# Report of Findings from a Multi-Center Study of Youth Outcomes in Private Residential Treatment

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## ABSTRACT

This paper presents the results from the first phase of a longitudinal, multi-center study of outcomes in private residential treatment. It is the first known large-scale attempt at a systematic exploration of client characteristics, treatment outcomes, and discharge predictors in private residential treatment. The sample of nearly 1000 adolescents, from nine private residential programs, was about equally likely to be male or female, from middle or upper socioeconomic backgrounds and predominately white. Ninety-five percent had prior treatment and 85% were treated for multiple presenting problems, the most common of which were disruptive behavior, mood, and substance abuse problems. Parents and adolescents reported significant improvement during treatment on adolescent communication, family relationships, and compliance. Analyses of variance indicated that both adolescents and parents reported a significant reduction in problems from admission to discharge, on each aggregate measure psycho-social functioning (Total Problems Scores, Internalizing Scales, and Externalizing Scales of the Child Behavior CheckList, CBCL, and Youth Self-Report, YSR) and every syndrome (16 YSR and CBCL Syndrome scales). Only two out of 22 treatment and non-treatment-related variables (Grade Point Average and Mood Disorder) interacted with outcomes. Furthermore, in stepwise regression analyses, testing a wide array of treatment and non-treatment variables, only a handful of variables predicted discharge functioning. Taken together, the analyses suggested that adolescent problems improve significantly during private residential treatment and that, with only a few exceptions, discharge functioning and in-treatment change are relatively similar, regardless of adolescent background, history, problems, and treatment factors. Implications and research recommendations are presented.

## INTRODUCTION

There is a dearth of published outcome research conducted in residential treatment and the existing research is fraught with problems (Curry, 1991; Epstein, 2004). One issue with this body of literature pertains to the samples, which were drawn primarily from public residential treatment programs (Curtis, Alexander, & Longhofer, 2001; Hair, 2005). Public residential treatment clients are typically referred thru public avenues (juvenile justice system, child protection agencies, or public mental health systems) (Curtis, et. al., 2001; Epstein, 2004; Hair,

2005) and funded with public money. Furthermore, they are predominantly males, who are disproportionately from ethic minority backgrounds. In private residential treatment, adolescents are typically placed by their parents, who pay for treatment. Though no client demographic and background information are available for private residential treatment programs, informal observation across a variety of programs suggests that clients are equally likely to be male or female, are predominately white, and come from upper middle class or upper class socioeconomic backgrounds. Based on the foregoing, there is a possibility that public residential treatment and private residential treatment are different services, utilized by different client populations. Nonetheless, literature reviews conceptualize private and public residential treatment research as one corpus of literature. Further complicating the issue, private residential treatment programs are so heterogeneous in terms of their treatment philosophy and services that in the relatively rare case of published research based on samples from private residential treatment, there is uncertainty about the degree to which the findings generalize to other private residential treatment programs (Curtis et al., 2001; Woodbury, 1999).

Another set of concerns about the residential treatment research corpus pertains to methodological flaws. Reviewers criticize this research for its poor samples, retrospective designs, unstandardized measures, and unsophisticated statistical analyses (Curry, 1991; Curtis et al., 2001; Epstein, 2004, Hair, 2005). The majority of studies use only one informant, even though the value of multiple informants has been established (Rend, 2005). Many studies use self-styled measures that lack normative data and psychometric rigor (Hair, 2005). There is lack of consensus on the timing and method of outcome measurement, making it difficult to integrate findings across studies. Sample sizes tend to be very small. Relatively few studies use advanced statistics that control for error or explore the impact of moderator and predictor variables. Reviewers have concluded that the effectiveness of residential care is largely unresolved in the research because of these and other methodological shortcomings.

Despite these limitations several conclusions have been drawn pertaining to this body of literature. Most adolescents improve during residential treatment. Though reported outcomes vary widely, ranging from about 25 % to 80%, reviews suggest that 60%-80% of adolescents improve during residential treatment (Curry, 1991; Curtis et al., 2001; Epstein, 2004; Hair, 2005; Wells, 1991). The following factors have been shown to predict outcome: age, intelligence, degree of pathology, stability of the discharge placement, aftercare participation, and the absence of externalizing behaviors (Connor, Miller, Cunninghan, & Melloni, 2002; Epstein, 2004; Gorske, Srebalus, Walls, 2003; Wells, 1991) Specifically, research suggests that adolescent females with high IQ, less severe dysfunction, acute and late onset, better academic ability, absence of learning disorders, low levels of behavioral problems, and high levels of internalizing problems tend to have positive outcomes. Some researchers have concluded that residential treatment is best for higher functioning, less vulnerable youth (Connor et al., 2002). One recent study that sampled from 17 public residential treatment programs, found that age and race predicted outcomes (Lyons, McCulloch, & Romansky, 2006), with mid-aged adolescents and African American adolescents having relatively worse outcomes. It bears repeating that the degree to which the findings within this corpus of research apply to *private* residential treatment programs is largely unknown.

This study attempted to add to the residential treatment literature by using a multi-center design, with repeated and standardized measures, prospective data, a large sample, and two informant groups. The questions were:

1) How do the two groups of informants (adolescents and parents) compare on their report of outcomes?

2) What are the characteristics of adolescents treated in private residential care?

3) To what degree do adolescents reportedly change during the course of treatment?

3a) How does reported adolescent functioning vary across the selected treatment outcomes (e.g., aggressive behavior, anxious/depressed symptoms, attention problems, aggressive behavior, communication quality, family relationships)?

3b) Do youth outcomes vary according to non-treatment factors (e.g., age, gender, prior treatment history, legal record, type of presenting problems, and number of presenting problems)?

3c) Do youth outcomes vary according to treatment factors (e.g., adolescent's response to placement at admission, length of stay, discharge status, satisfaction with treatment)?

4) What factors (treatment and non-treatment) predict adolescent functioning at the point of discharge?

## METHOD

### *Participants.*

The sample consisted of 993 adolescents, admitted to one of 9 programs located in the Eastern and Western United States, between August 2003 and August 2005, who, along with their parents or guardians (hereafter referred to as "parents") agreed to participate in the study and who completed measures at admission and/or discharge. The Western Institutional Review Board approved consent/assent forms and issued Certificates of Approval for the study.

The contribution of each of the 9 residential programs to the sample was relatively equal and ranged from 9% to 16%. This sample consisted of a mean of 55% (range 37-75%) of the adolescents admitted to the residential programs during the time period. Demographic information (i.e., gender, age) from admission data provided by the residential programs indicated the sample was roughly representative of students enrolled in the programs during the same time period.

