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School-Based Intervention for Childhood Disruptive Behavior in Disadvantaged Settings: A Randomized Controlled Trial With and Without Active Teacher Support

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Objective: In this randomized controlled trial, we investigated the effectiveness of a school-based targeted intervention program for disruptive behavior. A child-focused cognitive behavioral therapy (CBT) program was introduced at schools in disadvantaged settings and with active teacher support (ATS) versus educational teacher support (ETS) (CBT + ATS vs. CBT + ETS). ***Method:*** Screening (n = 1,929) and assessment (n = 224) led to the inclusion of 173 children ages 8–12 years from 17 elementary schools. Most of the children were boys (n = 136, 79%) of low or low-to-middle class socioeconomic status (87%); the sample was ethnically diverse (63% of non-Western origin). Children received CBT + ATS (n = 29) or CBT + ETS (n = 41) or were entered into a waitlist control condition (n = 103) to be treated afterward (CBT + ATS, n = 39, and CBT + ETS, n = 64). Effect sizes (ES), clinical significance (reliable change), and the results of multilevel modeling are reported. ***Results:*** Ninety-seven percent of children completed treatment. Teachers and parents reported positive posttreatment effects (mean ES = .31) for CBT compared with the waitlist control condition on disruptive behavior. Multilevel modeling showed similar results. Clinical significance was modest. Changes had remained stable or had increased at 3-months follow-up (mean ES = .39). No consistent effect of teacher condition was found at posttreatment; however, at follow-up, children who received ETS fared significantly better. ***Conclusions:*** This study shows that a school-based CBT program is beneficial for difficult-to-reach children with disruptive behavior: The completion rate was remarkably high, ESs (mean ES = .31) matched those of previous studies with targeted intervention, and effects were maintained or had increased at follow-up.

Keywords: cognitive behavioral therapy, disruptive behavior, school-based intervention, randomized controlled trial

Disruptive behavior problems in childhood predict disruptive behavior problems in adolescence and adulthood (Loeber, Burke, & Pardini, 2009). Intervention programs therefore target these problems in childhood. Although it has been shown that disruptive behavior problems can be effectively treated with cognitive behavioral therapy (CBT; e.g., Sukhodolsky, Kassinove, & Gorman, 2004), this at-risk population is difficult to reach (Waschbusch, Pelham, & Massetti, 2005). Therefore, strategies to involve this population in treatment are of great societal and clinical value, but these strategies are understudied.

Disruptive behavior is a unifying term for oppositional defiant behavior, conduct problems, and antisocial behavior. It refers to violations of social rules and negative actions toward others, such as aggression, lying, and stealing (Fossum, Handegard, Martinussen, & Morch, 2008). Disruptive behavior can have an adverse impact on child development in that it has been associated with long-term negative outcomes, deteriorating parent–child interactions, early school drop-out, and vandalism and crime (e.g., Loeber et al., 2009). By the age of 4 years, disruptive behavior can be a dominant feature of a child's behavioral repertoire (Broidy et al., 2003).

Early interventions aim to contain disruptive behavior to a childhood-limited interval and prevent persistent behavior problems throughout the life course. Effective child-focused and family-focused treatments for disruptive behavior problems have been developed, generally based on CBT principles (e.g., Costin & Chambers, 2007; Kazdin & Wassell, 2000; van Manen, Prins, & Emmelkamp, 2004). These effective treatments, however, are challenged by two fundamental implementation problems: how to ensure treatment access and how to ensure treatment completion.

Treatment Access and Treatment Completion

Effective treatment of child disruptive behavior problems typically involves parents as active agents of change (e.g., Costin &

