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Comparing Psychiatric Symptoms among Children of Substance-Abusing Parents With Different Treatment Histories

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Abstract

It appears that no studies to date have compared the psychiatric functioning of children of substance-abusing parents (COSs) across substance abuse treatment histories (e.g., inpatient, outpatient, residential). Different treatment histories may reflect differences in the severity of drug use, degree of impairment, or drug of choice, which may result in different symptomatology among COSs. Moreover, this information may be important for family-based treatment and prevention planning. In the current study, we examine psychiatric symptoms experienced by children whose parents have different addiction treatment histories. Eighty-one parents in treatment for a substance use disorder who had a 2-8 year old child completed an anonymous, computerized assessment. Respondents reported on their child's symptomatology as well as their own treatment history and current substance use. Overall, children were remarkably similar in psychiatric functioning and demographic characteristics across parent's treatment histories. However, children whose parents had only received medication management or detoxification had significantly higher somatization scores, more social withdrawal, and greater attention problems than children whose parents received outpatient treatment (but not inpatient/residential treatment). Children whose parents had been treated in an inpatient or residential setting had marginally higher attention problems than children whose parents received outpatient treatment (but not inpatient/residential treatment). Differences across treatment histories were reflected in the severity of psychiatric symptomatology in the young children of parents in treatment. However, given the modest size of these differences, prevention and intervention programs with children of substance-abusing parents may not need to be tailored as a function of parental treatment history as recruitment from various treatment centers may provide a sample with similar characteristics and risk profiles.

A substantial research literature documents that children of substance-abusing parents (COSs) are at risk for a wide variety of negative outcomes and this risk is first evident early in life (see Solis, Shadur, Burns, & Hussong, 2012 for a review). For example, children of alcoholics initiate substance use earlier than their peers, increase their use more quickly over time, and show a faster escalation from initiation to alcohol use disorder relative to children of non-alcoholic parents (Chassin, Curran, Hussong, & Colder, 1996; Chassin, Pitts, & DeLucia, 1999; Hussong, Bauer, & Chassin, 2008). By young adulthood, children of alcoholics show two times the risk for alcohol and drug use disorders as compared to children of non-alcoholic parents, with over half evidencing a disorder (Chassin et al., 1999).

Risk for negative outcomes, however, extend beyond that associated with substance involvement to include other psychiatric symptoms. Children of alcoholic parents show

increased rates of anxiety, depression, oppositional behavior, conduct problems, and aggressive behavior as well as lower levels of self-esteem and social competence as compared to their peers (Chassin, Rogosch, & Barrera, 1991; Hussong, Zucker, Wong, Fitzgerald, & Puttler, 2005; Martin et al., 1994; Roosa, Sandler, Beals, & Short, 1988). By young adulthood, rates of mood disorders are nearly double for children of alcoholics as compared with their peers (Chassin et al., 1999).

Although much of this literature focuses on risk associated with parent alcoholism, a smaller body of work demonstrates that children of parents with drug use disorders have similar elevations in conduct disorder and aggression (Gabel & Shindledecker, 1991) as well as anxiety and depression (Burstein, Stanger, Kamon, & Dumenci, 2006; Drucker, Greco-Vigorito, Coil, & Moore-Russell, 1997). Similarly, children of parents in methadone maintenance show greater rates of problem behavior than do their peers (Catalano, Haggerty, Fleming, Brewer, & Gainey, 2002), including conduct disorder (in boys) and social deficits (in girls and boys; Nunes et al., 1998). Importantly, these effects appear to extend beyond risk due to prenatal exposure to illicit drugs (Chassin et al., 1991; Glantz & Chambers, 2006) and are evidenced in African American samples as well as European American and Latino samples (Mupier, Rodney, & Samuels, 2002).

