# Multimethod Psychoeducational Intervention for Preschool Children with Disruptive Behavior: Two-Year Post-Treatment Follow-up

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**Abstract:**
This paper describes the 2-year post-treatment follow-up of preschool children identified as having high levels of disruptive behavior at kindergarten entry. They were assigned to four treatment conditions: A no-treatment group, parent-training only, treatment classroom only, and the combination of parent training with the treatment classroom. Interventions lasted the entire kindergarten academic year. Initial post-treatment results reported previously indicated no effects for the parent-training program but some efficacy for the classroom intervention program. For this report, the disruptive behavior (DB) children were subdivided into those who did (n = 74) and did not (n = 77) receive the treatment classroom. Two-year post-treatment follow-up results indicated no differences between the classroom treated and untreated DB groups. These groups also failed to differ in the percentage of children using available treatments across the follow-up period. The DB children in both groups had significantly more symptoms of ADHD and ODD than a community control group (N = 47) at follow-up. They also received higher ratings of externalizing problems on the parent Child Behavior Checklist, more severe ratings of behavior problems at home, and ratings of more pervasive behavior problems at school, and had poorer academic skills. Results suggested that early intervention classrooms for DB children may not produce enduring effects once treatment is withdrawn, and that better approaches are needed for identifying those DB children at greatest risk for later maladjustment.

**KEYWORDS:** Disruptive behavior; early intervention; preschool children.

**Article:**
Preschool children with high levels of disruptive behavior (DB; hyperactive, inattentive, impulsive, aggressive) have considerable risk for a variety of forms of maladjustment throughout childhood (McGee, Partridge, Williams, & Silva, 1991; Tremblay, Pihl, Vitaro, & Dobkin, 1994). Such children often have poorer language and cognitive skills, lower levels of academic achievement skills, and more family adversity than children without this behavior pattern (Heller, Baker, Henker, & Hinshaw, 1996; Kingston & Prior, 1995; McGee et al., 1991; Stormont-Spurgin & Zentall, 1995). DB is also highly persistent over the next decade or longer (McGee et al., 1991; Pope & Bierman, 1999). DB children identified as young as age 3 by parent reports are more likely to display hyper-active, noncompliant, and aggressive behaviors in their preschool classrooms than are control children (Campbell, 1987, 1990). They are also more likely to persist in these behavior patterns to age 6 than are problem children with less severe preschool behavior problems. DB children also experience more family adversities, and have parents with poorer child management skills and more parenting stress (Heller et al., 1996; Kingston & Prior, 1995; Stormont-Spurgin & Zentall, 1995). Notably, children showing the combination of early aggression and hyperactive-impulsive behavior seem particularly prone to continue to have problems that reflect more diverse negative out-comes than children with either behavior problem alone. That combination is also associated with even greater family problems than is either behavior pattern alone (Barkley, Fischer, Edelbrock, & Smallish, 1991; Biederman et al., 1996; Hinshaw, 1987; Loeber, 1990; Patterson, Dishion, &

Reid, 1992). These findings have led others to attempt early intervention for children already demonstrating high levels of DB in early childhood. Some studies have even focused on prevention programs for children who may be at risk for developing such DB problems because of other risk factors, such as low socioeconomic status.

Parent management training is among the most widely used forms of psychosocial intervention for children with disruptive behavior. Various training programs exist but all strive to promote more positive, compliant, and generally prosocial behavior while decreasing negative, defiant, and disruptive behavior in children. Typically, this is achieved by training parents in more positive, consistent, and predictable child management skills (Barkley, 1987; Forehand & McMahon, 1981; Patterson, Reid, & Dishion, 1992; Webster-Stratton & Spitzer, 1996). Numerous studies attest to the short-term effectiveness of these programs for clinically referred families (Barkley, 1997; Webster-Stratton & Spitzer, 1996). However, their efficacy for community-derived samples of DB children, as might be identified through school-based screenings, re-mains to be reliably established. Webster-Stratton (1998) has had success in training parents of children entering Head Start programs who are known to have a greater than normal risk of developing DB. However, the majority of these children did not manifest such behavior patterns at the time of intervention. Others working with community samples of DB children have not had such good success. Compliance by parents in both attending the training meetings and following through on the recommended strategies can be problematic (Cunningham, Bremner, & Boyle, 1995; Kazdin, 1987; Offord & Bennett, 1994). Parental motivation or readiness to change also may be low, or at least range widely across families of children identified by community screenings (Cunningham, 1997).

A different form of psychosocial treatment for DB children focuses directly on the child's repertoire of social skills. Results of these interventions have been quite mixed, however, lacking clear-cut evidence of efficacy (Durlak, 1991; Ladd, 1985; Kazdin, Siegel, & Bass, 1992). School-based programs offer another means by which to intervene with children showing high levels of DB. These programs typically focus on peer relations, classroom conduct, and school achievement (Arnold et al., 1997; Bierman, Miller, & Stabb, 1987; Cunningham & Cunningham, 1998; Pfiffner & Barkley, 1998). Results of such school-based interventions, at least in the short term, have been promising, but evaluations of the longer-term effects of these programs are quite limited at the moment (Coie, Underwood, & Lochman, 1991; Offord & Bennett, 1994).

Several programs have combined these different methods of intervention for children already manifesting DB or at high risk to do so (e.g., those of low social class, minority status, single parent households). Tremblay and colleagues (1995) conducted a 2-year prevention program for disruptive kindergarten boys from inner-city neighborhoods. The program included a home-based parent-training intervention along with school-based social skills training. The study found that a significantly greater percentage of the treated than untreated boys were in age-appropriate class placements by the end of elementary school. The treated boys also showed fewer delinquent activities across 10-15 years of age than the boys assigned to a control condition. Kellam and colleagues (1994) con-ducted a 2-year classroom based prevention program with more than 1,000 kindergarten children that was designed to reduce aggressive behavior through participation in The Good Behavior Game. Peer- and teacher-mediated behavioral intervention programs were a substantial part of this treatment program. Children were assigned to teams and rewarded by teachers for maintaining low levels of disruptive and aggressive behavior in themselves and their teammates. The most aggressive children demonstrated significant improvements in their observable behavior both during first grade and even through middle school. These and other early intervention programs (Johnson, 1988; Lally, Mangione, & Honig, 1988; Webster-Stratton, 1998; Zigler, Taussig, & Black, 1992) aimed at high-risk children from low-income families are encouraging. They suggest that some of the later risks associated with low socio-economic status or early DB are malleable. Such disruptive behavior can be decreased through prevention or early intervention programs that involve parents and/or classroom settings and lead to reductions in the risk of later conduct problems, antisocial activities, arrest rates, and school underachievement and failure.