### *Description of the residential programs.*

The 9 participating programs were private, out-of-home, licensed, therapeutic placements for adolescents and are member-programs of the National Association of Therapeutic Schools and Programs (NATSAP): Academy at Swift River, Aspen Ranch, Copper Canyon Academy, Mount Bachelor Academy, Stone Mountain School, Pine Ridge Academy, SunHawk Academy, Turnabout Ranch, and Youth Care, Inc. Residential treatment is a complex service that utilizes various approaches to the treatment of serious emotional and behavioral problems. Most adolescents are placed in private residential treatment by their parent(s): the juvenile justice and child welfare systems typically do not refer to these programs. Programs have on-site schools or academic programs and multi-disciplinary treatment teams. All programs provide group, individual, and family services, but the amount and type of each varies widely among the programs. During treatment, adolescents progress through "levels" associated with increasing privileges (e.g., possession of personal items, home visits) and responsibilities (e.g., peer mentoring, community leadership). Days are highly structured, with most time spent in school, community meetings, treatment groups, recreation, or counseling. Professional program staff includes social workers, psychologists, substance abuse counselors, marriage and family

therapists, counselors, teachers, nurses, and psychiatrists. The participating residential programs vary widely in terms of size (15-bed to 120-bed), location (Massachusetts, Utah, Arizona, Oregon, North Carolina), treatment philosophy (therapeutic boarding school or residential treatment, the latter of which is more clinically focused and designed for more severely impaired adolescents), and the range of interventions provided (e.g., equine therapy, neurofeedback, adventure therapy, partial community placements). The diversity of the participating programs is reflective of the diversity within the private residential treatment industry.

***Design and Measures.***

The data (N=993) formed three subsets, determined by the availability of admission and discharge data. The data subsets are 1) admission, 2) treatment outcome (admission and discharge), and 3) discharge. A single-group design was used for all subsets of data. A pretest-post-test design was used for the treatment outcomes data set (N of adolescents =403, N of parents=211) which was derived from parents and adolescents who completed measures at admission to and, subsequently, discharge from a program. Its purpose was to examine change in functioning during treatment. The admission data set (N of adolescents=754, N of parents = 635) was derived from parents and students who completed measures at admission. This data subset provided information on the characteristics of adolescents treated at private residential programs. The discharge subset of data (N of adolescents=616, N of parents = 404) was derived from parents and students who completed the measures at discharge and was used to identify predictors of discharge functioning.

For all data subsets the primary measures were the Child Behavior Check List (CBCL) and the Youth Self Report (YSR) (Achenbach, 2001), two widely used measures of adaptive and maladaptive psycho-social functioning. The reliability and validity of the CBCL and YSR Syndrome Scores, Internalizing and Externalizing Scores, and Total Problem Score have been demonstrated (e.g., Achenbach, 2001; Bérubé, & Achenbach, 2006). The CBCL is a parent-report measure of adolescent functioning that consists of 113 items. The YSR is a self-report measure that consists of 112 items. The measures have the same item format and scales, making them highly compatible. Items are rated on a three-point scale and are primarily objective or behaviorally anchored (e.g., “cries a lot”, “gets teased”, "fidgets”, “truant”). For the purposes of this study the following YSR and CBCL scales were used: Syndrome Scales (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Thought Problems, Attention Problems, Rule-Breaking Behavior, Aggressive Behavior), Internalizing (problems that are mainly within the self), Externalizing (problems that mainly involve conflict with other people and their expectations for the child), and Total Problems Score (the sum of all the problems reported on the measure). High scores on a scale indicate clinical deviations from the norm and the presence numerous problems. Each raw scale score can be converted into a T score, percentile rank, and range (Normal, Borderline Clinical, and Clinical). Scores are truncated on the Syndrome Scales at the $50^{th}$ percentile. The Normal range spans the $50^{th}$ to the $92^{nd}$ percentiles on the Syndrome Scales and $24^{th}$ to the $84^{th}$ percentile on the Internalizing, Externalizing, and Total Problems Scales. The Borderline Clinical range spans the $93^{rd}$ to $96^{th}$ percentile on the Syndrome Scales and $84^{th}$ to $91^{st}$ percentile on the Internalizing, Externalizing, and Total Problems Scales. The Clinical range on the Syndrome Scales spans the $97^{th}$ to $100^{th}$ percentile and on the Internalizing, Externalizing, and Total Problems Scales spans the $92^{nd}$ to $100^{th}$ percentiles. As recommended in the manual, this study used raw scores for statistical analyses, because T scores are truncated (Achenbach, 2001). Standard scores and percentile ranks were reported only for informational purposes, to provide information on the functioning of the sample relative to norms.

Background questionnaires were completed by both parents and adolescents at admission and discharge and assessed the adolescent’s treatment history, psychotropic medication use, legal

record, grade point average, matriculation in school, communication with family members, compliance with rules, relationship quality, drug use, and alcohol use. In addition, residential program staff completed a brief form for each adolescent at discharge that indicated discharge status, length of stay, and problems that were the focus of treatment (type and number).

Data gathered via the aforementioned measures were organized into the following groups of variables.

**I. Non-Treatment Variable Groups**

(1) **Demographic Variables**: age, gender, ethnicity, parental income,

(2) **Pre-Treatment Academic Functioning**: grade point average, matriculation,

(3) **Prior Treatment History**: psychiatric hospitalization, outpatient therapy, wilderness therapy, residential treatment, psychiatric medication,

(4) **Psychosocial Functioning:** YSR Internalizing Scale, YSR Eternalizing Scale, YSR Total Problems Scale, CBCL Internalizing Scale, CBCL Eternalizing Scale, CBCL Total Problems Scale, Adolescent communication with family, Adolescent Compliance with Rules, Adolescent Family Relationships,

(5) **Presenting Problems**: number of problems, mood disorder, substance abuse disorder, learning disorder, disruptive behavior disorders, eating disorders, anxiety disorders, developmental disorders, legal problems

**II. Treatment Variables Group:** Adolescent Reaction to Residential Placement at Admission, Adolescent and Parental Satisfaction with Treatment, Length of Stay, Adolescent and Parental Report of Overall Improvement Over the Course of Treatment, Self-Reported Amount of Effort in Residential Treatment, and Discharge Status.

The Discharge Status variable categorized students upon discharge, based on the clinical team's recommendations. The five categories included: With Maximum Benefit (e.g. planned discharge, graduation from program, treatment goals met); Premature, With Program Approval (e.g. some progress, but student did not benefit from full treatment); Premature, Against Program Advice (program recommended continued stay due to clear need for additional treatment); Treatment Beyond Scope of Program (program not a suitable match, transferred to a more appropriate setting); and Other. The Treatment Beyond Scope category was included due to concerns that programs would be "penalized" for making appropriate treatment recommendations that included transferring students to a different level of care. In this case, it was deemed that a program making an early referral for students who required alternative clinical care would constitute appropriate, ethical care rather than a "failure" on the part of the program. Of the initial sample of 551 adolescents, 50 fell into the Treatment Beyond Scope category. A repeated measures ANCOVA was used to test the interaction hypothesis that those in the Treatment Beyond Scope category show less progress than those in the other groups. Analysis confirmed that for most of the YSR and CBCL scales, those in the Treatment Beyond Scope group did indeed show a statistically significant difference in their admit to discharge progress. Because of the foregoing the Treatment Beyond Scope group was excluded from subsequent analysis.

## RESULTS

### *Comparisons of informant data.*

Although multiple informants are a "gold standard" in outcome research, there is little agreement on how to combine the data they produce. Until a systematic method of combining data is validated, experts recommend examining the contributions of each informant separately (Renk, 2005). This study did that. However, it seemed prudent to precede the study's fundamental analyses with an exploration of informant concordance, with the primary question being whether the reports of parents (other-report) and adolescents (self-report) were correlated.

