity, parental income, number and type of problems, presence/absence of psychiatric medication, prior treatment, length of stay, or discharge status" (Behrens & Satterfield, 2006, p. 12). Instead low levels of psychosocial symptoms, absence of a mood disorder, a positive experience in treatment, perceptions of improvement and satisfied parents were found to be significant predictors of change. While this study began to clarify specific groups of clients that were more likely to be successful, these findings focused more on the relationship between outcome scores and client attributes rather than programmatic characteristics.

Outdoor Behavioral Healthcare

Russell and Hendee stated that "the integration of psychotherapeutic theory and practice" (2000, p. 12) is the distinction between OBH programs and other non-therapeutic wilderness programs. Russell and Farnum (2004) posited three unique aspects of the wilderness therapy process: wilderness, physical self, and social self. Wilderness refers to immersion in the wilderness environment, physical self refers to the effects of physical activity, and "social self" accounts for interactions with the group and improved social functioning. These three items were qualitatively corroborated by OBH participants as important aspects of their experience which made the treatment effective (Russell, 2005). Despite these reports from clients, researchers have yet to correlate these programmatic characteristics with client outcome measures.

OBH programs can be distinguished by how they incorporate expeditions into wilderness settings as part of their treatment modalities. In a survey of OBH programs, Russell and Hendee (2000) found that length of treatment for participants was related to the type of OBH program. Private placement Residential Expedition programs (residential treatment facilities) had an average of 302 days of treatment, whereas Continuous Flow wilderness programs averaged 65 days, and Contained Expedition wilderness programs averaged 42 days of treatment. The length of treatment's relationship with outcomes was not investigated until later. Using hierarchical linear modeling, Russell and Sibthorp (2004) examined this relationship and found that length of treatment accounted for 9% of the total change in outcomes for OBH participants. This finding demonstrated the need for further investigation of the other aspects of OBH programming which account for the remaining change in outcome scores (Russell & Sibthorp, 2006).

Clark, Marmol, Cooley, and Gathercoal (2004) incorporated clinical diagnoses as the dependent variable in their study of participants in a 21-day wilderness therapy program. This research not only demonstrated significant improvements of clinical concerns on Axes I, II, and IV, but also claimed that wilderness therapy interventions may create characterological change in clients. According to the authors, this type of change is incredibly rare, especially following interventions that would be considered short-term (21 days). This research suggests that wilderness therapy creates deeper therapeutic outcomes, rather than behavioral improvements and also seems to imply that length of treatment may have had an effect on the change process of participants.

In addition to the relationship between diagnoses and outcomes, individuals with certain characteristics have been described to fare better in OBH programs. Russell (2001) used change scores on the Youth Outcomes Questionnaire to demonstrate "improvement" in addition to cutoff scores to determine clinical recovery. According to Russell there was no significant difference when gender was investigated. Age appeared to be a factor, as 13- and 19-year-olds appeared to fare better in OBH programming; however, statistical analyses were not used to investigate the significance of relationships between those considered "recovered" and client and program characteristics. Russell investigated OBH programs based on short-term (21 days) and long-term programs. Russell found that long-term programs had significantly lower scores; however, after 12 months, both types of programs showed similar improvements.

Adventure Therapy

Since many of the NATSAP programs, both wilderness and residential programs, also incorporated adventure therapy in their treatment, this study also chose to examine how the use of adventure therapy was related to

outcomes. For the purpose of this research, adventure therapy specifically referred to the use of adventure-based therapeutic activities typically conducted in an outdoor setting, where the activity as well as the processing of the activity is the focus of the treatment (Tucker, 2009). Given this definition, adventure therapy is conceptualized as a specific modality which may be incorporated into any treatment environment. For example, a clinician working in an OBH or a RTC may choose to use the modality of adventure therapy, the same way he or she might choose to use any other therapeutic modality (e.g. Cognitive-Behavioral Therapy or Motivational Interviewing). This research investigated the use of adventure therapy as a modality within the contexts of OBH and private RTCs.