However, with the exception of Tremblay and colleagues, most of these other programs selected preschool or early school-age children on the basis of low social class, minority status, single parenthood, or other family

risk factors and not because the children manifested serious behavioral problems. A concern with such broad-spectrum selection criteria is that many of the children so selected will not necessarily go on to demonstrate significant levels of DB nor develop later problems such as antisocial behavior. Treatment resources therefore might not be aimed at those children who have the highest risk of later problems. In contrast, DB manifested in the preschool years has been shown to be quite persistent and has been reliably associated with later negative academic outcomes and risk for antisocial conduct. More cost-effective intervention efforts might be those aimed specifically at children already demonstrating early DB as opposed to targeting all children or all children of a given social class or minority group (Bennett & Offord, 1994).

This paper reports the 2-year follow-up evaluation of just such an attempt at an early screening and intervention project targeting high-risk preschool children having high levels of DB. The children were drawn from an urban school district of predominantly low-income families. After identifying the children as having significant levels of externalizing behavior, participants were randomly assigned to four possible treatment groups that included no treatment, parent training only, a specially designed behavioral treatment classroom, and a combined parent and classroom intervention. Treatments spanned the en-tire kindergarten year. Medications, such as stimulants, were not considered for inclusion as a treatment method for numerous reasons. The FDA has not approved such medications for use with children of this young age group (primarily 4–5 year olds). More importantly, these children were chosen only with a kindergarten screening tool identifying them as being in a "high-risk" group, and not by clinical referral, diagnosis, or clinical evidence of impairment. To medicate preschool children who are simply identified as possibly being at "high risk" because of their behavior patterns alone without clinical evidence of impairment or suffering would not have received approval by the local Institutional Review Board. Moreover, the lower level of social acceptability of drug treatment among parents of this age group suggested that many parents would not volunteer their children for an intervention program that included medication when their children were about to begin kindergarten.

The initial pretreatment findings comparing all DB children with the normal control children have been reported elsewhere (Shelton et al., 1998), as have the immediate post-treatment results (Barkley et al., in press). The latter report indicated no significant treatment effects from the parent training program at post-treatment, probably owing to poor attendance. However, children participating in the special treatment classroom demonstrated significant gains in a variety of domains of behavioral and social functioning relative to those not receiving this form of intervention. The present paper reports the results for the 2-year post-treatment follow-up evaluations of the DB children who did and did not receive this special classroom intervention. These two groups are also compared with a community control group at the end of second grade.

## METHODS

### *Participants*

The project took place from 1991 to 1996. From 1991 to 1993, an annual cohort of children was identified for the project as part of each spring's kindergarten registration process for children entering Worcester, Massachusetts, public schools for the fall term. Details on the screening procedure are provided in earlier reports (Barkley et al., in press; Shelton et al., 1998). The screening for high levels of aggression and hyperactive–impulsive– inattentive behavior used a parent rating scale constructed especially for this project. It involved the DSM-III-R symptoms of ADHD and ODD along with the items from the Revised Conners Parent Rating Scale (CPRS) Impulsive–Hyper-active and Conduct Problem factors (Goyette, Conners, & Ulrich, 1978). To be identified as DB, subjects had to have significantly elevated scores (>+1.5SD) on either the ADHD or impulsive– hyperactive factor items and on the ODD or conduct problem factor items (see Barkley et al., in press). Once identified as DB on the screen, the second author contacted parents by telephone to explain that their ratings had placed their children significantly above the normal range for these domains of behavior and that this might convey some risk for adjustment to school. Families were further told of the nature of this early intervention project. Of those identified as DB and presented with this invitation, 59% accepted it, yielding a total of 170 DB children. Subsequently, 12 DB children either withdrew from the project or were deemed ineligible following their comprehensive summer evaluation.

The remaining 158 DB children were initially randomly assigned to participate in one of four treatment groups: (1) no-treatment control (n = 42), (2) parent training only (n = 39), (3) special treatment classroom only (n = 37), and (4) parent training combined with special classroom (n = 40). Randomization within gender was done to ensure that relatively equal numbers of each sex were assigned to each treatment group. Randomization had to be violated in eight cases due to several circumstances. In one case, the project had to ensure that the second twin in one twin pair participated in the same treatment condition to which the first twin had been assigned (Combined Treatment) given the requirement for parental participation in that condition. In a second case, the same problem arose for one set of siblings in which one sibling and the parent had already participated in an earlier cohort (classroom only condition). In six cases, children who were assigned to the special treatment class conditions could not bused to the study classrooms because they lived on unpaved streets where school district busing was not provided. This situation was handled as follows: If the children were initially assigned to the classroom only group, they were reassigned to the no-treatment control group. If they had been initially offered the combined treatment, they were assigned to the parent-training only group. In this way, only their participation in the class program was eliminated due to the busing problem and not the other services promised to them.

Evaluation at post-treatment showed no significant treatment effects of the parent training program (see Barkley et al., in press). Therefore, the four DB treatment groups were collapsed across the parent training factor so as to form two groups, these being DB children who did not receive the treatment classroom (initial N = 81) and those who did (initial N = 77). The present paper com-pares these two groups at the 2-year follow-up.

Eight children and their parents failed to participate in the post-treatment evaluation. Four of these were from each of the two DB groups. The teacher of one of these children in the treated DB group provided school ratings. This left 151 DB children with school ratings (77 untreated and 74 treated) and 150 with parent ratings (77 untreated and 73 treated) at post-treatment. Another nine DB children (five in the untreated and four in the treated DB group) failed to participate in one or both of the annual follow-up evaluations, thereby reducing the sample of DB children having complete data to 142 at 2-year follow-up.

The present study employed an “intent-to-treat” approach to the statistical analyses in which scores for missing children at the 2-year follow-up were created by carrying forward the score from the last available post-treatment evaluation of that child. Consequently, all 151 children on whom there was at least partial post-treatment teacher data and all 150 children on whom there was at least partial parent data are included here (see Results section).