These risks may be first evident early in life, with risk for poor health and behavioral outcomes among children of substance-abusing parents reported in those as young as 3 years of age (Osborne & Berger, 2009). For example, beginning around 2 years of age, children of alcoholic parents have higher rates of internalizing and externalizing symptoms than their peers and, in general, this risk remains elevated throughout childhood and adolescence (Hussong et al., 2007; Hussong, Flora, Curran, Chassin, & Zucker, 2008). Other studies show evidence of precursors to psychiatric symptomatology, such as poor emotion regulation, in COSs as early as the first year of life (Eiden, Lewis, Croff, & Young, 2002).

Not surprisingly, these elevated rates of risk make COSs a high-service utilization population, with COSs over-represented in welfare, mental health, and special education services (Child Welfare League of America, 2004). Thus, COSs are both a substantial and multi-risk population deserving of effective preventive interventions. In fact, the need to target COSs as a vulnerable group was among the top health priorities identified in the 2007 Surgeon General's report on underage drinking (U.S. Department of Health and Human Services, 2007). Despite this clear need, few empirically-supported prevention programs target COSs.

Current developments in prevention science, and in the prevention of addiction in particular, indicate that early intervention may be more effective than intervening once a problem behavior exists (Hussong, Jones, Stein, Baucom, & Boeding, 2011; Ialongo et al., 2006; Zucker, Donovan, Masten, Mattson, & Moss, 2008). Early childhood is posited to be a pivotal point of intervention in deterring risk for substance use disorders among COSs for three reasons. First, risk factors (internalizing and externalizing symptoms) for substance use disorders can reliably be identified by early childhood, making targeted early prevention possible (Hussong et al., 2011; Zucker & Wong, 2006; Zucker et al., 2008). Second, in early childhood, risk behaviors may be more malleable prior to school entry when systemic repercussions of such behaviors (e.g., labeling, teacher expectations, peer rejection) may reinforce and make these behaviors more difficult to change (Haring, Lovett, Haney, & Algozzine, 1992; Thurlow & Gilman, 1999). Third, the rapid developmental change that accompanies this period offers families multiple opportunities to adapt to the child's needs and reorganize how they function as a unit (Cummings, Davies, & Campbell, 2000). Few existing programs target COSs early in life (Child Welfare League of America, 2001) and

those that do show modest effects on child outcomes when rigorously evaluated (Catalano et al., 2002; Dawe & Harnett, 2007; Kumpfer, Whiteside, Greene, & Allen, 2010).

One potential reason for this dearth of empirically-supported programming is how difficult this high-risk and highly stigmatized population is to access. One promising avenue, however, is to pair prevention programming for COSs with treatment programs for their parents. An estimated 20%-40% of adults entering treatment for an alcohol or drug use disorder are raising at least one child at the time of treatment (Pilowsky et al., 2001; Stanger et al., 1999). Thus, COSs are both prevalent in the adult substance abuse treatment population and face risks associated with the typical course of recovery and relapse that substance abusing parents often experience (McLellan, Lewis, O'Brien, & Kleber, 2000).

Studies of COSs whose parents are in treatment mirror the findings of community-based studies that compare COSs to control samples, showing elevated risk for psychiatric symptoms. Children of parents in treatment for cocaine or opiate dependence have shown higher rates of internalizing and externalizing symptoms than children of demographically-matched, non-disordered parents (Stanger et al., 1999). Similarly, children of women in treatment for co-occurring alcohol and/or drug abuse, mental health disorders, and histories of violence were three times more likely to score in the clinical range of emotional and behavioral problems than a general population sample (31% versus 10%, respectively; VanDeMark et al., 2005). However, the majority of children in this sample (69%) scored in the normal range of emotional and behavioral problems, reflecting substantial variability in children's adjustment among COSs whose parents are in treatment (VanDeMark et al., 2005).