To help clarify some of the ambiguity surrounding the practice of experiential therapies (including adventure therapy), Russell and Gillis (2010) surveyed clinical directors of 51 different NATSAP programs to assess how programs used and defined experiential therapy. Qualitative responses from clinical directors reported a belief that experiential therapies built relationships within the group, provided natural consequences for clients, and built the therapeutic relationship. Of the programs represented, 33% viewed experiential therapies as their primary modality of treatment; however, the majority of programs (64.4%) viewed experiential therapy as adjunctive, or "an additional component of treatment used in conjunction with more traditional models" (p. 55). The remaining 2.2% saw this modality as a tangential approach, designed more for recreational opportunities for clients than for therapy (Russell & Gillis, 2010).

How the modality of adventure therapy is used within both the OBH and RTC industries raises many questions about definition and efficacy. Several authors have made arguments that vague definitions and conceptualizations of adventure therapy may threaten the body of literature have urged future research endeavors to include measures of treatment fidelity in addition to measuring outcomes (Gillis et al., 2008; Russell & Gillis, 2010; Tucker & Rheingold, 2010), and have argued that the specific elements of a program should be considered just as important as the outcomes (Gillis, 1992). Gillis et al. (2008) stressed that "researchers must also present what is occurring in the treatment program that is labeled "therapy" and how (or if) wilderness adventure therapy is being delivered" (p. 230) in addition to demonstrating change.

With such varied use of experiential and adventure therapy practices in these industries, it became clear that programmatic characteristics such as frequency of adventure therapy, length of treatment, and program type may be important variables in predicting change in client outcomes. In addition, further investigation between the relationship of different client characteristics, program characteristics and those clients who are considered to be recovered after receiving treatment was warranted. This research attempted to investigate not only the outcomes of OBH and RTC participants, but also the relationship between these outcomes and what programs

did to reach those outcomes. This study hoped to answer the following questions:

1. Did program type and length of treatment predict change in client outcomes?
2. What individual and program characteristics were associated with clients who were considered "recovered" based on clinical outcome measures?
3. Did the frequency of adventure therapy activities predict change in client outcomes?

METHODS

Measures

The NATSAP programs included in this study used a variety of measures to gather psychosocial information; however, the results of this research focused on the information gathered from the Outcome Questionnaire Family of Instruments (OQ) (Wells, Burlingame, & Rose, 1999), admission data gathered via the NATSAP Staff Admission (SA-R) form, and a brief survey created to assess the programmatic use of adventure therapy modalities. Measures from the OQ family of instruments used for this research included the Y-OQ-SR 2.0 as well as its abbreviated version, the Y-OQ 30 SR. Both of these instruments are youth self-report surveys that assess a variety of behavioral and emotional problems in youth between the ages of 11 and 19 (Burlingame et al., 1996).

The OQ assessments are frequently used, have published validity and reliability scores, and have a broad and diverse normative sample. The OQ instruments were developed to be more sensitive to the therapeutic change of the client (Lambert et al., 1996; Mueller, Lambert, & Burlingame, 1998; Wells et al., 2003). The Y-OQ 30 SR consists of the 30 questions chosen from the Y-OQ 2.0 SR that showed the most sensitivity to clinical change. The Y-OQ 30 has consistently demonstrated strong reliability and validity in a variety of clinical treatment settings (Holloway, 2004; Jones, 2004). The Y-OQ 30 SR was designed to be a brief measure of behavior and disturbance and, therefore, reports results in a single generalized score. A cutoff score of 30 represents a clinical threshold between normal functioning and clinical concerns. Additionally, the Y-OQ 30 uses a reliable change index to determine if a client's change is clinically meaningful. If a client has a reliable change index greater than 10, and their total Y-OQ 30 score drops below the cutoff score, the client is considered "recovered" (Jacobson & Truax, 1991; OQ Measures, 2011). Since programs can elect whether to measure via the Y-OQ 2.0 SR or the Y-OQ 30 SR, in this study data from the Y-OQ 2.0 SR was converted to a Y-OQ 30 SR score by scoring only the 30 items that are included in the shorter instrument.