The two DB groups did not differ in their gender representation. The DB group receiving no classroom treatment (henceforth termed untreated DB) was 65% male, and the DB children placed in the classroom treatment (henceforth termed treated DB) was 68% male. The two groups also did not differ in their ethnic composition. For the untreated DB group, the representation was: 75.9% white, 13.9% African-American, 5.1% Hispanic, 1.3% Asian, 1.3% Native American, and 2.5% Other. For the treated DB children, ethnic composition was: 80.3% white, 7.9% African-American, 7.9% Hispanic, 1.3% Native American, and 2.6% Other. These two groups also did not differ in the proportion of biological parents who were married to each other at the time of study entry (untreated DB = 63%; treated DB = 58%) or in the percentage receiving public assistance (untreated DB = 38%; treated DB = 42%). Two of the DB children in each group were receiving psychiatric medication at the time of their initial entry into the study. Another three in each group had been placed on psychoactive medication during the kindergarten year.

The two DB groups were compared on initial demographic information as well as on their degree of deviance in the two behavioral domains used to select children into the study. One-way analyses of variance were conducted with significance set at $p < .05$ so as to identify any potentially confounding variables at the time of study entry. The results are shown in Table I.

**Table I.** Initial Demographic and Subject Selection Characteristics at Study Entry by Treatment Group

| Measure | Untreated DB ($N = 77$) | | Treated DB ($N = 74$) | | $F$ | $p$ |
|---|---|---|---|---|---|---|
| | Mean | *SD* | Mean | *SD* | | |
| Age (in years) | 4.7 | 0.5 | 4.9 | 0.5 | 2.42 | — |
| IQ (Woodcock–Johnson) | 98.1 | 12.9 | 96.5 | 12.4 | 0.62 | — |
| NABC adaptive functioning | 89.1 | 9.3 | 88.3 | 13.3 | 0.22 | — |
| Father's age (in years) | 33.2 | 5.9 | 33.0 | 7.3 | 0.01 | — |
| Mother's age (in years) | 30.2 | 5.0 | 28.5 | 4.6 | 4.48 | .035 |
| Father's education (in years) | 12.7 | 2.5 | 12.5 | 2.4 | 0.12 | — |
| Mother's education (in years) | 12.7 | 2.2 | 12.5 | 2.1 | 0.43 | — |
| Father's SES level | 44.2 | 24.8 | 43.3 | 22.5 | 0.03 | — |
| Mother's SES level | 29.4 | 23.7 | 30.5 | 24.3 | 0.06 | — |
| CPRS Impulsive–Hyperactivity | 7.1 | 3.1 | 8.0 | 2.8 | 3.71 | — |
| CPRS conduct problems | 12.7 | 6.8 | 13.7 | 6.4 | 1.03 | — |
| CBCL attention problems | 59.5 | 7.8 | 62.5 | 8.5 | 5.45 | .021 |
| CBCL aggression | 65.6 | 10.2 | 68.9 | 10.4 | 3.91 | .049 |

*Note.* DB = Disruptive behavior; $F$ = value of $F$-test from ANCOVA; *SD* = standard deviation; $p$ = probability value for the $F$-test if significant (<.05). CBCL = Child Behavior Checklist; CPRS = Conners Parent Rating Scale (revised); NABC = Normative Adaptive Behavior Checklist; SES = socioeconomic status level as determined by the Hollingshead Two-Factor Index of Social Position; WJ = Woodcock–Johnson Psychoeducational Assessment Battery.

As this table shows, the two DB groups did not differ at baseline in their age, IQ (based on the Woodcock Johnson Psychoeducational Test Battery, see below), or adaptive functioning standard scores from the Normative Adaptive Behavior Checklist (NABC, see below). They also did not differ in parent ratings on the Impulsive– Hyperactive or Conduct Problems factors of the Revised-CPRS. However, there were significant differences between the two DB groups on both the parent CBCL attention and aggression scales. Consequently, these two baseline measures were used as covariates in all subsequent analyses. The two groups did not differ significantly in the percentage of children in each group who met DSM-IV diagnostic criteria for ADHD (untreated DB = 61 %; treated DB = 71 %) or ODD (untreated DB = 65%; treated DB=63%) based on parental interview (see below). Nor did these two groups differ in their fathers' ages, mothers' and fathers' educational levels, or mothers' and fathers' socioeconomic status (based on the Hollingshead Two Factor Index of Social Position; see Table I). The mothers of untreated DB children were significantly older than those of treated children ($p < .04$).

A community control group was also chosen during the initial screening. Control children were obtained by selecting every fifth child whose scores fell within one standard deviation of the mean on both the hyperactive/ADHD and ODD/conduct problem items of the screening scale (see Barkley et al., in press; Shelton et al., 1998). These families were invited to receive the same annual psychological assessments as the DB children over the 3 years of the project. Fifty-eight percent accepted the invitation to enter the project, resulting in 47 comparison children. By the end of the 2-year post-treatment follow-up, complete information was available for 44 of these children. At study entry, this group was comparable in age to the two DB groups (mean = 4.8 years, SD = 0.40). The gender representation of this group was not significantly different from that of the DB groups (62% male), nor was their ethnic representation (89.4% white, 4.3% African-American, 4.3% Hispanic, 2. 1 % Asian). However, more of these control children had biological parents who were married at study entry (9 1%) than in the two DB groups, X 2 = 15.38, df= 2, p < . 00 1. A smaller percentage of these control families were receiving public assistance than the two DB groups (15%), X2= 13.00, df= 2, p <.01. Such findings are not surprising given that DB children are more likely to come from families having more family and social disadvantage than normal children.

*Evaluation Procedures*

In the late spring and summer months of each of the first 3 years, the DB and control children and their parents participated in a lengthy evaluation. This included a battery of structured psychiatric interviews, psychological and academic tests, parent behavior rating scales, and direct behavioral observations of the children in the clinic. Details on this evaluation can be found in an earlier paper (Shelton et al., 1998).

*Treatment Procedures*

The parent training program used in treatment was identical to that published by Barkley (1987, 1997) and was provided to parents in a group format over 10 weekly sessions beginning in October of each year. Further details on this treatment procedure as used in this project are available in the earlier report (Barkley et al., in press). Given that no significant treatment effects were found for this particular treatment, it receives no further attention here.