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Chambers, 2007). Overall, parent-focused treatments have proven to be more effective than child-focused CBT and therefore are the first choice (McCart, Priester, Davies, & Azen, 2006), but they are complex to implement in difficult-to-reach populations. That is, although parent-focused treatments work "best," not all children actually receive "the best". Parents of children with disruptive behavior problems have difficulty accessing mental health services (Waschbusch et al., 2005); are often reluctant to accept treatment (Kazdin, Holland, & Crowley, 1997); and are more likely to drop out of treatment prematurely (Reyno & McGrath, 2006). In particular, parents and children from low socioeconomic (SES) backgrounds, deprived neighborhoods and/or ethnic minorities are less likely to complete treatment (August, Egan, Realmuto, & Hektner, 2003). Drop-out rates easily exceed 30% (Kazdin & Wassell, 2000; Reyno & McGrath, 2006). Low attendance and low treatment adherence have been associated with negative outcomes for clients (e.g., poorer therapeutic outcomes), therapists (e.g., lower cost effectiveness), and researchers (e.g., power problems and problems with generalizability; Nock & Kazdin, 2005). In several key psychosocial intervention studies of the effectiveness of parent-focused treatments for disruptive behavior problems, researchers have reported improved parenting practices and improved child behavior following treatment. However, all these researchers encountered problems with parents' treatment attendance: Lochman and Wells (2003) reported parent treatment attendance of 26% (Coping Power); Reid, Webster-Stratton, and Hammond (2007) reported that approximately half of the mothers attended only one half or fewer of the parent sessions (Incredible Years); and Brotman et al. (2011) reported a mean parental attendance of six out of 13 sessions (ParentCorps). In the latter study, attendance was found to be related to improved outcome. It should be noted that these studies also varied in several other ways, such as age range and inclusion criteria. In sum, although treatment of disruptive behavior problems appears most effective (i.e., largest effect-sizes) when parents are the agents of change, catching and keeping these parents and their children for treatment is problematic. Supplemental strategies to reach and support at-risk children therefore are of vital importance.

School-Based Intervention

The employment of school-based interventions for children with disruptive behavior problems may help overcome the difficulties involved in implementing parent-focused interventions. Meta-analyses of elementary-school-based programs have shown overall small but positive effects on aggressive or disruptive behavior (Dymnicki, Weissberg, & Henry, 2011; Wilson & Lipsey, 2007; ESs of .11 and .21, respectively). These small effects persist into adulthood as evidenced by long-term positive outcomes (e.g., academic attainment; engagement in work or school; Deković et al., 2011). Preventive efforts—both universal classroom-based programs as well as indicated and targeted intervention programs—have been important in efforts to reduce disruptive behavior problems. In an update of their 2003 meta-analysis, Wilson and Lipsey (2007) found that targeted programs for selected high-risk children were the most effective, with a mean ES of .29 (i.e., compared with an ES of .21 for universal programs in Wilson, Lipsey, & Derzon, 2003, and an ES of .11 for universal programs in Dymnicki et al., 2011). In addition, a mean ES of .36 was found for targeted intervention of violent behaviors (Mytton, DiGuiseppi, Gough, Taylor, & Logan, 2006). Thus, school-based programs have yielded positive short-term and long-term outcomes, and targeted intervention has shown stronger gains than universal school-based intervention programs.

Teacher Involvement

Interventions performed at school have the advantage that teachers can participate and function as co-therapists and agents of change. The behavior management skills of teachers may be inadequate when they have to deal with children with increased levels of disruptive behavior on a daily basis (e.g., Webster-Stratton, Reid, & Stoolmiller, 2008). Therefore, teacher training in combination with school-based child-focused CBT is likely to enhance intervention effects for children with disruptive behavior problems. Webster-Stratton, Reid, and Hammond (2004) added teacher and parent training to child training and found improvements on teachers' classroom behavior management skills and on children's behavior problems. The teacher training targeted classroom management strategies, promoting children's social skills and positive peer-relationships. While the beneficial effects of multimodal treatment have been demonstrated (e.g., Waschbusch et al., 2005; Webster-Stratton & Reid, 2003; Webster-Stratton, Reid, & Hammond, 2004), there is no evidence that teacher involvement enhances the effectiveness of child interventions, nor is it known which teacher training components are effective. Psycho-education and support may be sufficient to help teachers cope more effectively with the problematic behaviors of their pupils. Indeed, Silverman et al. (1999) showed that an attention-control condition involving (child) educational support resulted in a reduction of anxiety comparable to "active" treatments (i.e., a child contingency management condition and a child self-control training condition). Similar results were found for a school-based preventive intervention trial for childhood anxiety (Miller et al., 2011). To examine whether *active* teacher participation enhances outcome over and above an attention-control condition, in the current study we compared two conditions: an active teacher-training condition with active CBT ingredients, and a teacher training condition designed to control for nonspecific effects such as the psycho-education and support teachers received in the active condition.