Agreement between parent report and adolescent report was assessed with Pearson Correlation Coefficients. Admission and Discharge data was examined on the Internalizing, Externalizing, and Total Problems scales of the CBCL and YSR. Results were generally consistent with expectations. Correlations between Admissions scales (e.g. YSR Internalizing with CBCL Internalizing) ranged from ranged from .32 to .42 (Table 1). Correlations between Discharge scales ranged .23 to .34 (Table 1). Almost all correlations were significant at $p<.001$. These correlations were positive and significant, but weak in magnitude.

***Treatment and Non-Treatment Characteristics of adolescents in the private residential treatment sample.***

Participants were 54% male, with a mean age of 16 (SD=1.2). Most (87%) were Caucasian, with small percentages of other ethnic groups. The median annual family income was >$100,000. Ninety-seven percent of the adolescents were placed in treatment by their parents. The overwhelming majority of youth had been treated at other levels-of-care (95%). Specifically, 80% had received outpatient treatment in the prior year, 38% had a history of prior wilderness therapy, 33% had at least one psychiatric hospitalization, and 67% were prescribed psychotropic medication(s) within the 3 months prior to admission. Only 20% of the sample had a legal record. The average grade point average was 2.0 on a 4.0 scale (D). The majority of adolescents were treated for multiple problems (85.5%). The most frequent treatment foci were disruptive behavior disorders (44%), substance use disorders (36%), and mood disorder (31%) (percentages did not total 100% because participants could have more than one problem).

At admission, most adolescents indicated that they felt "neutral" about their placement in the residential program. The mean T-score on the CBCL Total Problems Scale at admission was 70, the mean T-score on the YSR Total Problems Scale was somewhat lower (61), but still significantly above the normal mean (25 for males, 23 for females). Percentile equivalents of the obtained T scores, were 97.5$^{th}$ for the CBCL and 88$^{th}$ for the YSR, which means that the adult-report and adolescent-report scores were higher than the scores obtained by 97.5% and 88%, respectively, of normal, non-clinical adolescents in the national normative sample (Achenbach, 2001). The average length of stay was 8.6 months for those discharged with maximum benefit and 6.5 months for who were discharged with partial benefit or against program advice. The majority discharged with program approval: 53% with maximum benefit, 19% prematurely but with approval, 15% against program advice, 8% needed treatment beyond the scope of the program, and 3% "other" discharge status.

***Change in functioning across outcomes***.

Paired samples *t*-tests were used to examine change in symptoms over the course of treatment. Table 2 and 3 present the mean raw scores, standard deviations, N, and *t*-test values, mean T scores, mean percentile rank, ranges for CBCL and YSR scales. In general, both adolescents and parents reported a significant decline in symptoms from admission to discharge, on all scales of the YSR and CBCL. Admission scores changed from the clinical (parent report) or borderline clinical (youth report) to the normal range over the course of treatment, on all of the aggregate scales of the ASEBA (Internalizing, Externalizing, and Total Problems Score). For example, parent report of externalizing behavior decreased from the 97$^{th}$ percentile at admission to the 67$^{th}$ percentile at discharge, which is well within the normal range. Adolescent report of externalizing behavior decreased from the 95$^{th}$ percentile at admission to the 70$^{th}$ percentile at discharge, which again is well within the normal range.

Syndrome scales of the YSR and CBCL also showed significant in-treatment changes. Although adolescents reported symptoms within the normal range on all YSR syndrome scales at admission (except Rule-Breaking Behavior, which was in the borderline clinical range) *t*-tests showed a significant decrease of symptoms during treatment. Admission scores on the CBCL syndrome scales changed from the clinical range for the Anxious/Depressed, Withdrawn/Depressed, Thought Problems, Rule-Breaking Behavior, and Aggressive Behavior Scales and the borderline clinical range on the Somatic Complaints, Social Problems, and Attention Problems scales to levels well within the normal range at discharge. Rule-Breaking Behavior showed the highest admission scores in both parent and adolescent report, with admit scores at the 98$^{th}$ and 97$^{th}$ percentile, respectively. At discharge, those scores decreased to the 72$^{nd}$ and 77$^{th}$ percentile, respectively. Again, the change during treatment on that scale, as with the others, was significant and reflected normal functional levels by discharge.

Parents' average appraisal of adolescent communication quality, compliance, and relationship quality was measured with a background questionnaire. Data showed statistically significant improvement from admission to discharge, with each factor shifting from "poor" at admission to "good" at discharge (Table 3). Adolescents were also surveyed for their appraisal of their communication quality, compliance, and relationship quality. Unlike their parents, they rated themselves as "adequate" on most items at admission. By discharge the adolescents appraised their communication, compliance, and relationships as "good" (Table 2). These results, which are more opinion-oriented than the items on the CBCL and YSR, suggest that parents and adolescents perceive positive in-treatment changes in functioning on broad relationship issues.

Outcome interaction effects were tested for variables in the following groups: Demographic Variables, Pre-Treatment Academic Functioning, Prior Treatment History, and Presenting Problems, as well as Discharge Status and Length of Stay (See ***Design and Measures***, above). An interaction effect indicates a change in scores from admission to discharge depends on the status of another variable. A repeated measures Analysis of Covariance (ANCOVA) was utilized to test interaction effects for the YSR and CBCL Internalizing, Externalizing, and Total Problems scales from admit to discharge. In general, few significant interaction effects were observed on these variables, suggesting that change in symptoms was comparable regardless of status on the measured variables (e.g., age, parental income, ethnicity, legal involvement, number of problems, type of problem, prior treatment, and prescribed medication).

There were two exceptions. On the YSR, Mood Problems showed statistically significant interaction on the Internalizing ($F$ (1,367) = 10.70, $p$ = .001), Externalizing ($F$ (1,367) = 11.40, $p$ = .001), and Total Problems scales ($F$ (1,367) = 12.52, $p < .001$) (Table 4). There was also a main effect, in which both groups made statistically significant improvements. These analyses suggest that, though adolescents with mood disorders show significant improvement over the course of treatment, their report of outcomes are not as positive as adolescents without mood problems. The T score equivalents of these raw scores are noted in Table 4 and indicate differences between groups are small.

Table 4. Interaction of Mood Problems with YSR Scores

| Youth Self Report |
|---|

| | Internalizing Score | | Externalizing Score | | Total Score | |
|---|---|---|---|---|---|---|
| | Admission | Discharge | Admission | Discharge | Admission | Discharge |
| Mood primary focus n=200 | 17.3 (T=60) | 12.2 (T=54.5) | 23.5 (T=66.5) | 14.7 (T=58) | 61.7 (T=62.5) | 42.5 (T=54) |
| Mood not primary focus n=169 | 17.7 (T=61) | 9.1 (T=50.5) | 23.6 (T=66.5) | 10.7 (T=53.5) | 60.9 (T=62) | 31.6 (T=49) |

There was a significant interaction effect for grade point average with CBCL Externalizing Scale: $F$ (1,192) = 5.03, $p$ = .007. (Table 5). Post hoc, multiple comparison tests showed that the interaction effect was attributable to differences between those with low and high grade point averages. These analyses suggest adolescents with low grade point averages reportedly had a relatively higher amount of externalizing behavior at admission, coupled with a greater degree of change on externalizing behavior during treatment, leading them to discharge with externalizing scores within the normal range and comparable to those with high grade point averages. Note that this interaction could be due, to some degree, to a floor effect on the CBCL.