Although prior research points to differences in child symptomatology among those with parents in treatment versus non-COSs, no studies to date have compared the psychiatric functioning of COSs across substance abuse treatment histories (e.g., inpatient, outpatient, residential, medication management, etc.). Different treatment histories may reflect differences in the severity of drug use, degree of impairment, or drug of choice (e.g., opiate users are more likely to be enrolled in a medication management program than marijuana users). Given these posited differences, children's symptomatology may also differ across parent's treatment histories. As a result, it remains uncertain whether one prevention program would be appropriate for COSs recruited through different treatment settings, or rather, whether selection effects related to treatment setting would result in subgroups of COSs with substantially different risk profiles, calling for tailored programs to address distinct needs. In addition, characterizing the types of psychiatric symptoms experienced by young children whose parents have different treatment histories will elucidate potential targets for intervention and highlight whether targets need to be tailored as a function of treatment setting.

In the current study, we examine psychiatric symptoms experienced by children whose parents are in treatment for addiction. Risk for negative child outcomes may vary not only across parental treatment history, but also as a function of parental addiction and child exposure to parental addiction. Therefore, the current study examined whether children's symptomatology differs across parents' substance abuse treatment history after controlling for other salient factors such as child gender, involvement with Department of Social Services (DSS), current parental substance use, and whether the child is living with the substance-abusing parent.

We hypothesized that children will demonstrate more problematic behavior and less adaptive behavior as parent's treatment history includes more intensive services due to more severe substance use and decreased parental functioning posited to occur in such settings.

Specifically, we expected children whose parents have received inpatient or residential services to have the greatest symptomatology, followed by those whose parents have received outpatient services, and lastly, children of parents who have received medication or detoxification services only.

Methods

Participants

Participants were recruited from a methadone maintenance program, an outpatient substance abuse program, and a residential substance abuse program within a single treatment facility. We announced the study opportunity to individuals after group therapy sessions and while waiting for a methadone dose, as well as by posting flyers. Individuals had to be at least 18 years old, speak English, have a diagnosed substance use disorder in the past two years, and be the biological or residential caretaker of a child between the ages of 2 and 8.

Respondents ($n=81$) were 81% female, ranged in age from 19 to 65 years old (mean = 32.44, $sd=8.64$), and a majority had at least a high school education (68%). The sample self-identified as 66.7% Caucasian, 17.3% African American, 8.6% Multiracial (i.e., 5 American Indian or Alaska Native and Caucasian individuals, and 2 African American and Caucasian individuals), 2.5% American Indian or Alaska Native, 2.5% Latino, and 2.5% 'Other' (e.g., Italian), totaling approximately 31% ethnic/racial minority. Almost half (47%) of the sample reported having been involved with the Department of Social Services (DSS) at some point in time with 11% reporting current DSS involvement.

Participants reported on a single target child between the ages of 2 and 8 years old. When multiple children were between the ages of 2 and 8, we selected target children with the following hierarchical criteria: (a) the oldest biological child living with the parent at least 3 days a week (i.e., residential), (b) the oldest residential, non-biological child, and (c) the oldest biological, non-residential child. Target children were 48% male with a mean age of about 4.5 years (mean=4.63, $sd=2.18$). Ninety-one percent were biological children of the respondent and 86% were living with the respondent at least 3 days a week.

Procedure

After being screened for eligibility criteria and consented into the study, participants completed an anonymous, computerized assessment battery read aloud by Audio Computer Assisted Self-Interview software (Jones, 2003). All participants received a \$20 gift certificate for their participation.

Measures

Descriptives—We asked respondents to report on the target child's gender and age, DSS involvement in regards to the target child, and the relation between the child and respondent. Based on these questions, we identified biological versus non-biological parent-child relations as well as residential (≥ 3 nights a week) versus non-residential living arrangements.

Current substance use—Respondents were asked to identify their drug of choice with 40% reporting abuse of prescription medication, 33% heroin, 10% alcohol, 7.5% marijuana, 7.5% cocaine, and 2% methamphetamines. We asked parents how often they used their drug of choice in the past month on a 5-point Likert scale from 0 'Not at all' to 5 'Everyday'. The mean response (mean=1.30, $sd=2.05$) suggested that although individuals were in treatment for substance abuse, they continued to use their drug of choice between 'less than once a week' and '1 day a week' on average.

