

Effectiveness of Day Treatment for Disruptive Behaviour Disorders: What is the Long-term Clinical Outcome for Children?

Sharon E. Clark PhD¹; Susan Jerrott PhD¹

Abstract

Objective: The present study investigates the clinical long-term outcomes (2½ to 4 years post-discharge) of children aged 12 and under with a primary diagnosis of a Disruptive Behaviour Disorder (DBD) who attended a short-term day treatment program using best-practice treatment strategies. This study compared children's admission, discharge, and follow-up test scores on standardized measures of behaviour and functioning, as rated by parents. **Method:** Measures of clinical symptoms in the children and parent report of stress were used. To test for treatment effects across time, two repeated-measures ANOVAs were calculated. **Results:** There was significant treatment change across time points on measures of social problems, externalizing symptoms, levels of aggression, intensity of problems, and symptoms of ADHD. **Conclusions:** Children with DBD who attended a short-term day treatment program using best-practice treatment strategies showed significant improvement in their behaviour at home. These improvements were relatively long lasting. The current study lends support to the effectiveness of day treatment and the idea that severe DBD can be treated using multi-modal, intensive, and evidence-based treatment techniques resulting in long-term change.

Key words: *disruptive behaviour disorders, day treatment, long-term treatment outcomes, children, effectiveness*

Résumé

Objectif: Étudier les résultats cliniques à long terme (de 2 ½ ans à 4 ans après le congé) chez des enfants âgés de 12 ans ou moins qui ont reçu un diagnostic primaire de trouble de comportement perturbateur (TCP) et ont participé à un traitement de jour à court terme utilisant les stratégies des pratiques exemplaires. Les scores des enfants à l'admission, au congé et au suivi, dans des tests standardisés du comportement et du fonctionnement fournis par les parents. **Méthodologie:** Les mesures de symptômes cliniques des enfants et du stress des parents ont été utilisées. Deux ANOVA à mesures répétées ont permis de vérifier les effets du traitement avec le temps. **Résultats:** On constate un effet du traitement significatif aux différents moments sur les problèmes sociaux, les symptômes extériorisés, le niveau d'agressivité, l'intensité des problèmes et les symptômes du TDAH. **Conclusion:** Le comportement à la maison des enfants souffrant de TCP qui ont participé à un traitement de jour à court terme basé sur les stratégies des pratiques exemplaires s'est significativement amélioré. L'amélioration était relativement durable. Ces résultats attestent de l'efficacité des traitements de jour et appuient le concept selon lequel il est possible de traiter les TCP graves au moyen de techniques de traitement multimodales, intensives et fondées sur des données probantes, et d'obtenir un changement à long terme.

Mots clés: *troubles du comportement perturbateur, traitement de jour, résultats d'un traitement à long terme, enfants, efficacité*

Day treatment has been offered for several decades as a treatment alternative (Sayegh & Grizenko, 1991) to both costly in-patient treatment options and less intense out-patient services that are unable to provide the level of intervention necessary to support sustained changes for children

with significant emotional and behavioural difficulties (Grizenko, Paineau, & Sayegh, 1993; Grizenko, Sayegh, & Paineau, 1994; Whitmore, Ford, & Sack, 2003). The benefits of day treatment include providing a treatment modality where children and their families are able to receive

¹IWK Health Centre, Dalhousie University, Halifax, Nova Scotia

Corresponding email: sharon.clark@iwk.nshealth.ca

Submitted: April 18, 2011; Accepted: September 1, 2011

an intense level of treatment within the framework of a less-restrictive and more financially feasible environment than what might be offered within a residential or hospital setting (e.g., van Bokhoven et al., 2005). In addition, as compared to residential treatment, day treatment services create less family disruption (Erker et al., 1993; Whitmore et al., 2003).

Disruptive Behaviour Disorders (DBDs: Attention Deficit Hyperactivity Disorder (ADHD); Oppositional Defiant Disorder (ODD); and, Conduct Disorder (CD)) present with a range of symptoms along a continuum of disruption to home, family, school, and community. Due to the significant impairment of social, emotional, and educational functioning children with DBDs experience, successful treatment needs to target each of these domains. A comprehensive day treatment program employing evidence-based strategies is able to provide treatment that addresses multiple domains (Jerrott, Clark, & Fearon, 2010). In addition, because DBDs do not present in isolation, both children and their caregivers need to be involved in the treatment for best outcomes to be achieved (Grizenko, 1997; Prentice-Dunn, Wilson, & Lyman, 1981).

Oftentimes changes in behaviour can be observed immediately following the completion of treatment. However, the challenge within the mental health care field is to take immediate treatment gains and carry them forward into the future—thus long-term outcome data is necessary to be confident that a treatment of choice is, in fact, an effective option. Given the current status of the health care system where limited resources and fiscal restraint is a constant concern, it is essential to evaluate effectiveness of treatment programs within real-world settings with particular consideration to clients' ability to maintain treatment gains over years (Depp & Lebowitz, 2007). This study will investigate long-term outcomes for children with DBDs and their parents who participated in a short-term day treatment service.