Table 5. Interaction of Grade Point Average with CBCL

| | CBCL Externalizing Score | |
|---|---|---|
| | Admission | Discharge |
| Low Grade Point Average, (0.0-1.0) n=42 | 31.8 (T=72) | 7.7 (T=54.5) |
| High Grade Point Average (3.0-4.0) n=47 | 24.4 (T=68.5) | 7.9 (T=55) |

***Clinical significance of change:***

Over the last decade, there has been a movement to report treatment outcomes in terms of clinical significance. The goal of clinical significance testing is to answer these questions: What is the variability of response to treatment and what is the size or the potency of the outcomes? Although adolescents may show statistically significant reductions in symptoms, it is possible that the changes may not reflect meaningful improvement either because the behavior may continue to deviate from normality or because the magnitude of the change may not be reliable. In the present study, clinical significance was reported as a compliment to statistical significance scores.

On the YSR and CBCL total problems scale, using the Achenbach (2001) norms for males and females, the percentage of respondents reporting clinically significant change on the YSR and CBCL was calculated using the Jacobson and Truax (1991) method. The Jacobson and Truax

(1991) method uses two concepts, and corresponding statistical analyses, to address the issue of clinically significant change: recovery and reliability. Recovery occurs when the adolescent's level of symptoms at discharge is closer to the mean of the normal (nonclinical) population than to the mean of the clinical population. In simple terms, "recovery" is a measure of the quality of the change. Reliable change occurs when an adolescent's change in symptoms over the course of therapy is of sufficient magnitude (2 standard deviations) that it is likely to be bona fide and not due to measurement error.

First, reliable change and recovery were assessed using the male adolescents' report of symptoms on the YSR. Of the 155 males who completed the YSR at admission and discharge, 81% of adolescent males reported some amount or degree of symptom reduction. Of that, 31% reported improvement that exceeded the 2 standard deviation cut-off for reliable change (>28 raw score points) and 50% reported improvement below the cut-off for reliable change (<28 raw score points). On the other end of the continuum, relatively few adolescent males (19%) reported deterioration in symptoms over the course of treatment, of which 15% did not exceed the cut-off for reliable deterioration and 4% did. Next, the percentage of the sample that qualified as "recovered" was calculated. The majority of male adolescents (66%) reported symptoms at discharge that qualified them as "recovered" because their scores exceeded the cut-off score (raw score 44). In other words, by the point of discharge the majority of males reported symptoms that were more comparable to the normal population than to the clinical population. Combining the reliability and recovery scores statistically, 66% of adolescent males reported a change in symptoms that was both of sufficient quantity and quality that it was considered clinically meaningful or clinically significant.

Of the 107 parents of male adolescents who completed the CBCL at admission and discharge, 97% of the parents of adolescent males reported some degree or amount of symptom reduction. Of that, 85% reported improvement that exceed the cut-off for reliable change (> 21 raw score points) and 12% reported improvement below the cut-off for reliable change (<21 raw score points). Although 3% reported deterioration in symptoms over the course of treatment none reached the cut-off that marked reliable deterioration. Next, the percentage of the sample that qualified as "recovered" was calculated. The majority (89%) reported symptoms at discharge that qualify them as "recovered", because scores exceeded the cut-off score (raw score 45). Eighty-nine percent of male adolescents exceeded cut-off scores on both measures of clinical significance suggesting that the reported change in symptoms was both of sufficient quantity and quality that it is considered clinically meaningful.

Of the 203 female adolescents who completed the YSR at admission and discharge, 90% reported some degree or amount of symptom reduction. Of that, 48% reported improvement that exceeds the cut-off for reliable change (>29 raw score points) and 42% reported improvement below the cut-off for reliable change (<29 raw score points). Although 10% reported some deterioration in symptoms during treatment, only 1% reached the cut-off that marks reliable deterioration. The majority (78%) reported discharge symptoms that qualified them as "recovered" because scores exceeded the cut-off score (raw score 50). Combining these criteria, 78% of adolescent females reported a change in symptoms that was consistent with recovery and reliable change.

Of the 107 parents of female adolescents who completed the CBCL at admission and discharge 97% reported some degree of improvement in symptoms over the course of treatment. Of that, 85% reported changes in symptoms that exceeds the cut-off for reliable change (> 29 raw score points) and 12% reported improvement below the cut-off for reliable change (<29 raw score points). Although 3% reported some deterioration in symptoms, none reached the cut-off that marks reliable deterioration. Furthermore, 89% of the parents of female adolescents reported

discharge symptoms that qualify as "recovered" because scores exceed the cut-off score (raw score 45). Combining the criteria, 89% of parents of adolescent females reported a change in symptoms that was suggestive of recovery and reliable change.

The foregoing indicates more parents than adolescents reported clinically significant change during treatment. This finding should be interpreted in light of mean YSR and CBCL T scores (Tables 2 and 3). Mean T scores indicate the difference was primarily attributable to reported functioning at admission, not discharge. Compared to parents, adolescents reported fewer psychosocial symptoms at admission and therefore reached levels of functioning within the normal range while simultaneously reporting less change.

***Pre-treatment and treatment predictors of discharge functioning.***

The previous analyses examined reported change in functioning during treatment. The next set of analyses, regression analyses, examined variables that predict functioning at discharge. With regression analyses, measurement of change, per se, is not the goal. Instead, the goal is to identify factors that are most likely to correlate with psychosocial functioning at discharge. The difference between the analyses is subtle, but important. The former explores change during treatment, the latter explores predictors of discharge functioning.

Two series of preliminary stepwise regression analyses were conducted to identify the predictors of discharge functioning, one using the CBCL Total Problems Score as the dependent variable, the other using the YSR Total Problems Score as the dependent variable. The criterion for entry into the stepwise multiple regressions for all variables was .05. Categorical variables were recoded as dummy variables. All groups of variables (predictors) were used for both regression analyses (See ***Design and Measures***, above).

Using the CBCL Total Problems Score as the dependent variable, within the Demographic Variables group, only Males ($p < .003$) met the criterion for entry into a stepwise multiple regression. Within the Prior Treatment History group, only Prior Outpatient Therapy ($p < .008$) met the criterion, within the Psychosocial Functioning Pre-Treatment only Adolescent Compliance with Rules (at admission) met the criterion. Within the Treatment Factors group, three variables met the criterion: Parent Report of Overall Improvement ($p < .000$), Adolescent Report of Overall Improvement ($p < .005$), and CBCL Admission Total Problem Score ($p < .003$). None of the variables within the Pre-Treatment Academic Functioning or Presenting Problems groups met the criterion for entry into a stepwise multiple regression. In the final stepwise regression analysis, the previously identified significant variables were tested, in combination, as predictors of parent reported discharge functioning. See Table 6 for regression coefficients, *t* values, and significance levels. The final, best model indicated significant prediction of CBCL Total Problem Score by the five variables. The model of combined predictor variables accounted for 43% of the variation in parent report of treatment outcome ($p < .000$). These final results indicated that parents were more likely to report favorable outcomes for their adolescent under the following conditions: male gender, recent outpatient therapy, compliance with rules ($p = .08$) and relatively healthy functioning at admission, as well as a self-report and parent report of positive change during treatment.