Parental substance abuse treatment history—Respondents reported on the types of substance abuse treatment they have received throughout their lifetime. Options included participating in (a) an inpatient program, (b) outpatient individual therapy, (c) outpatient group therapy, (d) outpatient family therapy, (e) a residential program, (f) a detoxification program, (g) medications (e.g., Methadone-Maintenance, Naltrexone), or (h) other. We grouped parents into three categories representing treatment histories identified by (a) medication or detoxification only (n=14), (b) outpatient therapy (i.e., individual, group, or family therapy) with or without medication but without inpatient or residential treatment (n=31), and (c) inpatient or residential treatment with or without outpatient therapy, medication, or detoxification (n=36; see table 1). Of those in the ‘outpatient therapy’ group, 71% also had a history of medication treatment, as did 69% of those in the ‘inpatient/residential’ group. Seventy two percent of those in the ‘inpatient/residential’ group also had a history of outpatient therapy. Thus these groups are not mutually exclusive but may be thought of as representing a continuum of intensity of care (medication/detoxification only, outpatient with or without medication/detoxification, and inpatient with or without outpatient or medication/detoxification). Respondents were not asked what type of treatment they are currently in and this information was not tracked in order to increase anonymity in responses.

Behavior Assessment System for Children, Second Edition (BASC-2)—The BASC-2 preschool aged parent rating scale (Reynolds & Kamphaus, 2004) measures behavior and symptomatology of children ages 2 to 5¹. Parent-report of 134 items assessed the target child's adaptive and problematic behaviors over the past six months on a 4-point Likert scale ranging from 0 ‘Never’ to 3 ‘Almost always’. Raw scores were averaged to create composite subscales used in all study analyses. Subscales that evaluate problematic behaviors included hyperactivity, aggression, anxiety, depression, somatization, atypicality, social withdrawal, and attention problems, with high scores indicating more symptomatology. Adaptive behavior subscales included adaptability, social skills, activities of daily living, and functional communication, with high scores indicating greater adaptability (each subscale is described in greater detail in Table 2). In previous research, BASC-2 scales demonstrated moderate to high correlations with similar scales on the Achenbach Child Behavior Checklist, Conner's Parent Rating Scale, and Behavior Rating Inventory of Executive Functioning (Reynolds & Kamphaus, 2004).

Results

We first compared demographic characteristics of parents and their children across substance abuse treatment histories to identify whether samples recruited from different treatment settings would represent distinct subgroups. Results from a one-way ANOVA showed no significant differences in the target child's age across treatment histories (Table 1). Similarly, chi-square analyses found that child gender, biological relation status, residential status, and use of a drug of choice in the past month did not significantly differ across treatment histories. However, treatment groups significantly differed in the percent of families with DSS involvement in regards to the target child, with more involvement for families with parents having a history of inpatient or residential services versus outpatient services ($\chi^2(2)=9.55, p=0.008$).

We next examined raw mean differences of child symptomatology across parental substance abuse treatment group. Only group differences in withdrawal were found to have a large effect size (Cohen's $d=0.97$; see Table 3). All other indicators, including problematic

¹The preschool aged version of the BASC was used with all families regardless of the target child's age in order to keep items consistent across our sample. Thus, t-scores are not used in study analyses as norms for 6-8 year olds in the sample were not available.

behaviors and adaptive behaviors, had effect sizes that ranged from small to moderate (Cohen's d ranged from 0.06 to 0.78). Although t -scores were only available for our 2-5 year olds ($n=50$), given our choice to give a consistent group of items across the 2-8 year old age range to facilitate group comparisons, we conducted descriptive analyses of these scores in this sub-group. Average t -scores on problematic behavior indicators all fell within normal limits (ranging from 47.06 to 56.38 with somatization having the lowest scores and attention problems having the highest scores, on average). The average t -score on adaptive behavior indicators ranged from 37.6 to 49 with the average score on activities of daily living falling in the "at-risk" range, whereas all other average scores fell within normal limits. Although 2-5 year old children in our sample, on average, fell within normal limits, as table 3 shows, some children fell in the at-risk (6-32%) and clinical ranges (4-30%) across indicators, highlighting the variability in symptomatology found in our sample.