The Current Study

The current study is a randomized controlled trial in which we investigated the efficacy of a school-based CBT targeted-intervention program for children with disruptive behavior problems in a difficult-to-reach population. Child-focused treatment was combined with either active teacher support or teacher psycho-education. We expected that the child-focused CBT program (intervention condition) would be more effective in reducing disruptive behavior than a waitlist control condition (WLC) and that short-term gains would persist at follow-up (Hypothesis 1). We further expected that children in the active teacher participation condition would outperform those in the teacher education condition (Hypothesis 2). In addition, we explored the potential moderating effects of SES, gender, ethnicity, and percentage of at-risk children per school.

Method

Participants

Children. One hundred and seventy-three children were included in the study (intent-to-treat), of which 136 were boys with a mean age of 10.32 years ($SD = 1.19$). The mean age of the girls ($n = 37$) was 10.08 years ($SD = 1.15$). SES was categorized as low ($n = 96$; 55%), low to middle ($n = 56$; 32%), high ($n = 16$; 9%), and missing ($n = 5$; 3%; SES according to data from the Central Bureau of Statistics Netherlands, 2010). Fifty-seven children were Dutch (33%), seven of Western origin (5%), and 109 were children of non-Western immigrants (63%; e.g., Turkish, Moroccan, Surinamese, and Afghan). Most children lived with both biological parents ($n = 105$; 61%). Forty-five children lived in a single-parent household (26%), and 17 children were from divorced families in which one or both parents were remarried (10%). For six children, no information on the family situation was available. See Table 1 for the descriptive statistics.

Teachers. Seventy teachers were included in the pretreatment assessment. Most of the participating teachers were women (57 out of 70) and Dutch (58 out of 70). Data on the age and teaching experience of the sample were not collected.

Trainers. Thirteen trainers (all female and Dutch) participated as principal trainer and 22 (all female and Dutch, except for one Surinamese) as co-trainer, providing 39 group interventions. Seven trainers participated on a freelance basis, four worked in a school mental health organization, and two worked at the university. The work-related background of the trainers and co-trainers ($N = 35$) was in school mental health care ($n = 7$), regular mental health care ($n = 3$), freelance or commercial training company ($n = 3$), university ($n = 2$), university master's degree program ($n = 8$), or working for the participating school ($n = 12$). Nine of the principal trainers participated in Wave 1 and Wave 2 (discussed later); four of the principal trainers participated either in Wave 1 ($n = 1$) or in Wave 2 ($n = 3$). Schools provided co-trainers ($n = 14$) to facilitate implementation (Wave 1 + Wave 2: $n = 12$; Wave 1: $n = 3$, and Wave 2: $n = 7$).

Measures

Screening. To select at-risk children, we used a six-item screening questionnaire (List Global Screening: LGS; van Leeuwen & Bijl, 2003) that was completed by two teachers for each child to prevent false positives. The LGS aims to identify children showing (symptoms of) antisocial behavior. Three items include overt, covert, and oppositional problem behaviors; one item reflects risk for persistence of problems; and two items assess delays in educational development. Each item is rated on a 3-point Likert scale (range 0–2; 0 = *none/no significant problems*, 2 = *significant problems*). A child is rated as *at risk* when either the sum of the problem behavior items is 3 or greater or when the sum of the problem behavior (≥ 1) combined with the score on the risk-for-persistence item is 3 or greater. Delays in educational development (Items 5 and 6) augment the at-risk score with a maximum of 1 point. The LGS was validated and tested in an ethnically diverse sample (758 children, among which 170 children were judged to be at risk) and resulted in good sensitivity (73%) and specificity (86%): the Yule's Y (e.g., interrater agreement for skewed distributions) was .60, which indicates sufficient interrater agreement (van Leeuwen & Bijl, 2003). In our sample, a child was selected if both teachers rated the child as at-risk. The interrater agreement (Yule's Y) among teachers was .61 ($n = 151$ teachers).