Using the YSR Total Problems Score as the dependent variable, within the Pre-Treatment Presenting Problems group only Mood Disorder ($p < .02$) met the criterion for entry into a stepwise multiple regression. Within the Psychosocial Functioning Pre-Treatment group only YST Admission Total Problems Score met the criterion ($p < .000$). Within the Treatment Factors group, three variables met the criterion: Parental Satisfaction with the Program ($p < .006$), Self-Reported

Positive Experience in the Program ("How do you feel about your experience at this program?") ($p<.005$) and Adolescents Report of Overall Improvement ("Compared to when you began the program, how would you describe your problems?") ($p<.04$). None of the variables within the groups of Demographic Variables, Pre-Treatment Academic Functioning, or Prior Treatment History met the criterion for entry into a stepwise multiple regression. In the final stepwise regression analysis, the previously identified significant variables were tested, in a final combination, as predictors of youth-reported treatment outcome. See Table 7 for regression coefficients, *t* values, and significance levels. The final, best model indicated significant prediction of YSR Total Problem Score by the 5 variables. The model of combined predictor variables accounted for 42% of the variation in adolescent report of treatment outcome, which was a statistically significant portion ($p<.000$). These final results indicated that adolescents who had lower levels of psycho-social symptoms at admission (adolescent report), the absence of a mood disorder, a positive experience in the program, a sense that their problems had improved, and parents who were satisfied with the program were more likely to report positive outcomes at discharge from residential treatment.

**CONCLUSIONS**

This is the first known large-scale attempt within private residential treatment at a systematic exploration of client characteristics, treatment outcomes, and discharge predictors. The 992 adolescents were sampled from nine private residential programs that vary widely in their approach and services, a variety which is believed to be a reflection of the private residential treatment network. The "typical" client in the programs is a white, upper-middle to upper-class, 16 year old male or female with prior treatment failures, who is functioning below average academically and has multiple psycho-social problems. The most common problems treated are disruptive behavior, substance use, and mood disorders. Most adolescents do not have a legal record.

This present sample seems to be quite different from the samples reported in public residential treatment studies. Whereas public residential treatment clients are primarily males who are disproportionately from ethic minority backgrounds and referred by public authorities, it appears that private residential treatment clients are equally likely to be male or female, unlikely to be from ethnic minority backgrounds and are placed in treatment by their parents. These preliminary data lend credence to the possibility that private and public residential treatment have distinct treatment and research. That possibility needs to be explored with more rigorous, experimental designs directly comparing the two groups. If further research bears that out, there is a dearth of outcome data applicable to private residential care. In that case, the private residential treatment network would have a compelling need to pursue more active, rigorous outcome research to establish it as a treatment setting with unique characteristics and outcomes.

Data suggest that the correlations between parents and adolescents reports on psycho-social functioning are weak in magnitude, though in the expected direction, and comparable to those reported in the YSR and CBCL manual (Achenbach, 2001). The finding of only modest correlations underscores the value of surveying both groups of informants in adolescent outcome research. Consistent with other research (Achenbach, 2001; Renk, 2005), this study suggests that the groups of informants have different views on adolescent functioning.

Adolescents in private residential treatment seem to have serious psycho-social problems. At admission, both adolescents and parents report a total number and severity of problems that are

significantly above the mean for the normal same-aged population. Parent report places the adolescent in the clinical range of functioning; adolescent report places the adolescent in the normal (but high normal) or borderline range of functioning. Adolescents' general psychosocial functioning at admission was at the 97th percentile, according to parent report, and the 88th percentile, according to adolescent report. Simply put, at admission parents and adolescents view problems as worse than 97% and 88%, respectively, of normal, non-clinical adolescents in the national normative sample. Other study variables are suggestive of high levels of adolescent dysfunction or distress: the extensive treatment history of the adolescents (95% had prior treatment at least one level-of-care), the high percentage of adolescents treated for multiple problems during residential care (85%), and the 8 month average length-of-stay for those discharged with maximum benefit.

According to both informants, adolescents typically improve during treatment. In fact, both adolescents and parents report a significant decline in problems from admission to discharge, on every measured outcome that captures signs of global psycho-social change (CBCL and YSR Total Problems Scores, Internalizing Scales, and Externalizing Scales) as well as change at a syndrome level (YSR and CBCL syndrome scales). Parents reported that adolescents' internalizing problems decreased from the 97th percentile at admission to the 72nd percentile at discharge. Adolescents reported a similar change in internalizing problems: the scores reflected a decrease from the 85th to the 56th percentile, according to adolescent report. Externalizing problems had a comparable change during treatment. Parents reported adolescents' externalizing problems decreased from the 97th percentile at admission to the 67th percentile at discharge. Adolescents reported a similar change in externalizing problems: the scores reflected a decrease from the 95th to the 70th percentile, according to adolescent report. Perhaps the most striking and meaningful outcome results are that scores changed from the clinical (parent report) or borderline clinical (adolescent report) to the normal range over the course of treatment, on all of the aggregate scales of the ASEBA (Internalizing, Externalizing, and Total Problems Score). Furthermore, parents and adolescents reported significant adolescent improvement on communication, family relationships, and compliance by the point of discharge. It seems that during treatment adolescents experience broad improvement, across many areas of functioning.

Treatment outcomes generally do not vary according to prior treatment history, presenting problems, or demographic variables. In other words, change in functioning during treatment does not depend on age, gender, ethnicity, parental income, number and type of problems, presence/absence of psychiatric mediation, prior treatment, length of stay, or discharge status. Some of these "null" findings are surprising and merit additional research attention. For example, a critical mass of research suggests that those with relatively severe problems, which in this study are inferred from the use of psychiatric medication, the number of problems treated during residential care, and/or prior treatment history, would change less during treatment (Connor et al., 2002; Curry, 1991; Epstein, 2004; Gorske et al., 2003; Hussey & Guo, 2002). However, that was not the case in the present study. Furthermore, prior research suggests that those with legal problems and disruptive behavior change less over the course of treatment than those who do not (Connor et al., 2002). Again, that was not the case in this study. Perhaps one explanation for some of the "null" findings of the present study lies within the differences between private and public residential treatment clientele and services, but again that hypothesis needs further exploration.

Data suggest length of stay and discharge status does not correlate with differences in outcome. In other words, the degree of change in functioning does not depend on the duration of treatment

or the discharge status. These findings, at first blush, are surprising. However, it seems reasonable that length of stay would not moderate outcome because many of the participating residential programs individualize length of stay based on the functional status of the adolescent, not elapsed time in treatment. The finding that discharge status does not predict the degree of change is harder to understand. One possibility is that because parents are often confronted by clinical staff if they discharge an adolescent against program advice, they, along with their adolescent, may have a conscious or unconscious motivation to underreport problems. Perhaps existing differences between those who discharged with and without program advice were masked by a desire to "look good" in the group who discharged against program advice. Another possibility is suggested by the length of stay for those who discharge against program advice. That group has an average length-of-stay of about 6 months. Had the length-of-stay for that group been shorter, for instance 2 or 3 months, relatively less change in problems would be expected. However, in this case, those who left against program advice left, on average, during the last stage of treatment. Clinical staff in private residential care often devote the last few weeks or months to consolidation of gains and transfer of skills. In essence, this last phase is typically designed to solidify change. Parents and adolescents who discharge against program advice during this last phase may not appreciate the need for continued care because problems appear resolved. This study presents data from the first phase of a two part study. In the second phase of the study, the same adolescents will be assessed for maintenance of gains in the 12 months following discharge. It will be of interest to explore the role of discharge status on reported outcomes with that data set.