Disruptive Behaviour Disorders

DBDs are one of the most frequently diagnosed psychiatric disorders in childhood (Kazdin, Maxurick, & Siegel, 1994) with prevalence rates ranging from 2.6% to 15.6% in community samples and from 28% to 65% in clinical samples (Boylan, Vaillancourt, Boyle, & Szatmari, 2007). The onset of externalizing disorders in childhood has been shown to be highly predictive of future behaviour problems and to be costly to society (Fergusson, Horwood, & Ridder, 2005; van Bokhoven, Matthys, van Goozen, & van Engeland, 2006) including involvement with the criminal justice system, need for education specialists, and residential placements (Scott, Knapp, Henderson, & Maughan, 2001). In addition, ODD is known to be a predisposing factor to the development of CD and a common starting point for subsequent development of other mental health disorders including anxiety and depression (Loeber, Burke, & Pardidi, 2009). Thus,

if we are able to provide evidence-based interventions to children with DBD that demonstrate long-term outcomes, there are significant individual, familial, and societal gains to be made.

Evidence from review and meta-analytic studies indicates that cognitive behavioural strategies, parent management training, psychopharmacological treatment, and behavioural techniques are effective components of all treatment programs for DBD, including day treatment (Brestan & Eyberg, 1998; Pappadopulos et al., 2006). Specifically, Brestan and Eyberg (1998) used the stringent Chambless criteria to determine that behavioural parent training programs are a well established treatment for DBD, and that Cognitive Behavioural Therapy (CBT) and behavioural strategies (e.g. anger coping, assertiveness training, problem solving skills training, time out) were all probably efficacious. Components of effective parenting programs include increasing positive time spent between parents and children, modelling appropriate parenting behaviours, teaching parents to give contingent rewards and consequences, and helping parents to engage in realistic self-talk to help reduce anger when dealing with their child's behaviour. In terms of the CBT programs for children, specifics of these treatments include self-talk, thinking of the consequences of one's behaviour, relaxation training, and brainstorming ideas for solving a problem. Psychopharmacological treatment, especially the use of stimulants to treat ADHD and risperidone to treat aggression (Pappadopulos et al. 2006), has also been found to be an effective component of treatment. Programs combining these interventions show the most success in treating severe DBD (Burke, Loeber, & Birmaher, 2002; Connor et al., 2006).

Long-term Outcomes of Day Treatment

Day treatment studies have found that children improve from admission to discharge on a variety of symptoms (e.g., Bennett, Macri, Creed, & Isom, 2001; Kotsopoulos, Walker, Beggs, & Jones, 1996) and make significant gains as compared to similar peers receiving outpatient treatment services (Grizenko et al., 1994). Fewer studies have evaluated how well treatment effects carry into the future, with those studies covering a wide range of length in follow-up from six months to ten years. For instance, day treatment has been found to lead to improvement in behaviour, social skills, and family functioning at discharge, and these gains were maintained at six months (Grizenko et al., 1993). Robinson and Rappaport's (2002) evaluation of outcome for children with serious emotional disorders who participated in a school-based day treatment program found at 9-month follow-up that 50% of the sample showed overall symptom reduction, with 27% scoring below clinical cut-offs. In a longer-term follow-up study, Grizenko (1997) found that children maintained their gains from intake to five year follow-up and noted that parental cooperation was the most important variable in predicting outcome. DBD

has also been found to be relatively stable, as noted by van Bokhoven et al., (2006) in their five year follow-up study of adolescents with DBD who received day or in-patient treatment where about half (53%) were noted to meet criteria for DBD at follow-up. In addition, higher numbers of their DBD sample were engaged in delinquent behaviours as compared to their non-DBD comparison group.

In their ten year follow-up study of children who had received day treatment services for a wide range of disorders, Erker et al., (Erker, Searight, Amanat, & White, 1993) note that 65% of their sample received healthier ratings at follow-up. Similarly, Goran Svedin and Wadsby (2000) found in their four year follow-up of “day school students” (with the majority having a DBD diagnosis), that sixty percent of the students were symptom free at follow-up. However, disruptive symptoms were still more common in the clinical sample than in the reference group. As noted by the authors, the improvement in symptoms was a reduction to more “acceptable levels” facilitating their return to the typical school system. However, the children with conduct disorders had poorer outcomes, as two thirds of those students were still requiring higher intensity services (i.e., residential schools or day treatment) despite having spent, on average, 80 weeks at the treatment day school. Overall, in many of the long-term outcome studies treatment gains are noted, but caveats are included.

There are many challenges related to conducting research with this population of children in a real-world treatment setting. These issues include the realities of small sample sizes leading to combining clients who have received different treatment options like day or residential treatments (e.g., van Bokhoven et al., 2006; Erker et al., 1993), combining diverse diagnostic groups such as internalizing and externalizing disorders (e.g., Erker et al., 1993; Goran Svedin & Wadsby, 2000), wide ranges in treatment duration, and inconsistency in defining what “change”, as measured by outcome assessments, constitutes. In sum, there are few studies over the past twenty years that have examined long-term outcomes of day treatment for children with disruptive behaviour that employ clear inclusion criteria, standardized measures of change, and evidence-based interventions.