Two special treatment classrooms were created. Each was located in a separate WPS school, with one on the east and the other on the west part of town. Approximately 14–16 DB children were assigned to each of these special kindergarten classes each year. Busing was provided to the classrooms by the project. Each classroom was outfitted to be similar to a standard kindergarten classroom in WPS. A teacher and teacher aide were hired from an eligible pool of WPS teachers and aides to work in each classroom. In addition, a master teacher (C.C.), highly experienced in behavioral treatment programs, spent a half day working in each classroom. This insured comparability of the treatment approaches across both classrooms as well as treatment integrity. The behavioral interventions used in these classrooms were modeled on those in use at the University of California–Irvine (UCI) special school for ADHD children developed by James Swanson, Ph.D., and colleagues (Linda Pfiffner, Ph.D., and Keith McBurnett, Ph.D.) (see Pfiffner & Barkley, 1990, for a description). More information on the nature of this classroom intervention is provided elsewhere (Barkley et al., in press). Multiple behavioral interventions were used in the classrooms including token systems, time out, response cost, social skills training, and self-control instruction. In addition, a more accelerated curriculum was designed than was the standard WPS kindergarten curriculum, with greater emphasis placed on early academic skills, such as reading, spelling, math skills, and handwriting.

Children who had participated in these special treatment kindergartens returned to their neighborhood schools for first grade. Their first-grade teachers were provided with consultation. All first-grade teachers had an initial meeting with project staff during the summer before first grade to receive information about the child and general suggestions about behavior management. All were offered follow-up consultations for the next 3 months, but only 10% initiated such consultations with project staff.

*Dependent Measures*

The following dependent measures were collected at the 2-year follow-up point and are described in more detail in the earlier report (Shelton et al., 1998) and elsewhere (Barkley et al., in press).

*Clinical Diagnostic Interview*

The printed version of the DISC-P version 2.1 that was constructed and used in the DSM-IV field trials (Lahey et al., 1994) was employed in this study. This particular interview was designed to collect information on both DSM-III-R and DSM-IV symptom lists for 12 childhood disorders. Since the final DSM-IV symptom lists for each disorder are now published (American Psychiatric Association, 1994), these criteria were used in scoring this interview. Parents were interviewed as well about any mental health or special educational services their children had received over the past year.

*Parent Ratings of Child Behavior*

1. Child Behavior Checklist (CBCL; Achenbach, 1991).
2. Home Situations Questionnaire (HSQ; Barkley, 1990). This scale assesses the pervasiveness and severity of home behavior problems across 16 possible settings. Separate scores were calculated for the number of problem settings and the mean severity across them.
3. Normative Adaptive Behavior Checklist (NABC; Adams,1984). This is a parent rating scale of the child's adaptive functioning in eight areas of development, including fine motor, gross motor, language, and self-help skills, independence, home responsibilities, etc. The total standard score was employed here.
4. Parenting Stress Index—Short Form (PSI; Abidin, 1986). For this study, only the Total Stress score was employed rather than the separate scores reflecting the degree of stress due to the child, the parent, and

the parent–child interaction.

*Teacher Ratings of Child Behavior*

1. CBCL—Teacher Report Form (Achenbach, 1991).
2. School Situations Questionnaire (SSQ; Barkley, 1990). This scale is similar to the HSQ above and assesses pervasiveness of school behavior problems across 12 settings as well as their severity. Separate scores were calculated for the number of problem settings and the mean severity of problems across them.
3. Self-Control Rating Scale (SCRS; Kendall & Wilcox, 1979). This scale evaluates the extent of a child's inhibition and self-regulation in the school setting as rated by teachers. A total score was employed here.
4. Social Skills Rating Scale (SSRS; Gresham & Elliott, 1990). This scale was used to assess children's social skills, academic competence, and general problem behaviors in the classroom. Standard scores for each scale were used here.

*Psychological Testing*

1. Woodcock–Johnson Psychoeducational Test Battery (WJ; Woodcock & Johnson, 1984). This test battery assesses general cognitive ability (IQ) as well as various specific areas of academic achievement skills and knowledge. Only the summary scores for the Broad Academic Knowledge and Broad Academic Skills domains were analyzed here.
2. Continuous Performance Test (CPT; Gordon, 1983). A CPT was included to provide an objective clinical assessment of inhibition (commission errors) and inattention (total correct). The preschool version of this CPT was used here. The device provided raw scores for total correct and number of commission errors. The task presents single digits ranging from 1 to 9 on the screen of a computerized device at the rate of 1 per second. The target digit (1) appears 29 times throughout this randomly presented series of digits. The task lasts 6 min, thus presenting 360 stimuli (targets and nontargets) to the child. Due to the young age of the subjects and consistent with recommendations of the test developer, the examiner remained in the room during the testing.

*Clinic Behavioral Observations of Disruptive Behavior During the CPT*

During the administration of the CPT, the child's behavior was videotaped from behind a one-way mirror. These videotapes were later coded for four categories of behavior related to ADHD (off-task, fidgets, vocalizes, and out-of-seat) using the Restricted Academic Situations Coding System developed by Barkley (1990). Details on these behaviors and their intercoder reliabilities are pro-vided in the earlier report (Shelton et al., 1998). Research assistants conducting these observations were blind to the group membership of the children.

*Examiner Ratings of Children's Behavior During Testing*

A 17-item rating scale was created just for this project to assess various behavioral problems shown by the children during their clinic evaluation. The items dealt with inattentive, hyperactive, impulsive, oppositional, defiant, and destructive behavior as well as anxiety, shyness, and withdrawal. Each item was rated on a Likert 7-point scale (1–7) by the research technician based on the child's behavior throughout the entire evaluation session. A total raw score was calculated by summing across all 17 items. Higher total scores reflected more deviant behavior. Information on the internal consistency of the scale or its inter-rater reliability is not available. Examiners were blind to the treatment condition of the children.

## RESULTS

Two separate questions were addressed here: (1) Did the two DB treatment groups differ significantly from each other at the two-year follow-up? And (2) at this 2-year follow-up, did either of the two DB groups continue to differ from the control group?

*Comparison of Untreated and Treated DB Children*

One-way analyses of covariance (ANCOVA) were employed for each of the dependent measures at the 2-year follow-up. Three covariates were employed. One was the initial pretreatment score on the measure. The other

two were the CBCL parent ratings (aggression, attention problems) from the study entry point on which the two DB groups differed significantly, as noted above and in Table I. The results for these analyses appear in Table II. The control group was not included in these initial analyses of treatment effects given that an intent-to-treat approach to the statistical analyses was used for these two DB groups. In this approach, all subjects for whom an immediate post-treatment evaluation was available were carried forward to the 2-year evaluation point. For the DB subjects who did not complete this follow-up evaluation, scores from their 1-year follow-up evaluation were carried forward and used in the analyses. If these were unavailable, the post-treatment score was used and carried forward for the later follow-up points.