The change in adolescent functioning, measured over the course of treatment, was found to be clinically significant: both parents and adolescents reports indicate that the majority of adolescents experience an amount of change that is reliable and qualifies as "recovered" at the point of discharge. These values are somewhat greater than those cited in the residential treatment literature (Curtis et al., 2001; Curry 1991; Epstein, 2004; Hair, 2005; Wells, 1991.).

An important secondary finding is that very few adolescents decline in functioning over the course of treatment. This finding is significant when considered in light of research that has raised the possibility that group-based adolescent treatment can lead to deterioration, in certain instances. Specifically, some research has found that association with deviant peers in therapy may increase problematic behaviors, such as externalizing behavior and substance use (Dishion, McCord, & Poulin, 1999). Residential programs typically treat adolescents with high levels of externalizing behavior and, therefore, have a compelling need to address the question of "deviancy training" arising within the literature. This study suggests that, even when the majority of adolescents have high levels of externalizing symptoms, there is no evidence of a "deviancy training" effect.

The results discussed thus far indicate that the majority of adolescents reportedly change in positive, meaningful and reliable ways during private residential treatment. Regression analyses complement the outcome analyses by identifying factors that predict healthy functioning at discharge. Parents report somewhat better discharge functioning if, at admission, the adolescent has few symptoms, is compliant with rules, and had outpatient therapy and if, at discharge, both parent and adolescent have a strong sense of overall improvement. Offering a different predictor profile, adolescents report relatively better discharge functioning when they view themselves as having good functioning at admission and if, by discharge, they have not been treated for a mood disorder, have a sense of improvement and, along with their parents, a sense of satisfaction. In essence, most predictors of discharge scores are redundant with outcome (i.e., satisfaction, sense

of improvement and change) or functioning at admission (CBCL & YSR Admission Total Problems, compliance at admission). Furthermore, the regression data suggest that adolescents function about equally well at discharge regardless of their demographic profile (except gender), type and severity of problems (except mood disorder), or the prior treatment history (except outpatient therapy). In this case, as with interaction effects, most of the variables do not predict discharge functioning. Private residential treatment seems to serve a wide-variety of adolescents well. The "null" findings are somewhat surprising given that prior research suggests that adolescent age and problem severity and type are associated with outcome (Connor et al., 2002; Curry, 2004; Epstein, 2004).

Three predictors, within the models, are especially clinically relevant: mood disorder (adolescent model), male adolescents (parent model) and prior outpatient therapy (parent model). Adolescents report better discharge functioning when they do not have mood problems. Those with mood disorder improve in broad and meaningful ways; however those without mood problems have slightly better scores than those with mood problems. It is possible that the nature of mood problems, of which most are cyclic or chronic, have a degree of enduring or residual symptoms that persist over the course of treatment. Parents report better discharge functioning for their male adolescents and for those who had prior outpatient therapy. Perhaps outpatient therapy primes youth for residential therapy. Perhaps males are more likely than females to display signs or behaviors that are indicative of healthy functioning at discharge. Further research exploring these variables is needed. Note that, based on the analyses of outcomes, meaningful and positive change occurs for adolescent females, who have not had outpatient therapy and for those with mood problems. The regression analyses merely isolate subtle differences present at discharge; results should be interpreted in light of that.

The information gained from regression analyses has an important implication for private residential care. Identification of factors related to predicators of healthy functioning at discharge promotes comprehensive understanding of treatment effectiveness. This study represents a first step in that direction. Ultimately, information on predictors could be used to define the type of adolescents best served by private residential care, as well as the particular residential treatment services that correlate with positive discharge functioning.

This study addresses some flaws of previous research, most notably by using multiple informants, outcome measures with normative data, and a large, multi-center sample. This study's sample size is large and drawn from nine residential treatment programs that vary widely, enhancing the degree to which the findings can be generalized to private residential treatment as a whole. Multiple informants provided slightly different perspectives thereby enriching what is known about adolescent functioning during treatment. The CBCL and YSR, the major outcome measures, were selected because they are empirically validated. Furthermore, the CBCL and YSR have normative data based on both clinical and normal samples that are based on large samples of youth and parents who were carefully chosen to be representative of the population. In the absence of a control group, the YSR and CBCL normative data is important because it allows for evaluation of sample functioning in relation to normal as well as clinical adolescents.

A number of issues warrant further research attention. First, like most outcome research in residential treatment, this study did not use a control group. The lack of experimental designs (i.e., control groups, random assignment to different conditions) in residential treatment outcome research is probably a common occurrence because of the practical and ethical constraints involved with leaving seriously disturbed adolescents untreated or treated at a lower level-of-care. In this age of outcome-based contracting and evidence-based practice standards it is clearly desirable to use more robust, experimental designs when possible. Curry (1991) has suggested

some creative alternatives to classic experimental design which use within-program and across program comparison groups. His recommendations are practical and may be a reasonable "next step" in research designs.

Future research in private residential treatment needs to address the question of post-discharge maintenance of treatment gains. The residential treatment literature indicates that a significant portion of adolescents who function well at discharge subsequently experience a decline when transferred to a lower level-of-care (Curry, 1991; Epstein, 2004; Hair, 2005). The second phase of this study will explore that issue using the private residential data of the present study as the point of comparison.

Private residential treatment research would also benefit from process-focused studies that attempt to attribute change to specific components of treatment. Private residential care is so multi-facetted and complex that it is less an intervention and more a "tapestry" of interventions (Fahlberg, 1990). As such, attempts to tie program components to outcomes would have profound clinical implications.

Whether in process or outcome studies, future research in private residential treatment should pay attention to the role of three factors: the "trajectory of change", family involvement, and aftercare. One study in public residential treatment found the majority of change in residential treatment occurs within the first 3 months (Shapiro, Welder, & Pierce, 1999). Studies should explore the trajectory of change by measuring the type and amount of change at regular intervals over the course of treatment. Curry (2004) noted that new, advanced statistical methods, such as Hierarchical Linear Modeling, facilitate the analyses of data designed to specify the trajectory of change. A critical mass of research indicates that family involvement is a predictor of treatment outcome (See Hair, 2005 for a review). Future studies would do well to explore the role of families in adolescents' treatment. In addition, the research indicates that aftercare services and the discharge environment predict maintenance of gains after treatment (Curry, 1991; Epstein, 2004; Whittaker, 2004). Research that examines the role of aftercare factors in the maintenance of treatment gains would foster the conceptualization that private residential treatment is one service within a continuum and may clarify its role relative to other types of mental health services.