Current Study

The present study investigates the long-term clinical outcomes (2½ to 4 years post-discharge) in a sample of children aged 12 and under with a primary diagnosis of DBD following completion of a day treatment program using evidence-based treatment strategies. Previous examination of the admission to discharge data for this group of children in a control group study (Jerrott et al., 2010) found that, compared with a wait list control group, children with DBD who attend a short-term day treatment program showed significant improvement in their behaviour at home. In contrast to the admission data, children’s average discharge

scores on measures of externalizing behaviour and social behaviour were in the non-clinical range. The parent’s level of stress regarding their child was also reduced to non-clinical levels.

In the present study, long-term outcome was evaluated with standardized measures of child symptomatology, parenting stress, service utilization, and placement stability. We compared children’s admission, discharge, and follow-up test scores on standardized measures of behaviour and functioning, as rated by the parent.

Method

Participants

Forty children were part of the original pre-post discharge cohort, however, only 28 of the 40 families (70%) completed the follow-up questionnaires (2½ to 4 years post-discharge) as seven families could not be located and five families chose not to participate. The children attended the Child and Family Day Treatment program at the IWK Health Centre between 2002 and 2005. This sample was comprised of 21 boys (75%) and 7 girls (25%). The mean age of the sample was 10.43 years (SD=1.76 years), with a range of 6 to 13 years. All children had a primary diagnosis of a DBD, most commonly ADHD and comorbid ODD. Secondary diagnoses were most commonly learning disabilities and borderline intellectual functioning. Seventy-eight percent of the children (N=22) received pharmacotherapy. Psychostimulants were used most frequently, with seventeen (60%) of the cases receiving psychostimulant medications.

Fifty-four percent of the sample ($n=15$) attended the treatment program two days a week for an average of 16 weeks (average of 32 days), while the remainder of the sample (46%; $n=13$) attended the treatment program beginning four days a week with a transition down to one day a week (average of 40 treatment days). This difference was due to a management led programming change. Mothers completed the measures most frequently (96%; $n=27$).

Program

The Child and Family Day Treatment (CFDT) Service at the IWK Health Centre in Halifax, Nova Scotia provides assessment and treatment for children with severe DBD, ages five to 12 years old, and their families. These children are not able to manage their daily life in their family, school or community and require more support than can be provided on an outpatient basis, but do not require a residential setting. More specifically, this day treatment program is for children who are in need of additional support to manage their behaviour, assess medications, return to full-time school attendance, review diagnoses, and improve self-esteem and social competence. The treatment team consists of Youth Care Workers, a Psychologist, a Psychiatrist, an

Occupational Therapist, a Registered Nurse, a Social Worker, and a Teacher.

The treatment program is based on best practice parameters for working with children with DBD. As part of the program, parents are required to be involved in the treatment process: attending parenting groups; completing daily program sheets; and, attending scheduled meetings. Behavioural parent strategies are implemented at home and home visits are conducted to determine areas of strength and difficulty. In addition, daily contact between the program and the school occurs, and behavioural strategies are recommended in the schools. The day treatment program employs a Cognitive-Behavioural approach, using a token economy, and skill building groups with a focus on social skills training, anger management, processing of school difficulties, hygiene and relaxation training, to name a few. The parent group also follows a Cognitive-Behavioural model with skills for reinforcing positive behaviours, giving good instructions, applying appropriate consequences for negative behaviours, coping with parenting stress, and having fun with children. Parents are taught about ADHD and techniques for dealing with hyperactive, impulsive and inattentive behaviour. In addition, the team Psychiatrist prescribes or modifies medications when needed. Final DSM diagnosis for all children is made by a joint decision of the team Psychiatrist and Psychologist based on clinical interviews with parent and child, questionnaires, and staff observations.

Data Collection

Parents completed identical standardized assessment packages on admission, discharge, and 2½ to 4 years post-discharge. In the follow-up package parents also completed a questionnaire that asked about the child's mental health follow-up. Parents were offered \$25 for their time and had their name placed in a lottery to win one of four \$100 dollar grocery gift certificates. All questionnaires were scored by a research assistant who was blind to the clinical status of the participant and had no clinical contact with the family or the child. This research received ethics approval from the IWK Health Centre Ethics Board and written consent was obtained from parents for participation in the study.

Measures

Child Symptomatology

The Child Behaviour Checklist (CBCL) is a highly recognized measure, with well-established psychometric properties, designed to obtain parents' reports of the child's current level of functioning (Achenbach, 1991). Due to the treatment focus of the program, Social Problems, Aggressive Behaviour, and Externalizing scales were used.

The Conners' Parent Rating Scale Revised: Short Form (CPRS-R:S) is a 27-item scale designed to measure levels

of oppositional behaviour, cognitive problems/inattention and hyperactivity (Conners, 1997).