The numbers of symptoms endorsed by parents on the DISC-P for 12 different psychiatric disorders were obtained. For this report, only the results for the three most common disorders found among the children at study entry are reported as they were of greatest interest to this project: ADHD, ODD, and CD symptoms (see Shelton et al., 1998). There were no significant differences between the two DB groups at follow-up on any of these DISC-P disorders. In fact, there were no differences between the DB groups on any of the other measures collected at this follow-up period as shown in Table II. This suggests that all group differences that may have been due to the treatment classroom, evident at the post-treatment evaluation (Barkley et al., in press), had become nonsignificant by the 2-year follow-up.

At post-treatment and each of the annual follow-up evaluations, parents were interviewed about any treatment services they may have sought for their children's behavioral problems since the previous evaluation. No significant differences were found between the untreated and treated DB children for any of the following services: individual therapy (15.9% vs. 25.4%), family therapy (9.5% vs. 14.3%), psychiatric medication (11.1% vs. 23.8%), special education learning disability classes (17.5% vs. 11. 1%), special education behavior disorder classes (4.8% vs. 14.3%), and speech and language services (7.9% vs. 12.7%).

*Comparison of the Two DB Groups to the Control Group*

The two DB groups were compared with the control group at the 2-year follow-up. One-way (groups) ANCOVAs were employed in which the two CBCL measures (aggression, inattention) obtained at study entry served as covariates. These analyses did not employ an intent-to-treat approach. Therefore, only subjects for whom 2-year follow-up scores were available were employed in these analyses. For parent reported and lab measures, this left samples of 65 untreated DB children, 63 treated DB children, and 44 control children. For teacher reported measures, this left 74 untreated and 68 treated DB children and 44 control children. Where the overall ANCOVAs were significant, follow-up pairwise contrasts were performed only between the two DB groups and the control group, as the comparisons between the two DB groups were reported above. The results that were significant ($p < .01$) are shown in Table III along with the results of the pairwise contrasts.

Both DB groups showed a significantly greater number of ADHD and ODD symptoms. Both also had a significantly greater percentage who met diagnostic criteria for ADHD and ODD than the control group at follow-up. For ADHD, the percentages were 44.6% untreated DB, 61.9% treated DB, and 2.3% control (untreated vs. control $X2 = 23.58$, $df= 1$, $p < .001$; treated vs. control $x 2 = 39.35$, $df= 1$, $p <.001$). For ODD, the percentages were: 43. 1 % untreated DB, 5 5.6% treated DB, and 6.8% control (untreated vs. control $X2 = 26.94$, $df= 1$, $p < .001$; treated vs. control $X2 = 26.87$, $df= 1$, $p < .001$). The number of CD symptoms shown in the groups was relatively low. The two DB groups did not differ from the control group on this measure. The percentage of each group meeting DSM-IV criteria for CD was 12.5% untreated DB, 14.8% treated DB, and 0% control (un-treated vs. control $X 2 = 5.94$, $df= 1$, $p < .02$; treated vs. control $X2 = 7. 1$, $df= 1$, $p < .008$).

**Table II.** Home, School, and Clinic Measures at Two-Year Post-Treatment Follow-up for Each Treatment Group

| Measure | DB No Class | | | DB Class | | | | |
|---|---|---|---|---|---|---|---|---|
| | *N* | Mean | *SD* | *N* | Mean | *SD* | *F* | *p* |
| Home | | | | | | | | |
| DISC-P: # ADHD Symptoms | 77 | 14.5 | 10.2 | 73 | 17.2 | 11.4 | 0.07 | — |
| DISC-P: # ODD Symptoms | 77 | 4.8 | 3.5 | 73 | 5.2 | 3.7 | 0.55 | — |
| DISC-P: # CD Symptoms | 77 | 0.8 | 1.8 | 73 | 1.3 | 2.1 | 0.26 | — |
| NABC Adaptive functioning | 76 | 95.1 | 12.5 | 73 | 96.4 | 13.8 | 1.17 | — |
| HSQ # Problem settings | 74 | 6.2 | 4.0 | 73 | 6.8 | 4.1 | 0.87 | — |
| HSQ Mean severity | 74 | 3.1 | 1.8 | 73 | 3.7 | 2.0 | 1.61 | — |
| CBCL Aggression | 76 | 60.5 | 10.5 | 73 | 61.0 | 12.9 | 0.35 | — |
| CBCL Inattention | 76 | 58.3 | 7.6 | 73 | 59.5 | 9.3 | 0.01 | — |
| CBCL Delinquent | 76 | 58.0 | 8.5 | 73 | 58.7 | 8.7 | 0.37 | — |
| CBCL Withdrawn | 76 | 54.0 | 6.7 | 73 | 53.1 | 5.6 | 3.50 | — |
| CBCL Somatic | 76 | 55.8 | 7.4 | 73 | 53.9 | 5.8 | 3.02 | — |
| CBCL Anxious | 76 | 56.6 | 9.2 | 73 | 54.9 | 6.4 | 3.18 | — |
| CBCL Social problems | 76 | 56.8 | 8.4 | 73 | 58.2 | 10.7 | 0.00 | — |
| CBCL Thought problems | 76 | 55.6 | 7.2 | 73 | 54.9 | 6.0 | 2.19 | — |
| CBCL Sex problems | 76 | 52.6 | 6.8 | 73 | 53.2 | 6.7 | 0.06 | — |
| Parenting Stress—Total | 75 | 65.6 | 31.9 | 73 | 66.2 | 30.5 | 0.23 | — |
| School | | | | | | | | |
| SSQ # Problem settings | 77 | 3.8 | 3.6 | 74 | 4.6 | 3.7 | 0.47 | — |
| SSQ Mean severity | 77 | 2.2 | 2.1 | 74 | 2.5 | 1.8 | 0.10 | — |
| Self-Control rating scale | 77 | 50.8 | 12.9 | 73 | 46.5 | 11.2 | 0.27 | — |
| SSRS: Social skills | 76 | 97.7 | 14.3 | 74 | 95.9 | 13.2 | 0.13 | — |
| SSRS: Social problems | 77 | 104.2 | 15.6 | 74 | 107.6 | 14.3 | 0.00 | — |
| CBCL-TRF Aggression | 77 | 57.4 | 9.6 | 74 | 59.1 | 8.8 | 0.01 | — |
| CBCL-TRF Inattention | 77 | 58.0 | 9.0 | 74 | 58.9 | 8.2 | 0.07 | — |
| CBCL-TRF Delinquent | 77 | 56.1 | 7.4 | 74 | 57.3 | 7.9 | 0.02 | — |
| CBCL-TRF Social problems | 77 | 56.4 | 7.7 | 74 | 57.0 | 7.5 | 0.16 | — |
| CBCL-TRF Anxious | 77 | 55.4 | 6.7 | 74 | 56.0 | 7.2 | 0.01 | — |
| CBCL-TRF Somatic | 77 | 54.5 | 6.9 | 74 | 52.6 | 5.2 | 3.80 | — |
| CBCL-TRF Withdrawn | 77 | 54.4 | 7.9 | 74 | 53.9 | 6.9 | 0.02 | — |
| Clinic | | | | | | | | |
| WJ Broad knowledge | 77 | 102.8 | 12.3 | 73 | 102.8 | 9.7 | 2.10 | — |
| WJ Academic skills | 77 | 101.8 | 17.4 | 73 | 101.7 | 18.1 | 1.55 | — |
| CPT Total correct | 76 | 25.9 | 4.8 | 72 | 26.6 | 4.3 | 0.30 | — |
| CPT Commission errors | 76 | 10.2 | 15.3 | 72 | 11.1 | 17.9 | 0.27 | — |
| CPT Off task (%) | 76 | 4.3 | 11.9 | 73 | 5.0 | 11.6 | 0.01 | — |
| CPT Fidgets | 76 | 16.3 | 16.4 | 73 | 19.7 | 15.9 | 1.43 | — |
| CPT Vocal | 72 | 12.2 | 18.9 | 72 | 15.7 | 18.2 | 0.94 | — |
| CPT Out of seat | 76 | 8.1 | 15.4 | 73 | 11.1 | 20.2 | 0.09 | — |
| Examiner ratings of behavior | 77 | 22.7 | 7.9 | 73 | 21.2 | 5.0 | 3.32 | — |