Finally, we conducted analyses to examine whether parents with different treatment histories have children with different levels of functioning after controlling for potential confounds. We conducted twelve ordinary least squares regression analyses predicting each BASC indicator of child problematic and adaptive behavior from parents' treatment history group membership, controlling for the child's gender, residential status, DSS involvement, and the parent's current substance use (Table 4). Treatment history was dummy coded such that the 'outpatient' group was the comparison group.

Differences were found on four of the twelve subscales. Children with a parent in the 'medication or detoxification' group were rated as having significantly higher somatization scores ($\beta = 0.26$, $p=0.04$), greater withdrawal ($\beta = 0.33$, $p=0.003$), and greater attention problems ($\beta = 0.36$, $p=0.03$) than children whose parents were in the 'outpatient' treatment group. Children whose parents were in the 'inpatient or residential' treatment group were reported to have marginally higher attention problems than children whose parents were in the outpatient treatment group ($\beta = 0.23$, $p=0.06$). These differences notwithstanding, children were reported to be remarkably similar across parent's treatment history group.

In addition to the effect of treatment history on child symptomatology, current parental substance use and target child's DSS involvement were also associated with child functioning. Parent's current use of their drug of choice resulted in significantly greater reports of somatization and atypicality ($\beta = 0.05$, $p=0.02$ and $\beta = 0.05$, $p=0.02$, respectively). Although history of DSS involvement with the target child predicted higher atypicality scores ($\beta = 0.28$, $p=0.07$) and lower social skills and functional communication scores ($\beta = -0.46$, $p=0.08$ and $\beta = -0.40$, $p=0.09$, respectively), DSS involvement was also associated with more reported activities of daily living ($\beta = 0.44$, $p=0.02$).

Given the large number of analyses, we also used a Bonferroni correction to examine results with a more conservative approach. Findings indicated that only the difference reported in withdrawal between the 'medication/detoxification' group and the 'outpatient' group remained significant ($p<0.004$).

Discussion

The current study examined differences in the characteristics as well as symptomatology of children whose parents' substance abuse treatment history included (1) medication or detoxification only, (2) outpatient therapy with or without medication or detoxification, or (3) inpatient or residential treatment with or without outpatient therapy, medication, or detoxification. We hypothesized differences in children's symptomatology across groups defined by parent's substance abuse treatment history given expected differences in the severity of drug use, degree of impairment, or drug of choice across treatment settings.

Evidence for such differences, however, was weak and overall children were quite similar across parental treatment history groups. In fact, when a Bonferroni correction was used to account for the number of regression analyses conducted in the current study, only the difference in social withdrawal reported in the 'medication/detoxification' group and the 'outpatient' group remained significant. Moreover, with the exception of group differences in social withdrawal, effect sizes for other uncorrected group differences were all small to moderate. Results suggest that prevention and intervention programs for children of substance-abusing parents may in fact not need to be tailored as a function of parental treatment history given similar risk profiles across groups. Moreover, recruitment of COSs across treatment settings may provide a more homogenous sample than originally hypothesized, allowing for greater generalization of prevention programs for COSs across these settings.