Parenting Stress

The Parenting Stress Index (PSI) is designed to identify parent and child characteristics that contribute to parenting stress (Abidin, 1995). The Child and Parent stress scales were used. High scores for the child domain indicate that the child has many qualities that make it hard for parents to fulfill their parenting roles. High scores for the parent domain indicate that the source of difficulty in the parent-child relationship may be related to the parent's functioning. The Attachment subscale was also used to measure the parent's emotional closeness to the child and their ability to interpret their child's needs and feelings. The Depression subscale was used to measure the presence of depression in the parent. The PSI is able to detect change, as a result of intervention, making it a good tool of choice for program evaluation (Abidin, 1997).

The Eyberg Child Behaviour Index is designed to assess behaviours associated with conduct disorders in childhood by measuring the number of difficult behaviours and the frequency with which they occur (Eyberg & Pincus, 1999). The Intensity scale is a measure of the severity of conduct problems as rated by parents.

Data-Analysis

Data analyses were designed to evaluate change in symptoms across points of treatment (admission, discharge, and follow-up). To test for these treatment effects, two repeated-measures ANOVAs were calculated. Descriptive statistics are reported for follow-up service use.

Results

All results were analyzed using SPSS 15.0 for Windows.

Group Comparisons: Clinical symptoms. At admission, parents rated their children with clinically significant levels of behaviour problems. See Table 1 for a summary of clinical levels of symptoms at different points of treatment. At admission, the majority of the children were described as having clinically significant ($T > 65$) levels of aggressive behaviour (75%; $n=21$), social problems (75%; $n=21$), externalizing behaviour problems (71%; $n=20$), ADHD (72%; $n=20$), and severe conduct problems (54%; $n=15$). At discharge a minority of children were described as displaying clinically significant levels of problems ranging from 43% ($n=12$) displaying aggressive behaviour to 11% ($n=3$) displaying severe conduct problems. However, by follow-up, more children were rated as displaying significant levels of problem behaviours ranging from a high of 68% ($n=19$) showing social problems and a low of 18% ($n=5$) displaying severe conduct problems.

Table 1 Percent of children with symptoms above clinical cut-off (T > 65) across treatment

Measures	Admission		Discharge		Follow-Up	
	%	n	%	n	%	n
CBCL						
Social problems	75	21	36	10	64	18
Aggression	75	21	43	12	68	19
Externalizing	71	20	36	10	61	17
Conners'						
ADHD	79	22	54	15	32	09
Eyberg						
Intensity	54	15	11	03	18	05
PSI						
Child	82	23	54	15	68	19
Parent	14	04	04	01	11	03

Note. n = 28. CBCL = Child Behavior Checklist; Conners' = Conners' Rating Scale; Eyberg = Eyberg Child Behaviour Index; PSI = Parenting Stress Index.

Table 2 Differences between child symptom means over time, using repeated-measures analysis of variance

Symptom report	Admission		Discharge		Follow-Up		F	d	df	p
	X	SD	X	SD	X	SD				
CBCL										
Social problems	72.91 ^a	10.12	63.95 ^b	9.45	64.38 ^b	8.10	18.03	0.40	2, 70	.000
Aggression	73.67 ^a	10.15	64.05 ^b	9.95	67.14 ^b	10.22	8.10	0.31	2, 70	.001
Externalizing	70.19 ^a	6.98	61.52 ^b	9.57	65.43 ^b	8.47	7.25	0.32	2, 70	.001
Conners'										
ADHD	70.53 ^a	11.63	62.50 ^b	13.22	64.89 ^b	12.65	11.75	0.25	2, 70	.000
Eyberg										
Intensity	66.81 ^a	7.74	54.05 ^b	7.50	57.19 ^b	7.03	25.04	0.59	2, 70	.000

Note. n = 28. CBCL = Child Behavior Checklist; Conners' = Conners' Rating Scale; Eyberg = Eyberg Child Behaviour Index. Means with differing subscripts are significantly different, $p \leq .05$. Cohen's d effect sizes: small $d = .2$; medium $d = .5$; large $d = .8$.

Behavioural Functioning. Parents reported on child's behavioural functioning at admission, discharge, and follow-up. Means and standard deviations for the clients' test scores are displayed in Table 2. A repeated-measure analysis of variance (ANOVA) was used to compare symptom changes from admission, to discharge, and follow-up. Dependent variables entered included the CBCL externalizing total score, CBCL aggressive subscale, CBCL social problem subscale, Conners' ADHD index, and the Eyberg intensity score.

There was overall a significant change across treatment time points multivariate F within (10, 134) = 5.49, $p = .001$. Univariate F statistics showed significant change for all of the five dependent variables between the treatment time points; social problems $F(2, 70) = 18.03$, $p < .001$; externalizing $F(2, 70) = 7.25$, $p = .001$; aggression $F(2, 70) = 8.10$, $p = .001$;

and, intensity $F(2, 70) = 25.04$, $p < .001$ and ADHD $F(2, 70) = 11.75$, $p < .001$.