*Note.* DB = disruptive behavior; *F* = value of *F*-test from ANCOVA; *SD* = standard deviation; Means and *SD*s are unadjusted for the covariates; DISC-P = Diagnostic Interview Schedule for Children—Parent Form; ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder; NABC = Normative Adaptive Behavior Checklist; HSQ = Home Situations Questionnaire; CBCL = Child Behavior Checklist; CBCL-TRF = Child Behavior Checklist Teacher Report Form; SSQ = School Situations Questionnaire; SSRS = Social Skills Rating Scale; WJ = Woodcock–Johnson Psychoeducational Assessment Battery; CPT = continuous performance test.

**Table III.** Significant Results for Comparisons of Two DB Groups with the Control Group at Two-Year Post-Treatment Follow-up

| | (1) Normal | | (2) DB No Class | | (3) DB Class | | | |
|---|---|---|---|---|---|---|---|---|
| Measure | Mean | *SD* | Mean | *SD* | Mean | *SD* | *F* & Contrasts | *p* = |
| Home | | | | | | | | |
| DISC-P ADHD | 2.9 | 5.2 | 14.3 | 10.2 | 17.6 | 11.1 | 5.39; 1 < 2, 1 < 3 | .005 |
| DISC-P ODD | 0.6 | 1.4 | 4.9 | 3.6 | 5.3 | 3.7 | 5.23; 1 < 2, 1 < 3 | .006 |
| CBCL Attention | 50.3 | 1.0 | 58.5 | 7.9 | 59.4 | 9.7 | 12.60; 1 < 2, 1 < 3 | .001 |
| CBCL Aggression | 50.8 | 3.2 | 60.7 | 10.6 | 60.4 | 13.1 | 9.24; 1 < 2, 1 < 3 | .001 |
| CBCL Delinquent | 51.0 | 2.4 | 58.1 | 8.5 | 58.5 | 8.5 | 8.77; 1 < 2, 1 < 3 | .001 |
| CBCL Anxious | 50.5 | 1.4 | 57.1 | 9.2 | 55.0 | 6.4 | 9.95; 1 < 2, 1 < 3 | .001 |
| CBCL Social | 50.8 | 2.3 | 57.2 | 8.7 | 58.3 | 11.1 | 4.78; 1 < 2, 1 < 3 | .01 |
| CBCL Somatic | 51.8 | 3.8 | 55.8 | 7.4 | 53.9 | 6.0 | 5.26; 1 < 2 | .006 |
| CBCL Thought | 50.5 | 2.0 | 56.2 | 7.3 | 54.9 | 5.9 | 11.17; 1 < 2, 1 < 3 | .001 |
| HSQ Severity | 1.2 | 1.3 | 3.0 | 1.8 | 3.6 | 1.9 | 4.50; 1 < 2, 1 < 3 | .01 |
| School | | | | | | | | |
| SSQ # Settings | 1.4 | 2.5 | 3.8 | 3.6 | 4.6 | 3.8 | 5.13; 1 < 2, 1 < 3 | .007 |
| Self-Control | 57.0 | 10.6 | 50.9 | 13.0 | 46.7 | 11.3 | 5.71; 1 > 3 | .004 |
| Clinic | | | | | | | | |
| WJ Skills | 115.7 | 12.9 | 103.5 | 16.3 | 102.2 | 19.1 | 7.66; 1 > 2, 1 > 3 | .001 |

*Note.* DB = disruptive behavior; *SD* = standard deviation; *N* = sample size; DISC-P = Diagnostic Interview Schedule for Children—Parent Form; ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder; NABC = Normative Adaptive Behavior Checklist; CBCL = Child Behavior Checklist–Parent Form; HSQ = Home Situations Questionnaire; SSQ = School Situations Questionnaire; WJ = Woodcock–Johnson Psychoeducational Assessment Battery. Means and *SD*s are unadjusted for the covariates. *F* values are for the overall ANCOVA comparing the two DB groups (*N*s = 65 and 63, respectively, for parent and laboratory measures, and 73 and 68, respectively, for teacher ratings) and control group (*N* = 44) at the 2-year follow-up assessment. The column marked as "*p* =" shows the probability value for this overall *F*-test if significant at $p < .01$. If significant, the results of any pairwise contrasts are shown next to the *F* value provided the pairwise contrast was significant at $p < .05$.