Two other questionnaires were used to obtain data for this study. The NATSAP Revised Staff Admission form collects information about a

client from program staff (e.g., Diagnostic codes, reasons for referral, referral source, date of admission, gender, birth date, and history of abuse). Additional programmatic information was gathered via a brief survey created by one of the authors with the aim of understanding in more depth how adventure therapy is used within NATSAP programs ("Brief Assessment of Therapeutic Modalities"). This survey gathered programmatic information from NATSAP programs about licensure, frequency of different adventure therapy activities (i.e., games and initiatives, hiking, challenge course, rock climbing), setting of therapy (base camp, expedition, dorms), and context of therapy (individual, group or family). Questions used a 5-point Likert Scale (daily, multiple times per week, 2–3 times per month, monthly, once every 2 or more months) to indicate frequency of therapeutic use of certain activities to better understand if and how often activities were used. To determine a program's frequency of use of adventure therapy, the frequency of the most frequently used adventure activity was used as the programmatic variable "frequency of adventure." For example, if a program used most adventure activities monthly, but used adventure initiatives two or three times per week, the program was described as having a "frequency of adventure" of two or three times per week. Questions regarding the setting and context of therapy asked respondents to calculate the estimated percentage of time (totaling 100%) that adventure therapy was used for each of the three contexts of therapy (Individual, Family, Group).

Procedure

Participating youth were registered into the NATSAP database, on the Carepaths system (an internet data management system), upon being admitted to the program and consent and/or assent was given. Participants completed several measures at admission and discharge while at the program to track their progress. Participants completed one age appropriate version of the OQ family of measures (either the Y-OQ 30 or the Y-OQ 2.0) upon admission, and program staff entered student background information into the database via the NATSAP SA-R form. Programmatic characteristics regarding the use of adventure therapy was collected via the Brief Assessment of Therapeutic Modalities Survey. This survey was completed by program staff (e.g., clinical directors, program directors) electronically via surveymonkey.com. Information from this survey was then merged, as new programmatic variables, into the NATSAP dataset.

Study Sample

While the NATSAP Research and Evaluation Network's database at the time of this study represented 3,041 clients from 23 participating programs, information for many of those participants was either missing or incomplete

as a result of the complexity and ongoing nature of the dataset. The sample ($N = 278$) for this study was selected from the dataset of clients because admission and discharge Y-OQ data, NATSAP SA-R data, and Brief Assessment of Therapeutic Modalities Survey data existed for each youth. This sample came from eight different member programs, whose names will be kept anonymous throughout this research. The majority of the sample was male (66.1%) with 33.9% of the population being female. The mean age for clients in this sample was 15.49 ($SD = 2.82$). The majority of the participants came from an OBH program ($n = 229$, 82.1%) with 17.9% ($n = 50$) of participants coming from RTCs. Within this sample, 72% of the clients with adequate data for this study came from one program ($n = 201$).

In order to control for the effects of program differences, a randomized subsample of participants was used from this overrepresented program ($n = 40$). Independent samples t tests were run to see if the mean scores for clients in the subsample were representative of that program's total sample. Analyses comparing means for age at admission, admission YOQ scores, discharge YOQ scores, changes in YOQ scores, and number of days of treatment found no statistical difference between the subsample data and the over represented program's data. With only the subsample included in the final dataset, this research incorporated data from 118 clients. Clients from RTCs accounted for 42% of the sample ($n = 50$), with the remaining 58% of clients ($n = 68$) representing OBH programs. Within the subsample, there is a nearly even mix of male (47%) and female (53%) clients represented. The OBH programs enrolled significantly ($t = -2.218$, $df = 133.024$, $p = .028$) older students ($M = 15.63$, $SD = 2.40$) while RTC clients were generally younger ($M = 14.94$, $SD = 1.63$).