Parent Stress. Parents rated their feeling of stress in relation to parenting their child (Child) and stress in relation to their parenting role (Parent) at admission and discharge. They also rated their feelings of attachment (Attachment) to their child and feelings of personal depression (Mood). A repeated-measure ANOVA was used to compare symptom changes from admission, to discharge, and follow-up. Dependent variables entered included the PSI child index score, PSI parent index score, PSI attachment subscale, and PSI depression subscale. Mean scores for the measures and post-hoc comparisons are displayed in Table 3.

There was a significant change across treatment time points within $F(8, 17) = 6.68$, $p = .001$. Univariate F statistics showed significant change for three of the four dependent

Table 3 Differences between parent symptom means over time, using repeated-measures analysis of variance

Symptom report	Admission		Discharge		Follow-Up		<i>F</i>	<i>d</i>	<i>df</i>	<i>p</i>
	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>				
PSI										
Child	77.60 ^a	11.76	64.56 ^b	14.21	70.40 ^c	13.35	12.76	0.35	2,48	.000
Parent	55.77	8.05	52.97	9.04	53.08	9.12	1.89	0.07	2,48	.163
Attachment	70.19 ^a	6.98	61.52 ^b	9.57	65.43 ^a	8.47	7.24	0.23	2,48	.002
Depression	54.96 ^a	9.54	50.24 ^b	9.05	50.80 ^b	7.60	19.49	0.14	2,48	.024

Note. *n* = 25. PSI = Parenting Stress Index.
Means with differing subscripts are significantly different, *p* ≤ .05.
Cohen's *d* effect sizes: small *d* = .2; medium *d* = .5; large *d* = .8.

variables between the point of admission to discharge and follow-up; PSI Child $F(2, 48) = 12.76, p < .001$; PSI Attachment $F(2, 48) = 7.24, p = .002$; PSI Mood $F(2, 48) = 4.03, p = .02$; and, non-significant for PSI Parent $F(2, 48) = 1.89, p = .16$.

Service Utilization at Follow-Up. The most common service accessed at follow-up was school-based supports (73%; $n=22$), followed by mental health supports (62%; $n=18$); community services (13%; $n=4$); and justice services (7%; $n=2$).

Discussion

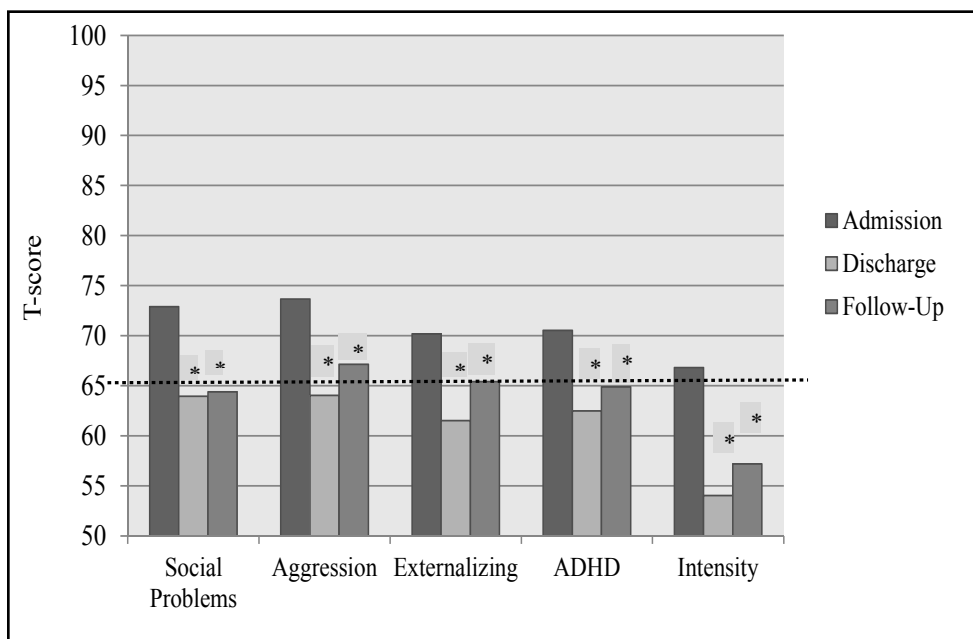
In this study we examined the long-term outcomes for a group of children who had been previously treated in a day-treatment setting because of their severely disruptive behaviour. The strengths of this study are a long follow-up time, the use of evidence-based treatment techniques, and psychometrically sound measures. At the start of treatment, all children met criteria for a DBD, as assessed by the team Psychiatrist and Psychologist.

The goal of the present study was to determine if the initial improvements in children who attended a Day Treatment program (Jerrott et al., 2010) would be long-lasting. In addition, the present study aimed to improve on methodological difficulties in the few previous follow-up studies, such as including non-DBD children (Goran Svedin & Wadsby, 2000) or including children who had been in residential treatment (van Bokhoven et al., 2006). The results of the present study found that children continued to show treatment gains related to externalizing behaviours, aggressive symptoms, social problems, ADHD, and behavioral intensity at 2½ to 4 years post-discharge. However, gains were of lesser magnitude at follow-up than at discharge, indicating some degree of relapse. Likewise, parent reports of their stress regarding their child, their attachment relationship with their child, and their own mood difficulties were all significantly improved at both the discharge and post-discharge time points, with smaller gains at the post-discharge assessment.