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**Table 1. Pearson Product Moment Correlations between Adolescent and Parent Report on YSR and CBCL Scales**

| Variables | YSR Internal, Admit | YSR External, Admit | YSR Total Problems, Admit | CBCL Internal, Admit | CBCL External, Admit | CBCL Total Problems, Admit | YSR Internal, Discharge | YSR External, Discharge | YSR Total Problems, Discharge | CBCL Internal, Discharge | CBCL External, Discharge | CBCL Total Problems, Discharge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| YSR Internalizing, Admit | 1 | .314(**) | .836(**) | .357(**) | .054 | .284(**) | .431(**) | .067 | .289(**) | .312(**) | .156(*) | .270(**) |
| YSR Externalizing, Admit | .314(**) | 1 | .746(**) | -.042 | .417(**) | .226(**) | .197(**) | .343(**) | .300(**) | .011 | .158(*) | .125 |
| YSR Total Problems, Admit | .836(**) | .746(**) | 1 | .210(**) | .239(**) | .315(**) | .404(**) | .250(**) | .388(**) | .190(**) | .171(*) | .235(**) |
| CBCL Internalizing, Admit | .357(**) | -.042 | .210(**) | 1 | .248(**) | .756(**) | .214(**) | -.083 | .076 | .463(**) | .107 | .310(**) |
| CBCL Externalizing, Admit | .054 | (**) | .239(**) | .248(**) | 1 | .748(**) | .082 | .151(**) | .128(*) | .133 | .295(**) | .257(**) |
| CBCL Total Problems, Admit | .284(**) | .226(**) | .315(**) | .756(**) | .748(**) | 1 | .214(**) | .072 | .174(**) | .357(**) | .248(**) | .383(**) |
| YSR Internalizing, Discharge | .431(**) | .197(**) | .404(**) | .214(**) | .082 | .214(**) | 1 | .602(**) | .886(**) | .339(**) | .286(**) | .347(**) |
| YSR Externalizing, Discharge | .067 | .343(**) | .250(**) | -.083 | .151(**) | .072 | .602(**) | 1 | .872(**) | .155(*) | .228(**) | .210(**) |
| YSR Total Problems, Discharge | .289(**) | .300(**) | .388(**) | .076 | .128(*) | .174(**) | .886(**) | .872(**) | 1 | .259(**) | .275(**) | .308(**) |
| CBCL Internalizing, Discharge | .312(**) | .011 | .190(**) | .463(**) | .133 | .357(**) | .339(**) | .155(*) | .259(**) | 1 | .633(**) | .862(**) |
| CBCL Externalizing, Discharge | .156(*) | .158(*) | .171(*) | .107 | .295(**) | .248(**) | .286(**) | .228(**) | .275(**) | .633(**) | 1 | .897(**) |
| CBCL Total Problems, Discharge | .270(**) | .125 | .235(**) | .310(**) | .257(**) | .383(**) | .347(**) | .210(**) | .308(**) | .862(**) | .897(**) | 1 |

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

**Table 2. Youth-Report Variables**

| Variables | M Raw Score | N | SD | t | p | Mean T Score | Mean Percentile | Range |
|---|---|---|---|---|---|---|---|---|
| Communication with Parents [a] | | | | | | | | |
| Admission | 3.14 | 372 | 1.13 | | | | | |
| Discharge | 4.31 | 372 | 0.76 | 0.20 | 0.000 | | | |
| Compliance with Rules [a] | | | | | | | | |
| Admission | 3.20 | 371 | 1.08 | | | | | |
| Discharge | 4.14 | 371 | 0.74 | 0.06 | 0.285 | | | |
| Relationship with Parent(s) [a] | | | | | | | | |
| Admission | 3.28 | 370 | 1.08 | | | | | |
| Discharge | 4.36 | 370 | 0.75 | 0.26 | 0.000 | | | |
| Relationship with Other Family [a] | | | | | | | | |
| Admission | 3.61 | 371 | 0.99 | | | | | |
| Discharge | 4.13 | 371 | 0.77 | 0.12 | 0.023 | | | |
| Psychiatric Medication Prescribed Prior 3 Months [c] | | | | | | | | |
| Admission | 1.29 | 354 | 0.62 | | | | | |
| Discharge | 1.38 | 354 | 0.49 | | | | | |
| YSR Scales | | | | | | | | |
| Anxious/Depressed | | | | | | | | |
| Admission | 7.70 | 369 | 5.50 | | | 60 | 84 | Normal |
| Discharge | 4.82 | 369 | 4.23 | 0.40 | 0.000 | 53 | 63 | Normal. |
| Anxious/Withdrawn | | | | | | | | |
| Admission | 5.29 | 369 | 3.31 | | | 59 | 82.5 | Normal |
| Discharge | 2.93 | 369 | 2.73 | 0.40 | 0.000 | 52 | 60 | Normal |
| Somatic Complaints | | | | | | | | |
| Admission | 4.55 | 369 | 3.65 | | | 57.5 | 77.5 | Normal |
| Discharge | 2.80 | 369 | 2.91 | 0.45 | 0.000 | 62 | 59 | Normal |
| Social Problems | | | | | | | | |
| Admission | 5.02 | 369 | 3.44 | | | 58 | 79 | Normal |
| Discharge | 3.40 | 369 | 2.65 | 0.47 | 0.000 | 54 | 67 | Normal |
| Thought Problems | | | | | | | | |
| Admission | 6.51 | 369 | 4.32 | | | 60 | 84 | Normal |
| Discharge | 4.29 | 369 | 3.83 | 0.40 | 0.000 | 54.5 | 68 | Normal |
| Attention Problems | | | | | | | | |
| Admission | 8.62 | 369 | 3.78 | | | 61.5 | 87 | Normal |
| Discharge | 5.82 | 369 | 3.40 | 0.47 | 0.000 | 53 | 61 | Normal |
| Rule-Breaking Behavior | | | | | | | | |
| Admission | 12.64 | 369 | 6.29 | | | 69 | 97 | Borderline |
| Discharge | 5.78 | 369 | 4.89 | 0.32 | 0.000 | 57 | 77 | Normal |
| Aggressive Behavior | | | | | | | | |
| Admission | 10.94 | 369 | 5.96 | | | 59.5 | 83 | Normal |
| Discharge | 6.77 | 369 | 5.22 | 0.37 | 0.000 | 52 | 59 | Normal |
| Internalizing | | | | | | | | |
| Admission | 17.54 | 369 | 10.53 | | | 60.5 | 85 | Borderline |
| Discharge | 10.55 | 369 | 8.34 | 0.43 | 0.000 | 51.5 | 56 | Normal |
| Externalizing | | | | | | | | |
| Admission | 23.57 | 369 | 10.99 | | | 66.5 | 95 | Clinical |
| Discharge | 12.54 | 369 | 9.45 | 0.34 | 0.000 | 55.5 | 70.5 | Normal |
| Total | | | | | | | | |
| Admission | 61.26 | 369 | 25.94 | | | 62 | 88 | Borderline |
| Discharge | 36.61 | 369 | 23.53 | 0.39 | 0.000 | 51.5 | 56 | Normal |

*Note:* [a] Scale 1-5, with 1 = “Very Poor” and 5 = “Excellent”. [b] Scale 1-7, with 1="none" and 7 = "50 or more times" [c] Yes = 1, No = 2