There were no differences between the two DB groups and the control group on NABC adaptive functioning. However, there were a number of significant differences between the DB and control groups at follow-up on scales of the CBCL (parent form) (Table III). Both DB groups demonstrated significantly greater scores on CBCL attention, aggression, delinquent, anxious, social, and thought problems scales. Only the untreated DB group had significantly higher scores on the Somatic Problems scale in comparison to the control group.

Both DB groups had significantly more severe behavioral problems in the home compared to the control group on the HSQ. Neither of the DB groups, however, differed from the control group in the number of different settings in which such problems existed on the HSQ. No significant group differences were evident on any remaining parent reported measures.

The two DB groups differed significantly from the control group in the number of school settings in which they manifested behavior problems but not in the mean severity of those problems, as assessed by the SSQ. The DB treated group was rated as having significantly less self-control by their teachers than did the control group at the 2-year follow-up. Otherwise, the two DB groups were not significantly different from the control group at this follow-up point on any dimensions of the Teacher Report Form of the CBCL or on either score from the SSRS.

The two DB groups did not differ from the control group on the majority of measures taken in the clinical setting, including the tests of academic knowledge as well as the CPT and the examiner ratings of the child's overall behavior during the testing session. Both DB groups were significantly lower in their academic skills than the normal control group.

## DISCUSSION

The present study reports the results at the 2-year post-treatment follow-up evaluation of two groups of children with significantly disruptive behavior at kindergarten entry, one of which had received a classroom-based early intervention program for their entire kindergarten year. At post-treatment, we previously reported (Barkley et al., in press) that the special classroom intervention produced initial improvements in some realms of classroom functioning (aggression, social skills, self-control, etc.), but had minimal impact on the home functioning of

these children or the stress these children posed for their parents. An exception may have occurred in the realm of daily adaptive functioning, in which some initial improvements in parental reports were associated with treatment. No benefits of the parent training program were evident at post-treatment. As reported here, none of the initial post-treatment gains for the special classroom treated DB group resulted in any lasting differences from the untreated DB group at this 2-year post-treatment follow-up. The DB children receiving the special kindergarten intervention did not differ from those DB children who did not receive the classroom intervention on any measures. Nevertheless, on many of these measures, such as symptoms of ADHD and ODD, externalizing and internalizing symptoms (as assessed by parental CBCL), pervasiveness of behavior problems at school, and academic skills, both groups of DB children remained significantly abnormal by the end of the 2-year follow-up evaluation. Such results are quite sobering as they indicate that no lasting benefits accrued to DB children receiving an intensive, full-day, multimethod classroom intervention spanning their entire kindergarten year. Also, although both treated and untreated children showed improvements in their school and home adjustment with age/maturation, so did the control children. Thus, the DB children continued to differ from control children in many respects at the end of second grade.

These findings must be viewed in the context of some methodological limitations noted in our earlier reports, yet deserving of reiteration here. The post-treatment effects evident in the school setting due to the special classroom program need to be viewed with some caution (see Barkley et al., in press). The teachers completing the rating scales for the children in the special classrooms between the pre-and post-treatment assessments were also serving as the intervention staff and may have been biased in their reporting of treatment effects. The fact that children in the classroom were not found to maintain some of their gains on some dimensions of teacher ratings after moving on to different teachers by second grade could reflect such observer bias besides being related to the termination of treatment itself. The findings from the direct classroom observations that also documented improvements at post-treatment might argue against such bias being the sole basis of the earlier results on the teacher ratings. Even so, these research assistants could not be kept entirely blind to group membership. That is because children receiving the special classes were all in the same classroom whereas those not receiving that treatment were disbursed across various regular public school classes. Observers could easily tell which classes were the special treatment programs. Thus, teacher and observer biases cannot be ruled out as possible contributors to the initially positive post-treatment findings.

As we reported earlier, there was no significant impact of the parent training intervention component on these DB children or their families, regardless of whether or not the children received this special class intervention (Barkley et al., in press). Combined with the present results on the classroom intervention, these findings argue against the approach taken here to early intervention with DB children selected by means of a screening at kindergarten entry, if the intent is to provide long-lasting risk reduction. At the very least, it suggests that this intervention program, or some variation of it, may need to be maintained past kindergarten, and only then for those DB children who are probably the most deviant and thereby carry the greatest long-term risks. This is not the first early intervention program for children with high levels of disruptive behavior to report disappointing results. Braswell and colleagues (Braswell, August, Bloomquist, Realmuto, Skare, & Crosby, 1997) tried a 2-year, multimethod, multiagent cognitive behavioral intervention program with 309 second- through fourth-grade students identified by a two-step screening (teacher, parent ratings) as having high levels of externalizing behavior problems. In comparison to an information/attention control group, they found no significant effects of the intervention on a multisource assessment battery of school and home behavioral–emotional adjustment, adaptive functioning, and social skills. Both groups improved significantly over time, suggesting a significant role for developmental maturation in the moderation of initially apparent developmental risks. That finding is quite consistent with those of the present study. Also in keeping with the present study, Cunningham, Bremer, and Boyle (1995) found little or no impact of a parent training program offered to parents of children at high-risk for disruptive behavior disorders similarly identified through a community-based screening process. Like the present project (see Barkley et al., in press), many parents of high-risk children offered parent training in that study opted not to attend or did so sufficiently sporadically as to be of little benefit. All of this suggests that school or home-based behavioral interventions may produce significant short-term gains while children remain in treatment. However, these efforts are not impressive at maintaining such gains after treatment withdrawal or

in reducing long-term risks thereafter. Indeed, the parent-training program, if offered to families identified only by a school-based screening as was done here, may not even be attended by a majority of families offered such services. Clearly, more innovative approaches to behavioral treatments and risk reduction seem in order for children with abnormally high levels of externalizing symptoms.