Although the children demonstrated significant symptom improvement from admission to post-discharge, a majority of the children continue to struggle with severe symptoms. In fact, at follow-up, 79% of this sample had at least one measured symptom which fell in the clinical range ($T > 65$). This is not surprising considering the significant stability of conduct problems (van Bokhoven, Matthys, van Goozen, & van Engeland, 2005) and the fact that DBDs have been found to require sustained behavioural treatment over time (Eyberg, Edwards, Boggs, & Foote, 1998). As a group, these children and their families continued to be significant consumers of public resources. However, it is important to note that very few of the children got worse, many showed clinically significant improvement, and all were treated in an environment which protected family stability and was inexpensive when compared to residential and in-patient settings. If left untreated, data suggests that the problems exhibited by these children would have been likely to escalate over time (Broidy et al., 2003), so any improvement is a cause for optimism.

The effect sizes of the child symptom outcomes in this study from admission to discharge fall within the small to medium effect range ($d = .31$ for ADHD to $d = .64$ for intensity of behaviour problems) and are similar to those of others who have evaluated the outcomes of a day treatment service for children (e.g., Grizenko et al., 1993; McCarthy et al., 2006). Only Grizenko (1997) reported day treatment follow-up data at five years which demonstrated effects for externalizing behaviour and peer relationships falling within the medium effect size range—whereas the results from this study demonstrated a small effect size for similar measures (externalizing $d = .29$ admission to follow-up; social problems $d = .42$ admission to follow-up). There is a need for more follow-up studies of effectiveness of differing treatment modality outcomes for this population of children to be better able to synthesis results across studies and compare outcome related data.

There are several developmental models of DBD which suggest progression from mild symptoms to moderate symptoms to severe CD and antisocial personality disorder

Figure 1. Child symptom changes across time

Note. N = 28. Social Problems, Aggression, and Externalizing subscales are from the Child Behavior Checklist; ADHD subscale is from the Conners' Rating Scale; Intensity subscale is from the Eyberg Child Behaviour Index. * indicates means are significantly different from admission, $p \leq .05$. Dotted line indicates borderline clinical range for scales

in adults, as explained by Burke and colleagues (Burke, Loeber, & Birmaher, 2004). Given the known progression of DBD symptoms, treatment services for this population of children and families likely needs to assume a developmental model beginning with evidence-based parenting groups provided to children with signs of early behaviour problems and prevention services being presented to high-risk youth. Treatment would then progress to medication consults, CBT work for children, and further parenting work for those families in which problems have worsened, or have not shown remittance. Finally, more expensive supports such as multi-systemic therapy and day treatment can be used in cases of severe difficulty or lack of improvement. This developmental treatment model follows the typical development of DBDs and may be more effective and less expensive, than a one size fits all approach.

When discussing the results of this study, it is important to note the distinction between efficacy and effectiveness in the research literature (Ablon & Jones, 2002). Efficacy is a term used in laboratory studies to allude to a promising treatment outcome in a controlled environment, whereas effectiveness is a term used when studies occur in real-world situations. The present data was obtained in a clinical setting, with limited exclusion criteria, and represents children being treated for DBD in real-world situations. These children were complex, having many comorbid conditions and high levels of family dysfunction. As studies representing true "effectiveness" for treatment of DBD are infrequent (van de Wiel, Matthys, Cohen-Kettenis, & van Engeland,

2002), the results are an important addition to what we know about day treatment for DBDs.

Some limitations of the present study need to be considered. First, no control group was used at the post-discharge time point. This is due to the fact that the control group used at the time of discharge (Jerrott et al., 2010) was a wait list control and these children were later admitted to the program. While the positive changes observed post-discharge may be a direct result of treatment, the absence of a control group prevents the ruling out of alternative explanations, such as the effect of maturation. The use of psychometrically sound measures, which are normed for age, does help control for this possibility. It should also be noted that the majority of these children (62%) received mental health treatment post-discharge and this treatment may have also contributed to the post-discharge findings.

Overall, these results suggest that short-term, cognitive-behavioural day treatment is of long-term benefit to children with DBDs and their families. However, most of the children treated will continue to have ongoing mental health needs. The present findings strongly suggest that structured follow-up supports (i.e., booster sessions) are likely to be a very important component for all clinical work with children who have DBD. These follow-up boosters may help with maintenance of the real life gains observed at discharge. Although the effect of booster sessions following intensive day treatment has not been examined, research in the area of other severe mental health disorders (i.e. depression) has indicated a reduction in the relapse rate from 50%

to 20% with the addition of six monthly booster sessions (Kroll, Harrington, Jayson, Fraser, & Gowers, 1996). This need for relatively inexpensive maintenance treatment has profound financial implications, as preventing one high-risk youth from a life of criminal behaviour will save society 2.6–5.3 million dollars (Cohen, 2009). In addition, there are serious ethical implications of engaging children in treatment without sufficient follow-up to help them maintain their gains (Rhule, 2005). As recommended by Farmer et al. (Farmer, Compton, Burns, & Robertson, 2002), more follow-up studies are needed to examine maintenance of improvement, the effect of booster sessions and the possibility of a “sleeper effect” with some children starting to improve post-treatment.