RESULTS

Admission and Discharge Data

In order to examine the relationship between pre- and post-intervention scores for both OBH and RTCs, paired samples t tests were conducted using pre- and post-intervention YOQ-30 scores from each type of program. The OBH programs showed a significant ($t = 6.943$, $df = 67$, $p < .001$) decrease between admission scores ($M = 38.79$, $SD = 17.0$) and discharge scores ($M = 22.29$, $SD = 13.667$). RTCs also demonstrated a significant ($t = 8.141$, $df = 49$, $p < .001$) decrease between admission scores ($M = 53.54$, $SD = 17.318$) and discharge scores ($M = 27.78$, $SD = 18.750$). These results showed that both the OBH and RTC programs significantly reduced the YOQ-30 scores of their clients. To compare the populations sampled in OBH and RTC programs, an independent samples t test was run comparing the admission Y-OQ 30 scores for OBH and RTC programs. This analysis showed a significant difference ($t = 5.400$, $df = 69.942$, $p < 0.001$)

between YOQ admissions scores in RTC programs ($M = 53.54$, $SD = 17.32$) and OBH programs ($M = 39.05$, $SD = 16.57$). This suggests that the RTC clients in this sample from the database were more acute at admission than OBH participants. Additionally, an independent samples t test of this sample showed that these RTC programs had significantly ($t = 2.389$, $df = 63.868$, $p = .020$) larger change in Y-OQ 30 scores ($M = 25.76$, $SD = 22.376$) than OBH programs ($M = 17.67$, $SD = 18.19$).

Program Type and Length of Treatment

An independent samples t test was run to compare length of treatment between OBH and RTC programs. This analysis showed a significant difference ($t = 19.750$, $df = 277$, $p < 0.001$) between length of treatment (in days) in RTC programs ($M = 311.16$, $SD = 146.35$) and OBH programs ($M = 82.85$, $SD = 45.39$). To investigate the effect that type of program and length of treatment and their interaction have on change in YOQ-30 scores, a multiple regression analysis was conducted. This analysis was conducted on the full sample ($n = 279$) since program characteristics such as the use of adventure therapy were not included in the regression. The resulting estimated model was statistically significant ($F(3, 275) = 3.124$, $p = .026$, $R^2 = 0.033$); however, none of the variables were found to be significant predictors of change in Y-OQ 30 scores.

Individual and Program Characteristics

To determine which individual and programmatic characteristics were predictors for change in YOQ-30 scores, a stepwise multiple regression analysis was conducted. This analysis was conducted on the subsample ($n = 118$) to mitigate the bias of varying sample sizes from different programs. The resulting estimated model is statistically significant ($F(4, 66) = 21.402$, $p < .001$, $R^2 = 0.565$). Admission scores on the Y-OQ 30, gender, percentage of time spent engaging individually in adventure therapy activities, and percentage

TABLE 1 Regression Analysis Summary for Individual and Program Variables Predicting Change in YOQ-30 Scores

Variable	B	SEB	β
Admission Y-OQ 30 score	.779	.109	.666***
% of time spent engaging in individual adventure therapy	−.273	.108	−.217*
Gender (Male = O)	.107	.038	.604**
% of time spent on expeditions	.097	.042	.227*
$R^2 = .565$			
$F = 21.402$***			

Note. $n = 70$.
*$p < .05$. **$p < .01$. ***$p < .001$.

of time on expeditions proved to be a significant predictors of change in Y-OQ 30 scores (see Table 1). Individual variables that were significant in this model included Y-OQ 30 admission scores ($\beta = .779$, $t = 7.180$, $p < .001$) and gender ($\beta = .107$, $t = 2.893$, $p = .005$). Programmatic variables that were significant in this model included percentage of time spent on expedition ($\beta = .097$, $t = 2.323$, $p = .023$), and percentage of time spent engaging individually in adventure therapy activities ($\beta = -.217$, $t = -2.526$, $p = .014$). Overall, 56.5% of the change reported by youth on the Y-OQ can be accounted for by these independent variables.

In order to study which program characteristics were associated with clinical recovery, separate independent samples *t* tests were conducted using clinical recovery as the dependent variable for both RTC and OBH settings. Program characteristics analyzed for both types of programs included: age, admission score, days of treatment, percentage of time spent using adventure therapy as a group, percentage of time spent using adventure therapy individually, and percentage of time spent using adventure therapy as a family.