Moreover, the few group differences that we identified suggested that children of substance-abusing parents who have only received medication or detoxification services and not outpatient, inpatient, or residential services may experience more symptomatology than children whose parents have received other treatment services for their addiction. Elevated symptoms were consistent with a potential trauma presentation including greater somatization, withdrawal, and attentional problems. These results may then suggest that with less intervention support for the parent's addiction, children may exhibit greater symptomatology potentially due to a greater negative effect on the family environment. In addition, the current study may be highlighting differences among treatments that strictly target the physiological aspects of addiction (medication or detoxification services) versus those that incorporate other forms of treatments as well (psychological outpatient, inpatient, or residential services or vocational training).

Other findings, however, were consistent with a severity interpretation of group differences. For example, we found some treatment history group differences in whether children had received DSS services. Children of parents who have received inpatient or residential treatment were most likely of our groups to be involved with the Department of Social Services. Previous studies show that COSs are 2.7 times more likely to be physically or sexually abused and 4.2 times more likely to be neglected than children who do not live with a substance-abusing parent (Kelleher, Chaffin, Hollenberg, & Fischer, 1994; The National Center on Addiction and Substance Abuse at Columbia University, 1999). However, no previous research has tested variability in risk of maltreatment within COSs. We posit that with more severe addiction, children are at even greater risk of being abused or neglected due to decreased functioning of the parent.

In addition, we found that children involved with DSS had reduced adaptive skills in some domains but not others. Specifically, COSs currently involved with DSS were reported to have poorer communication abilities and more atypical behavior. However, children with DSS involvement were also reported by parents to have a greater ability to care for themselves. This pattern of findings may reflect a general pattern of problems with adaptive behaviors involved within interacting with others. But parental neglect may also force children to be more self-reliant and to prematurely take care of daily activities to compensate for reduced parental aid. Alternatively, these differences may reflect a parental reporting bias as parents of children involved with DSS may want to see their children as more self-sufficient to reduce guilt and shame regarding potential neglect.

Finally, although parental substance use within the past 30 days was associated with higher somatization and more atypical behavior in the current study, overall indices of children's symptomatology were not greatly affected by the extent of parents' current use. These findings are consistent with previous work suggesting that changes in parental substance use

at a given time are not associated with changes in child symptomatology (Hussong, Cai, et al., 2008). Therefore, greater parental substance use in the past 30 days may not increase a child's risk profile above and beyond the risk associated with being a COS. Although, on average, parents in the current study reported their 2-5 year old children were within normal limits on all problematic behavior subscales and most adaptive behavior subscales, children's symptomatology ranged from average to clinically elevated. This is consistent with previous studies showing greater risk for problematic behaviors in COSs but variability in symptomatology within a sample of COSs. Although some children in the current study were reported to have elevations in symptomatology (either in the "at-risk" or "clinical" range), other children are reportedly functioning within normal limits. Understanding what factors may account for variability in risk for symptom outcomes within COSs is an important future direction for research both to inform etiological models of the intergenerational transmission of addiction but also to identify potential mechanisms for prevention.

Although the current study contributes to a greater understanding regarding the functioning of COSs, limitations should be noted. As the course of treatment for substance abuse disorders is often marked by chronic relapse and multiple treatment attempts (Chung & Maisto, 2006; Winters, Stinchfield, Latimer, & Stone, 2008), many individuals in the current study reported having been involved in more than one form of treatment throughout their lives, making it impossible to assess the unique effect of particular treatment settings. We assume that among other things, treatment history categories are a proxy for addiction severity or course of treatment. Our goal, however, was to understand whether children targeted through intervention across these treatment settings would be comparable in terms of their risk profiles. The answer appears to be yes. Thus, it may not be necessary to examine treatment settings separately as results suggest similar intervention programming may be warranted.

Second, the current study used parental report measures of children's symptomatology, raising concerns of reporter bias on child symptomatology data due to parental psychopathology. Previous research shows that parental psychopathology is associated both with an increase in children's risk for symptoms but also in an increased bias in parents' reporting of children's symptoms (Chilcoat & Breslau, 1997). However, as findings show, reports of children's symptoms were not elevated on average. Moreover, such a reporter bias would be consistent across all three treatment history groups and thus not a bias in making group comparisons. Future work should expand upon this study through the use of observational assessments or clinician ratings to obtain multiple reports on children's psychiatric symptoms.