Overall, this study lends further support to the idea that, although very difficult to treat, severe disruptive behaviour disorders can be treated using a combination of best practice treatment techniques. Behavioural parenting support, individual/group CBT for children (with a focus on problem solving and anger coping), and psychopharmacological supports, as needed, have all shown efficacy in tightly controlled research studies. When combined and presented in a short-term “real world” intensive program, these best practice techniques appear to be effective at reducing both child and parent difficulties. However, increasing the maintenance of these effects continues to be an area of needed treatment and outcome focus.

Acknowledgements / Conflicts of Interest

A Nova Scotia Health Research Foundation Grant and an IWK Health Centre research grant funded this work. We thank all of the children, parents and staff who participated in this study.

References

- Abidin, R. R. (1995). *Parenting Stress Index, Third Edition: Professional Manual*. Florida: Psychological Assessment Resources.
- Abidin, R. R. (1997). Parenting Stress Index: A measure of the parent-child system. In C.P. Zalaquett & R. Wood, (Eds.). *Evaluating stress: A book of resources* (pp. 277-291). Maryland: Scarecrow Press, Inc.
- Ablon, J. S., & Jones, E. E. (2002). Validity of controlled clinical trials of psychotherapy: Findings from the NIMH treatment of depression collaborative research project. *American Journal of Psychiatry*, 159(5), 775-783.
- Achenbach, T. M. (1991). *Manual for Child Behaviour Checklist/4-18 and 1991 Profile*. Vermont: University of Vermont, Department of Psychiatry.
- Bennett, D. S., Macri, M. T., Creed, T. A., & Isom, J. A. (2001). Predictors of treatment response in a child day treatment program. *Residential Treatment for Children and Youth*, 19(2), 59-72.
- Boylan, K., Vaillancourt, T., Boyle, M., & Szatmari, P. (2007). Comorbidity of internalizing disorders in children with oppositional defiant disorder. *European Child and Adolescent Psychiatry*, 16(8), 484-494.
- Brestan, E. V., & Eyberg, S. M. (1998). Effective psychological treatments of conduct-disordered children and adolescents: 29 Years, 82 Studies, and 5,272 Kids. *Journal of Clinical Child Psychology*, 27(2), 180-189.
- Broidy, L., Tremblay, R. E., Brame, B., Fergusson, D., Horwood, J. L., Laird, R.,...Pettit, G. S. (2003). Developmental trajectories of childhood disruptive behaviours and adolescent delinquency: A six-site, cross national study. *Developmental Psychology*, 39(2), 222-245.
- Burke, J. D., Loeber, R., & Birmaher, B. (2002). Oppositional defiant disorder and conduct disorder: A review of the past 10 years, part II. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41(11), 1275-1293.
- Burke, J. D., Loeber, R., & Birmaher, B. (2004). Oppositional defiant disorder and conduct disorder: A review of the past 10 years, part II. *The Journal of Lifelong Learning n Psychiatry*, 2(4), 558-576.
- Cohen, M. A. (2009). New evidence on the monetary value of saving a high risk youth. *Journal of Quantitative Criminology*, 25(1), 25-49.
- Conners, C. K. (1997). *Conners' Parent Rating Scale-Revised: User's Manual*. North Tonwanda: Multi-Health Systems.
- Connor, D. F., Carlson, G. A., Chang, K. D., Daniolos, P. T., Ferziger, R., Findling, R. L.,...Steiner, H. (2006). Juvenile maladaptive aggression: A review of prevention, treatment, and service configuration and a proposed research agenda. *Journal of Clinical Psychiatry*, 67(5), 808-820.
- Depp, C., & Lebowitz, B. D. (2007). Clinical Trials: Bridging the gap between efficacy and effectiveness. *International Review of Psychiatry*, 19(5), 531-539.
- Erker, G. J., Searight, H. R., Amanat, E., & White, P. (1993). Residential versus day treatment for children: A long-term follow-up study. *Child Psychiatry and Human Development*, 24(1), 31-39.
- Eyberg, S., Edwards, D., Boggs S., & Foote, R. (1998). Maintaining the treatment effects of parent training: The role of booster sessions and other maintenance strategies. *Clinical Psychology: Science and Practice*, 5(4), 544-554.
- Eyberg, S., & Pincus, D. (1999). *Eyberg Child Behavior Inventory & Sutter-Eyberg Student Behavior Inventory—Revised*. Florida: Psychological Assessment Resources.
- Farmer, E., Compton, S., Burns, B. & Robertson, E. (2002). Review of the evidence base for treatment of childhood psychopathology: Externalizing disorders. *Journal of Consulting and Clinical Psychology*, 70(6), 1267-1302.
- Fergusson, D. M., Horwood, L. J., & Ridder, E. M. (2005). Show me the child at seven: The consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry*, 46(8), 837-849.
- Goran Svedin, C., & Wadsby, M. (2000). Day school treatment in Sweden: A 4-year follow-up study of maladjusted pupils. *Children and Youth Services Review*; 22(6), 465-486.
- Grizenko, N. (1997). Outcome of multimodal day treatment for children with severe behavior problems: A five-year follow-up. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(7), 989-997.
- Grizenko, N., Papineau, D., & Sayegh, L. (1993). Effectiveness of a multimodal day treatment program for children with disruptive behavior problems. *Journal of the American Academy of Child & Adolescent Psychiatry*, 32(1), 127-134.
- Grizenko, N., Sayegh, L., & Papineau, D. (1994). Predicting outcome in a multimodal day treatment program for children with severe behaviour problems. *Canadian Journal of Psychiatry*, 29, 557-562.
- Jerrott, S., Clark, S. E., & Fearon, I. (2010). Day treatment for disruptive behaviour disorders: Can a short-term program be effective? *Canadian Journal of Child and Adolescent Psychiatry*, 19(2), 88-93.
- Kazdin, A., Mazurick, J., & Siegel, T. (1994). Treatment outcome among children with externalizing disorder who terminate prematurely versus those who complete psychotherapy. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33(4), 549-557.
- Kroll, L., Harrington, R., Jayson, D., Fraser, J., & Gowers, S. (1996). Pilot study of continuation cognitive-behavioral therapy for major depression in adolescent psychiatric patients. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 1156-1161.