For RTCs, age, time spent using adventure therapy individually, and time spent using adventure therapy for groups had significant relationships with client recovery. Recovered clients in RTC programs ($n = 29$) were significantly ($t = -2.946$, $df = 48$, $p = .005$) older ($M = 15.48$, $SD = 1.27$) than clients that were not considered recovered ($M = 14.19$, $SD = 1.83$, $n = 21$). Recovered clients in RTC programs spent a significantly ($t = -3.369$, $df = 36.529$, $p = .002$) larger percentage of time in group adventure therapy ($M = 83.97$, $SD = 13.84$) than clients that were not considered recovered ($M = 68.33$, $SD = 17.70$). Recovered clients also spent a significantly ($t = 3.651$, $df = 48$, $p = .001$) smaller percentage of time in individual adventure therapy ($M = 3.793$, $SD = 9.32$) than clients that were not considered recovered ($M = 21.19$, $SD = 23.29$). For OBH programs, admission score was the only variable that had a significant relationship with client recovery. Clients that were considered recovered after treatment, entered treatment with significantly ($t = -2.881$, $df = 64.364$, $p = .005$) higher (more acute) admission scores ($M = 44.28$, $SD = 15.33$) than those that were not considered recovered ($M = 32.97$, $SD = 16.95$).

To assess if being considered recovered was associated with frequency of adventure therapy, independent samples Kolmogorov–Smirnov tests were conducted for both OBH and RTC programs. No significant association was found for either OBH ($p = .999$) or RTC programs ($p = .107$).

Chi-square analyses were run for both OBH and RTC programs, to assess the relationship between recovery status (Yes/No) and the following variables: referral for attention issues (Yes/No), referral for depression (Yes/No), referral for alcohol and substance abuse (Yes/No), referral for ODD (Yes/No), gender, history of physical abuse (Yes/No), and history of sexual abuse (Yes/No). In RTC programs, the relationship between recovery and referral for alcohol and substance abuse was significant [$x^2(1, N = 41) =$

4.209, $p < .040$]. Clients referred for alcohol and substance abuse were less likely to report scores classifying them as "recovered." The remainder of the chi-square analyses listed did not show significance at a $p < .05$ level, hence these characteristics did not make participants more likely to be considered "recovered" at discharge.

DISCUSSION

The purpose of this study was to determine the three following research questions:

1. Did program type and length of treatment predict change in client outcomes?
2. What individual and program characteristics were associated with clients who were considered "recovered" based on clinical outcome measures?
3. Did the frequency of adventure therapy activities predict change in client outcomes?

Program Type and Length of Treatment

The findings of this analysis offer several implications for both the OBH and private RTC industries. First, it is important to note that participants in both OBH and RTC programs discharged with mean Y-OQ 30 scores below the clinical cutoff score of 30. While both types of programs demonstrated significant mean changes in YOQ-30 scores after treatment, RTC participants in this sample showed a significantly larger decrease in scores, reflective of greater increases in functioning. At first glance, the difference between these two program types may appear to be related to length of treatment, since RTC programs had a significantly longer length of treatment. Results from the multiple regression analysis, however, draw this assumption into question since length of treatment, program type, and their interaction were not associated with change in Y-OQ 30 scores. Put simply, based on the regression, RTC programs were not more effective than OBH programs at predicting change, regardless of length of program, even though preliminary *t* tests suggested otherwise. While these results showed no significant relationship, and previous analyses accounted for a relatively small percentage of explained change, the relationship between length of treatment and outcome may be better understood if other aspects of the therapeutic process are more carefully controlled. This finding may also imply that change is likely determined by clients' individual treatment needs, rather than that of the program. Further research into this question might consider using more comprehensive measures that can account more specifically for issues of treatment fidelity.