In sum, the current study found that children of substance-abusing parents with different treatment histories generally have similar levels of symptomatology and are more similar in their overall level of functioning than hypothesized. Moreover, children were reported to fall within normal limits, on average, on all but one indicator of child functioning. Nonetheless, COSs whose parents received only medication or detoxification may be at greater risk for some forms of symptomatology than those whose parents have received other forms of treatment (outpatient, inpatient, or residential). Prevention and intervention programs with children of substance-abusing parents may not need to be tailored as a function of parental treatment history as samples recruited from different treatment settings may have similar characteristics.

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Table 1
Sample characteristics by parental substance abuse treatment history

	Medication/Detoxification	Outpatient	Inpatient/Residential	Results of Group Comparisons
Sample Size	14	31	36	---
Percent who also had medication/detoxification	---	71	69	---
Percent who also had outpatient treatment	---	---	72	---
Target child's age: mean (SD)	5.00 (2.52)	4.65 (2.23)	4.49 (2.05)	F(2,76)=0.26
Target child's gender (% boys)	46	42	54	² (2)=1.03
Respondent's biological child (% yes)	92	84	97	² (2)=3.77
Target child lives with respondent at least 3 nights a week (% yes)	100	84	83	² (2)=4.30
DSS History involving target child (% yes)	⁷ **	0 **	19 **	² (2)= 9.55
Respondent used drug of choice in past month (% yes)	29	39	33	² (2)=0.49

***
 Note: p<.01

Table 2
Subscales of the Behavior Assessment System for Children, 2nd Edition

Scale	Scale Description	Number of Items	Current Study Reliability
PROBLEM BEHAVIOR SCALES			
Hyperactivity	Hyperactivity and impulsivity	11	0.83
Aggression	Verbal and physical aggression	11	0.88
Anxiety	Excessive worry, fears and phobias, self-deprecation, and nervousness	13	0.89
Depression	Dysphoric mood, suicidal ideation, withdrawal from others, and self-reproach	11	0.84
Somatization	Oversensitivity to, complaints about, or overreporting of minor physical problems	13	0.88
Atypicality	Tendency to act in odd ways	10	0.79
Withdrawal	Tendency to avoid social interaction and to lack interest in social interaction	11	0.54
Attention Problems	Inattention and distractibility	6	0.59
ADAPTIVE BEHAVIOR SCALES			
Adaptability	Flexibility in changes to routines, shifting from one task to another, and sharing with other children	8	0.80
Social Skills	Interpersonal skills	9	0.87
Activities of Daily Living	Cautious behavior, ability to do simple daily tasks, and organization	9	0.67
Functional Communication	Verbal communication abilities	11	0.80