Table 3. Parent-Report Variables

| Variables | M Raw Score | N | SD | t | p | Mean T Score | Mean Percentile | Range |
|---|---|---|---|---|---|---|---|---|
| Communication with Parents [a] | | | | | | | | |
| Admission | 2.60 | 194 | 1.14 | | | | | |
| Discharge | 3.90 | 194 | 0.89 | 0.26 | 0.000 | | | |
| Compliance with Rules [a] | | | | | | | | |
| Admission | 2.12 | 193 | 1.18 | | | | | |
| Discharge | 3.84 | 193 | 0.87 | 0.26 | 0.000 | | | |
| Relationship with Parent(s) [a] | | | | | | | | |
| Admission | 2.70 | 194 | 1.06 | | | | | |
| Discharge | 3.98 | 194 | 0.79 | 0.26 | 0.000 | | | |
| Relationship with Other Family [a] | | | | | | | | |
| Admission | 2.60 | 192 | 0.92 | | | | | |
| Discharge | 3.81 | 192 | 0.77 | 0.20 | 0.006 | | | |
| Psychiatric Medication Prescribed Prior 3 Months [c] | | | | | | | | |
| Admission | 3.42 | 107 | 1.37 | | | | | |
| Discharge | 4.52 | 107 | 0.73 | | | | | |
| Grade Point Average (4 pt scale) | | | | | | | | |
| Admission | 2.01 | 163 | 1.02 | | | | | |
| Discharge | 2.88 | 163 | 0.79 | 0.32 | 0.000 | | | |
| Matriculation [d] | | | | | | | | |
| Admission | 3.10 | 180 | 0.88 | | | | | |
| Discharge | 3.58 | 180 | 1.03 | 0.54 | 0.000 | | | |
| CBCL Scales | | | | | | | | |
| Anxious/Depressed | | | | | | | | |
| Admission | 8.43 | 192 | 4.73 | | | 66 | 94.5 | Borderline |
| Discharge | 4.00 | 192 | 3.81 | 0.51 | 0.000 | 56 | 72 | Normal. |
| Anxious/Withdrawn | | | | | | | | |
| Admission | 6.88 | 192 | 3.34 | | | 68 | 96 | Borderline |
| Discharge | 2.68 | 192 | 2.68 | 0.37 | 0.000 | 56 | 72 | Normal |
| Somatic Complaints | | | | | | | | |
| Admission | 3.58 | 192 | 3.25 | | | 61.5 | 87 | Normal |
| Discharge | 1.45 | 192 | 2.09 | 0.44 | 0.000 | 54 | 65 | Normal |
| Social Problems | | | | | | | | |
| Admission | 4.89 | 192 | 3.46 | | | 63 | 90 | Normal |
| Discharge | 1.92 | 192 | 2.52 | 0.60 | 0.000 | 53 | 61 | Normal |
| Thought Problems | | | | | | | | |
| Admission | 5.33 | 192 | 4.03 | | | 67 | 95 | Borderline |
| Discharge | 2.16 | 192 | 2.59 | 0.39 | 0.000 | 55 | 70 | Normal |
| Attention Problems | | | | | | | | |
| Admission | 10.20 | 192 | 3.67 | | | 63 | 90.5 | Normal |
| Discharge | 4.43 | 192 | 3.45 | 0.355 | 0.000 | 55 | 70 | Normal |
| Rule-Breaking Behavior | | | | | | | | |
| Admission | 13.79 | 192 | 5.77 | | | 72 | 98.5 | Clinical |
| Discharge | 3.54 | 192 | 4.18 | 0.3 | 0.000 | 56 | 72 | Normal |
| Aggressive Behavior | | | | | | | | |
| Admission | 14.32 | 192 | 6.37 | | | 67 | 95 | Borderline |
| Discharge | 4.32 | 192 | 4.84 | 0.35 | 0.000 | 53 | 61 | Normal |
| Internalizing | | | | | | | | |
| Admission | 18.91 | 192 | 8.86 | | | 68 | 97 | Clinical |
| Discharge | 8.15 | 192 | 7.21 | 0.46 | 0.000 | 56 | 72 | Normal |

Table 3. Parent-Report Variables

| Variables | | M Raw Score | N | SD | t | p | Mean T Score | Mean Percentile | Range |
|---|---|---|---|---|---|---|---|---|---|
| Externalizing | | | | | | | | | |
| | Admission | 28.11 | 192 | 10.15 | | | 70 | 97.5 | Clinical |
| | Discharge | 7.87 | 192 | 8.44 | 0.30 | 0.000 | 54.5 | 67 | Normal |
| Total | | | | | | | | | |
| | Admission | 72.77 | 192 | 23.10 | | | 70 | 97.5 | Clinical |
| | Discharge | 26.91 | 192 | 22.47 | 0.38 | 0.000 | 54.5 | 67 | Normal |

*Note*: [a] Scale ranges from 1-5. [b] Scale ranged from 1-7, with 1 = "none" and 7 = "50 or more times" [c] Yes = 1, No = 2 [d] Scale ranged from 1-5, with 1 = "More than one year behind" and 5 = "Ahead of schedule"

Table 6. Stepwise Regression Predicting Parent-Reported Discharge Functioning

**Variance Explained**

| R | R Square | Adjusted R Square | Std Error of Estimate |
|---|---|---|---|
| 0.654 | 0.427 | 0.395 | 15.369 |

**Anova Results**

| | Sum of Squares | Df | Mean Square | F Value | p |
|---|---|---|---|---|---|
| Regression | 18519.334 | 6.000 | 3086.556 | 13.067 | 0.000 |
| Residual | 24802.229 | 105.000 | 236.212 | | |
| Total | 43321.563 | 111.000 | | | |

**Regression Coefficients**

| | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. |
| (Constant) | 86.870 | 14.239 | | 6.101 | 0.000 |
| Males | -9.560 | 3.125 | -0.243 | -3.059 | 0.003 |
| Parent Report Compliance at Admission | -2.553 | 1.441 | -0.139 | -1.772 | 0.079 |
| CBCL Admit Total Problems | 0.231 | 0.076 | 0.244 | 3.018 | 0.003 |
| Parent Report Change in Problems | -10.883 | 1.966 | -0.421 | -5.535 | 0.000 |
| Adolescent Report Change in Problems | -4.970 | 1.719 | -0.222 | -2.892 | 0.005 |
| Outpatient Therapy | 9.105 | 3.351 | 0.205 | 2.717 | 0.008 |

Dependent Variable: CBCL Total Problems Score

Table 7. Stepwise Regression Predicting Youth-Reported Discharge Functioning

**Variance Explained**

| R | R Square | Adjusted R Square | Std Error of Estimate |
|---|---|---|---|
| 0.651 | 0.424 | 0.397 | 20.909 |

**Anova Results**

| | Sum of Squares | Df | Mean Square | F Value | p |
|---|---|---|---|---|---|
| Regression | 33807.286 | 5.000 | 6761.457 | 15.466 | 0.000 |
| Residual | 45904.606 | 105.000 | 437.187 | | |
| Total | 79711.892 | 110.000 | | | |

**Regression Coefficients**

| | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. |
| (Constant) | 113.912 | 15.375 | | 7.409 | 0.000 |
| Mood | 9.504 | 4.164 | 0.177 | 2.283 | 0.024 |
| YSR Total Admission | 0.343 | 0.079 | 0.331 | 4.334 | 0.000 |
| Quality of Adolescent's Experience in Program | -9.362 | 3.287 | -0.296 | -2.848 | 0.005 |
| Parental Satisfaction | -6.603 | 2.376 | -0.214 | -2.778 | 0.006 |
| Adolescent Report of Improvement | -7.013 | 3.391 | -0.211 | -2.068 | 0.041 |

Dependent Variable: YSR Total Problems Score