Individual and Program Characteristics

Further analyses were conducted to examine whether specific client or programmatic characteristics predicted change in Y-OQ 30 scores. The resulting significant estimated model included two programmatic variables (percentage of time on expeditions, and percentage of time spent engaging individually in adventure therapy activities) and two individual variables (gender, admission Y-OQ 30 scores). Gender of client seemed to have the greatest impact on change in Y-OQ 30 scores. This finding shows that female clients experience greater change in OBH and RTC programs. While this information may have major implications to these industries, it is important to note that in this sample, gender and program type were moderately correlated [$r(115) = -.641$, $p < .01$], so differences between these two variables cannot be entirely separated. Since the majority of participants from RTC programs were female (78.9%), and the majority of participants from OBH programs were male (78.4%), it is difficult to determine whether gender or program type are related to the change in outcome scores. Despite this collinearity, this finding was consistent with previous research in the RTC industry showing that female participants fair better during treatment than males (Behrens & Satterfield, 2006).

Admission Y-OQ 30 scores were also found to be associated with change in Y-OQ 30 scores. The predicted coefficient for this variable indicated that clients beginning treatment with higher Y-OQ 30 scores may experience greater changes in outcome scores than clients entering with lower scores. This finding may be explained by the fact that the measure has an absolute minimum score of zero; therefore, individuals entering treatment with a score that is very high, have the opportunity to change more than individuals entering treatment with lower scores. While this finding may only be a matter of mathematics, it may also be explained that clients with higher Y-OQ 30 scores, and therefore greater behavioral dysfunction, may realize that they do indeed need help, or are more ready to change than individuals with lower levels of dysfunction. It is important to note that admission scores were moderately correlated with program type [$r(115) = -.394$, $p < .01$], so these two variables cannot be considered independent of each other. Since participants enrolling in RTC programs had higher average Y-OQ 30 scores, it is difficult to determine whether admission scores or program type are related to the change in outcome scores.

While the correlation of these individual variables with program type makes interpretation of those results ambiguous, the program variables that were found to be significant predictors of change in Y-OQ 30 scores are more easily understood. Percentage of time spent engaging in individual adventure therapy had a coefficient of $-.273$, indicating that individuals whose treatment included higher percentages of individually based adventure therapy had less change in Y-OQ 30 scores. Since this information was

gathered as part of a question that had respondents estimate the percent of time that clients engaged in adventure therapy individually, in groups, and with families (all totaling 100%), this finding may validate qualitative research (Russell, 2005; Russell & Gillis, 2010) and theoretical discussions (Russell, 2003; Russell & Hendee, 2000; Russell & Phillips-Miller, 2002) that speculate that the group and group process are an essential part of the adventure therapy and OBH processes.

Percentage of time spent on expedition also was found to be a significant predictor variable for change in Y-OQ 30 scores; however, this variable had a strong correlation with OBH programs [$r(116) = .968$, $p < .01$]. Further investigation of this variable is necessary in RTC settings as a result of the strong correlation between program type and percentage of time spent on the expedition.

The analyses investigating which programmatic and individual characteristics were associated with clinical recovery provided an interesting examination into who is emerging from both OBH and RTC programs successfully. The criteria for distinguishing recovery with the Y-OQ 30 were twofold. The first criterion was if the client's discharge score drops below the cutoff score (30) and the second was if the client's change in score from admission to discharge is above a cutoff (10). For RTC programs, age, time spent using adventure therapy individually and time spent using adventure therapy for groups had significant relationships with client recovery. This analysis shows that older clients are more likely to successfully "recover" in an RTC environment than younger clients. Previous research in private RTC settings found that age did not predict change in outcome measures; however, it did not investigate the relationship between age and recovery (Behrens & Satterfield, 2006). This contradiction may warrant further investigation to determine if this discrepancy is related to particular programs or programmatic characteristics.