- Kotsopoulos, S., Walker, S., Beggs, K., & Jones, B. (1996). A clinical and academic outcome study of children attending a day treatment program. *Canadian Journal of Psychiatry, 41*, 371-378.
- Loeber, R., Burke, J. D., & Pardini, D. A. (2009). Development and etiology of disruptive and delinquent behaviour. *Annual Review of Clinical Psychology, 5*, 291-310.
- McCarthy, G., Baker, S., Betts, K., Bernard, D., Dove, J., Elliot, M.,... Woodhouse, W. (2006). The development of a new day treatment program for older children (8–11 Years) with behavioural problems: The GoZone. *Clinical Child Psychology and Psychiatry, 11*(1), 156-166.
- Pappadopulos, E., Wooston, S., Chait, A., Perkins, M., Connor, D., & Jensen, P. S. (2006). Pharmacotherapy of aggression in children and adolescents: Efficacy and effect size. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 15*(1), 27-39.
- Prentice-Dunn, S., Wilson, D., & Lymna, R. (1981). Client factors related to outcome in a residential and day treatment program for children. *Journal of Clinical Child Psychology, Fall*, 188-191.
- Rhule, D. M. (2005). Take care to do no harm: Harmful interventions for youth problem behaviour. *Professional Psychology: Research and Practice, 36*(6), 618-625.
- Robinson, K. E., & Rappaport, L. (2002). Outcomes of a school-based mental health program for youth with serious emotional disorders. *Psychology in the Schools, 39*(6), 661-675.
- Sayegh, L., & Grizenko, N. (1991). Studies of the effectiveness of day treatment programs for children. *Canadian Journal of Psychiatry, 36*, 246-252.
- Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: Follow up study of anti-social children into adulthood. *British Medical Journal, 323*, 191-194.
- SPSS for Windows, Rel. 11.0.1. 2001. Chicago: SPSS Inc.
- van Bokhoven, I., Matthys, W., van Goozen, S. H. M., & van Engeland, H. (2005). Prediction of adolescent outcome in children with disruptive behaviour disorders: A study of neurological, psychological, and family factors. *European Child and Adolescent Psychiatry, 14*(3), 153-163.
- van Bokhoven, I., Matthys, W., van Goozen, S., & van Engeland, H. (2006). Adolescent outcome of disruptive behaviour disorder in children who had been treated in in-patient and day-treatment settings. *European Child & Adolescent Psychiatry, 15*, 79-87.
- van de Wiel, N., Matthys, W., Cohen-Kettenis, P. C., & van Engeland, H. (2002). Effective treatments of school-aged conduct disordered children: Recommendations for changing clinical and research practices. *European Child & Adolescent Psychiatry, 11*(2), 79-84.
- Whitmore, E., Ford, E., & Sack, W. (2003). Effectiveness of day treatment with proctor care for young children: A four-year follow-up. *Journal of Community Psychology, 31*(5), 459-468.

Upcoming in the November 2012 Issue

Non-suicidal Self-injury and Suicidal Behaviour in Children and Adolescents Accessing Residential or Intensive Home-based Mental Health Services

Michèle Preyde et al.

Youth are More Vulnerable to False Memories than Middle-aged Adults due to Liberal Response Bias

Liesel-Ann Meusel et al.

Stress and Relief: Parents Attending a Respite Program

John McLennan et al.

Facteurs de risque dans le Trouble Déficitaire de l'Attention et de l'Hyperactivité: étude familiale

Hélène Poissant et al.

Efficacy of Methylphenidate in ADHD Children across the Normal and the Gifted Intellectual Spectrum

Natalie Grizenko et al.

Prevention of Substance Use in Children/Adolescents with Mental Disorders: A Systematic Review

Nadia Salvo et al.