It is also evident from these results that the identification of children as being at high risk based on parent reported behavior problems at kindergarten entry does not necessarily insure that all have such high risks. The actual level of problems for a large minority of the DB children did not reach clinically significant levels of deviance or impairment, even though the children were functioning more poorly than the control group followed here. The point is evident in the means in Tables II and III for many of the age-referenced standardized measures (e.g., some CBCL dimensions, social skills). Differences between the means for DB and control children, although statistically significant, were only a few T-score or standard score points apart, and thus do not indicate marked differences between most DB and control children by the follow-up evaluation. Such a finding suggests that a substantial minority of the children thought to have been at high risk due to the results of their screening for DB symptoms were not in fact at much risk when followed over this 3-year period. An important point made earlier by Lochman and the Conduct Disorders Prevention Group (1995) was that such community screening approaches necessarily involve a significant proportion of false-positive cases. A multi-gating (multistep) and multivariate screening procedure for identifying at-risk children would likely prove of greater utility in identifying those children at greatest actual risk and those most likely to benefit from intervention. Others have utilized just such a practice for identifying high-risk DB children for intervention (Loeber, Dishion, & Patterson, 1984). A similar multistep approach was employed by August and colleagues (1995) in identifying children at risk for ADHD and comorbid disorders, many of whom subsequently participated in an early intervention program (Braswell et al., 1997). Screening children on parent reported symptoms at kindergarten registration followed by teacher reported symptoms after several months into the kindergarten year would be one such alternative multistep approach having greater utility than the single-step approach used here. So might be such multistep screenings that included additional variables concerning the child or deviant parental/family functioning (poor child management skills, elevated parenting stress, single-parent household, etc.).

Our initial report on these DB children at pretreatment suggested one factor that deserves future consideration in efforts to identify that subset of DB children and their families most at risk for later adverse outcomes, and therefore most in need of intervention. That factor is the concept of adaptive disability. Previous investigations of ADHD children have noted a rather striking disparity between their level of intelligence or general cognitive ability and their adaptive functioning (Barkley, DuPaul, & McMurray, 1990; Roizen, Blondis, Irwin, & Stein, 1994). Adaptive functioning is reflected in the performance of daily activities related to personal care, social self-sufficiency, and responsibilities in daily living in the home and community. These domains may be measured by adaptive inventories such as the Vineland Adaptive Behavior Scales or the NABC used here. Past studies have found that the levels of adaptive functioning for clinically referred ADHD children may be comparable to those seen in mentally retarded or autistic children (Stein, Szumowski, Blondis, & Roizen, 1995). Stein et al. suggested that a significant disparity between IQ and adaptive functioning might be a marker for current and future impairments among ADHD children. In a previous report, we applied such a discrepancy formula to the pretest scores obtained by the DB children used in this study (Shelton et al., 1998). We found those DB children with adaptive disability to have significantly higher rates of concurrent aggression and conduct disorder, parental maladjustment and parenting stress, more severe degrees of ADHD, and poorer academic achievement skills than did DB children not so disabled. It remains to be seen whether such adaptive disability was associated with future risks in addition to concurrent ones. In one report, Greene and colleagues (1997) employed a similar discrepancy formula to identify ADHD children as socially disabled. They found that social disability was predictive of substantially greater rates of mood, anxiety, disruptive, and substance use disorders at the end of a 4-year prospective longitudinal study. Perhaps the concept of adaptive disability, one component of which is social competence, might likewise be a predictor of greater risk and hence a useful marker for screening DB children for early intervention. This could not be explored in the present follow-up study given the very small number of children in each of the DB groups qualifying as adaptively disabled

(approx. 18).

The foregoing discussion is not intended to suggest that none of the DB children studied here had any risks. At study entry, 61%–70% of the children passing the DB screen subsequently met criteria for ADHD, and 50%–65% for ODD during a comprehensive psychiatric evaluation. Such a prevalence figure for ADHD is similar to, if not higher than, that found by August, Realmuto, MacDonald, Nugent, and Crosby (1996), who employed a multistep (parent–teacher) screening process to identify behaviorally at-risk children for an intervention program. And the children identified in this study had an even greater prevalence of ODD and CD at study entry (see Shelton et al., 1998) than did those identified by August et al. (1996). Perhaps this was due to this study's use of the actual DSM symptoms for ADHD and ODD as part of the screening tool. The children identified here were also well above normal in their subsequent teacher ratings of aggression on entering school, and clearly were more behaviorally disruptive in class on direct observations than were the normal children (see Shelton et al., 1998). Moreover, 45%–64% continued to meet DSM criteria for ADHD and 43%–55% for ODD at the 2-year follow-up. However, this discussion is intended to point out that despite these ongoing signs of risk within a sub-group of the DB subjects, many of these DB children went on to improve substantially with maturity. Such improvements were often to an extent that some did not have a psychiatric disorder at follow-up. Nor did some experience adverse outcomes in later school or home functioning over the follow-up years. Only a small proportion of the DB children went on to receive some form of psychiatric, psychological, or special educational services by the end of their second-grade year. Such findings might suggest that only a minority of DB children were truly at-risk of requiring later services. It certainly implies that the sub-sequent utilization of treatment services by the children was not affected by the early intervention program.

Perhaps not only is a different approach to identifying at-risk children needed in future early prevention/intervention programs for DB children, but so may be a different approach to intervention. One such approach not utilized here stems from the fact that peer influences may make a marked contribution to disruptive behavioral patterns and hence to risks and negative outcomes (Deater-Deckard, Dodge, Bates, & Petit, 1998). Such influences, however, are rarely targeted for change in early intervention programs such as this one, even though a component addressing social skills may be embedded in the treatment package. Those components do not focus so much on directly influencing the peer group of the target child as on changing the child's repertoire of social skills that may be used in interactions with peers. This emphasis on skill training for children with ADHD symptoms has been seriously questioned in a recent theoretical model of ADHD that argues for greater problems with performance of known skills than with the knowledge of the skills them-selves (Barkley, 1997). Social interventions might target the peer group of these high-risk children as one means of risk reduction. For instance, the use of peer-mediated conflict resolution programs as developed by Cunningham and Cunningham (1998) might be one possibility. Another was the successful program by Kellam et al. (1994) using the peer-mediated Good Behavior Game.

In conclusion, the present study found that the immediate treatment gains from an early classroom intervention program for high-risk DB children did not continue through to the 2-year post-treatment follow-up reported here. Maturation or time resulted in both DB groups moving closer to normal in some respects. In others, such as severity of home behavior problems, pervasiveness of school behavior problems, home aggression, ADHD and ODD symptoms, and academic skills, both the classroom-treated and untreated DB groups remained abnormal despite such developmental improvement. In some instances (teacher CBCL ratings, social skills, etc.), the DB children in both groups improved over development sufficiently to no longer be deviant from the normal control group by the end of second grade. The results make plain the continuing problems with both trying to more efficiently identify potentially high-risk DB children who actually suffer high rates of later adverse outcomes and with developing interventions that can provide either immediate or lasting benefits to these children.

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