The two analyses using percentage of time spent using adventure therapy individually and as a group both pointed toward the same finding, which is that clients that spend a greater percentage of time in group adventure therapy, rather than individual adventure therapy, are more likely to "recover" in an RTC environment. Similar to the results from the multiple regression, this finding seems to validate the importance of the group within adventure therapy. For OBH programs, only admission Y-OQ 30 scores were shown to be associated with being considered "recovered." As previously mentioned, this may either indicate that clients need to experience a certain level of dysfunction before they are prepared to change, or it may be an implication of the mathematical criteria for labeling a client as "recovered."

The results of the chi-square analysis showed that significantly fewer participants referred for alcohol and substance abuse in RTC programs reported scores classifying them as recovered. This result may be explained by the fact that the OQ family of assessments was designed to measure

general behavioral disturbances, rather than alcohol or substance abuse specific changes in attitudes, beliefs and frequency of use. However, further alcohol and substance abuse research may be warranted in the RTC industry.

Of these analyses, what may be more interesting than the significant findings discussed above, are the analyses for which significant associations were not found. For example, the chi-square analyses used to investigate individual characteristics compared to recovery status found no significant relationships between any of these variables. This may mean that OBH and RTC interventions are effective for a wide variety of clients, including those that are referred for attention issues, depression, Oppositional Defiant Disorder, history of sexual trauma, and history of physical trauma.

Frequency of Adventure Therapy

Finally, the frequency of adventure therapy activities was not found to be significantly related to participant recovery; however, the analysis for RTC programs seemed to be approaching significance and further research with more programs and greater statistical power may find a relationship between these two variables. The results of the analyses investigating programmatic variables seemed to illustrate the importance that future research to investigate what therapeutic elements are leading to client change. Prior authors encouraged this practice in future studies (Gillis et al., 2008; Russell & Gillis, 2010; Tucker & Rheingold, 2010), and this research demonstrated not only the variations between programs, but also the impact that these factors play on student outcomes.

Limitations

While this research revealed interesting predictor variables of change in Y-OQ 30 scores, and began to examine what programmatic and individual characteristics were associated with recovery in both the RTC and OBH environments, aspects of the study and dataset limit the generalizations that may be made from these findings. The primary limitation of this study results from the sample used to find participants that had all the necessary measures recorded and the effects of having a large portion of the sample representing a single program. As a result, the sample was not completely random or representative. At the time of this study, the NATSAP database had not reached its maturity, and various systems for data entry were still in the process of being implemented across programs, hence missing data on length of treatment, in particular, limited this subsample only to those programs that were further along in the data collection process. Information regarding race, ethnicity, and socioeconomic status was not included because of missing data. As a result, it is impossible to assert that RTC programs are in fact more effective than OBH programs. Finally, without the use of fidelity measures,

there was little consistency in the measures regarding programmatic variables and the delivery of adventure therapy. For example, practitioners at two different programs may both use adventure activities with therapeutic intentions; however, if one practitioner is assessing client needs and framing and debriefing activities, while the other fails to frame or debrief the activity, it is likely that they will have different outcomes. These outcomes are likely to affect research that groups them both simply as "adventure therapy" without controlling for the quality of the delivery.

Future Research

Future research in this area should not ignore the growing message from the literature base calling for a more careful investigation that includes treatment fidelity measures (Gillis et al., 2008; Russell & Gillis, 2010; Tucker & Rheingold, 2010). While the NATSAP database is growing every day, the industry will benefit from greater programmatic involvement and consistency. Additionally, more research investigating the significant differences in outcomes between genders in both types of programs is warranted. Finally, further investigation into the curious finding from this research showing higher admission scores being associated with change in outcomes and recovery status may reveal a need for more sensitive measures, or the importance of participant motivation or readiness to change.

CONCLUSIONS

The outcomes of this research demonstrated that length of treatment does not predict change in OQ measures, and that participation as part of a group may be an important aspect of adventure therapy. In addition, gender was shown to be an important variable in the treatment of adolescents in both the RTC and OBH environments. This research represents an important step in beginning to understand the differences between RTC programs and OBH programs, the clients that they serve, by examining which program and individual characteristics impact participants' outcomes. It also demonstrates a need for careful integration of treatment fidelity measures and more advanced statistical analyses that can account for the complex nature of data found within these industries.

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