Table 3
Children's problematic and adaptive behavior outcomes

Scale	Overall Sample Mean (SD)	Medication/Detox Mean (SD)	Outpatient Mean (SD)	Inpatient/Residential Mean (SD)	Cohen's d	Percent of 2-5 year olds in "at risk" range	Percent of 2-5 year olds in clinical range
PROBLEM BEHAVIOR SCALES							
Hyperactivity	1.01 (0.49)	1.05 (0.55) *	0.98 (0.55) *	1.02 (0.42)	0.13	18%	8%
Aggression	0.59 (0.46)	0.69 (0.58) *	0.54 (0.43) *	0.60 (0.43)	0.29	10%	8%
Anxiety	0.75 (0.49)	0.93 (0.61) *	0.77 (0.50)	0.67 (0.42) *	0.50	16%	8%
Depression	0.80 (0.44)	0.94 (0.61) *	0.77 (0.43) *	0.78 (0.37)	0.32	16%	6%
Somatization	0.49 (0.38)	0.72 (0.63) *	0.44 (0.30) *	0.46 (0.30)	0.57	6%	4%
Atypicality	0.55 (0.39)	0.69 (0.63) *	0.55 (0.32)	0.50 (0.32) *	0.38	14%	12%
Withdrawal	0.87 (0.33)	1.09 (0.37) *	0.76 (0.31) *	0.89 (0.28)	0.97	6%	4%
Attention Problems	1.47 (0.48)	1.65 (0.44) *	1.30 (0.46) *	1.55 (0.48)	0.78	30%	6%
ADAPTIVE BEHAVIOR SCALES							
Adaptability	1.52 (0.58)	1.57 (0.65)	1.42 (0.57) *	1.59 (0.57) *	0.30	26%	10%
Social Skills	1.50 (0.64)	1.49 (0.67)	1.40 (0.60) *	1.60 (0.68) *	0.31	16%	10%
Activities of Daily Living	0.95 (0.47)	0.96 (0.49)	0.94 (0.45) *	0.97 (0.50) *	0.06	18%	30%
Functional Communication	1.28 (0.57)	1.35 (0.61) *	1.25 (0.58) *	1.29 (0.56)	0.17	32%	16%

* groups compared to obtain largest effect size estimates (Cohen's d)

Table 4
The effect of parents' treatment history on their children's problematic and adaptive behaviors

	PROBLEMATIC BEHAVIOR OUTCOMES							ADAPTIVE BEHAVIOR OUTCOMES				
	Hyperactivity	Aggression	Anxiety	Depression	Somatization	Atypicality	Withdrawal	Attention Problems	Adaptability	Social Skills	Activities of Daily Living	Functional Communication
	Regression Analyses (SD)											
PREDICTORS												
Child Gender	0.03 (0.11)	-0.13 (0.11)	0.08 (0.11)	0.05 (0.10)	0.06 (0.08)	0.05 (0.09)	0.04 (0.07)	0.11 (0.11)	0.01 (0.13)	0.12 (0.15)	0.03 (0.11)	-0.01 (0.13)
Residential Status	0.17 (0.17)	0.11 (0.16)	0.11 (0.16)	0.03 (0.15)	-0.02 (0.12)	0.02 (0.13)	0.0003 (0.11)	-0.003 (0.16)	0.30 (0.19)	0.08 (0.22)	0.16 (0.16)	0.007 (0.19)
Target Child's DSS History	0.19 (0.20)	0.07 (0.18)	0.09 (0.19)	0.17 (0.18)	0.13 (0.14)	0.28 (0.15) ⁺	-0.03 (0.13)	0.01 (0.19)	-0.36 (0.23)	-0.46 (0.26) ⁺	0.44 (0.19) [*]	-0.40 (0.23) ⁺
Respondent current use	0.02 (0.03)	0.02 (0.03)	0.04 (0.03)	0.03 (0.02)	0.05 (0.02) [*]	0.05 (0.02) [*]	0.01 (0.02)	-0.02 (0.03)	-0.03 (0.03)	-0.01 (0.04)	-0.004 (0.03)	-0.02 (0.03)
Medication vs. Outpatient	0.02 (0.17)	0.13 (0.15)	0.12 (0.16)	0.14 (0.15)	0.26 (0.12) [*]	0.10 (0.13)	0.33 (0.11) ^{*** a}	0.36 (0.16) [*]	0.13 (0.19)	0.11 (0.22)	-0.05 (0.16)	0.14 (0.19)
Inpatient vs. Outpatient	0.0006 (0.13)	0.07 (0.12)	-0.12 (0.13)	-0.03 (0.12)	-0.01 (0.09)	-0.11 (0.10)	0.13 (0.08)	0.23 (0.12) ⁺	0.24 (0.15)	0.28 (0.17)	-0.07 (0.12)	0.12 (0.15)

⁺Note: p<.10;

^{*}p<.05;

^{**}p<.01

^ap<0.004; p-value needed if a Bonferroni correction is used