Teacher-report measures. The Teacher Report Form (TRF; Achenbach & Rescorla, 2001; Verhulst, 2002) is a 113-item scale that assesses behavior problems and has shown good reliability and validity (Achenbach & Rescorla, 2001). Items are rated on a 3-point Likert scale (range 0–2). Cronbach's alpha's for the broadband Externalizing scale (32 items) in our study ranged from .92 to .94 (measured at pre-, post- or follow-up treatment), and the alphas for the TRF scales reflecting the criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., American Psychiatric Association, 1994) ranged from .84 to .89 for conduct problems (13 items) and from .81 to .85 for oppositional defiant problems (five items). Test–retest reliabilities for the American version are good (.71 for conduct problems and .91 for oppositional defiant problems; Achenbach & Rescorla, 2001).

Table 1
Pretreatment Descriptives for the Conditions

Variable	Intervention condition ($n = 70$)			Waitlist control condition ($n = 103$)
	Total ($n = 70$)	CBT + ATS ($n = 29$)	CBT + ETS ($n = 41$)	
Boys[a,b]	54	22	32	82
Ethnicity[a,b]				
Dutch	41	12	13	32
Western	4	1	3	3
Immigrants	25	16	25	68
Mean age in years (*SD*)[a,b]	10.35 (1.09)	10.62 (1.09)	10.17 (1.06)	10.21 (1.25)
Socioeconomic status[b*]				
Low	31	14	17	65
Middle	27	12	15	29
High	10	3	7	6
Single parent household[a,b]	20	9	11	25
Treatment completers[a,b]	68	29	39	100

Note. Socioeconomic status distribution was different for intervention condition versus waitlist control condition. CBT + ATS = child cognitive behavior therapy and active teacher support; CBT + ETS = child CBT and educational teacher support.
[a] Intervention condition and waitlist control condition were not significantly different. [b] ATS and ETS were not significantly different.
[*] $p < .05$.

The Disruptive Behavior Disorders Rating Scale (DBDRS; Pillow, Pelham, Hoza, Molina, & Stultz, 1998; Dutch teacher version, Oosterlaan et al., 2008) assesses symptoms of oppositional defiant disorder (eight items), conduct disorder (16 items), attention problems (nine items), and hyperactivity–impulsivity (nine items). Items are rated on a 4-point Likert scale (range 0–3). Both the original and the Dutch versions have shown good reliability and validity. In our study, Cronbach's alphas for the scales ranged from .89 to .93, with exception of the Conduct Disorder scale, where alphas ranged from .68 to .75.

Parent-report measures. Parents completed the Strength and Difficulties Questionnaire (SDQ; van Widenfelt, Goedhart, Treffers, & Goodman, 2003). The SDQ contains 25 items rated on a 3-point Likert scale (range 0–2). The original and Dutch versions have shown good reliability and validity. In the current study, the Total Difficulties scale (20 items) was included. The Cronbach's alpha was .88 for this scale in the Dutch norm population (van Widenfelt et al., 2003). The mean test–retest correlation for the SDQ teacher-rated scales is .73 (Goodman, 2001). The Cronbach's alpha's in the current study ranged from .78 to .82 for the Total Difficulties Scale, except at follow-up ($\alpha = .63$, $n = 23$).

Peer-report measures. The Peer Measurement of Internalizing and Externalizing Behavior (PMIEB; Weiss, Harris, & Catron, 2002) is a 22-item peer-nomination inventory that assesses psychopathology in school-age children. Classmates are asked to select up to three of their classmates who best fit the description of each item (e.g., "sometimes fights"; "is shy or withdrawn"; "swears or uses bad language"). In the validation study,Weiss et al. (2002) reported that the PMIEB had a Cronbach's alpha of .92 and test–retest reliability of .88 for Externalizing Behavior. Cronbach's alpha's in our study sample ranged from .88 to .92 for Externalizing Behavior (10 items).

Procedure

Seventeen schools from low or low-to-middle SES urban areas participated during 3 consecutive school years. Four to six weeks after the start of each school year, teachers rated children with the LGS (van Leeuwen & Bijl, 2003). Each child was rated by two teachers who were instructed to independently evaluate children. Combined teacher–teacher ratings were used to identify the at-risk children. Of the 1,929 screened children, 280 children were thus selected. Parental informed consent was obtained via schools (Time 1, cf. flowchart in Figure 1). Official translators from the Dutch Centre for Translation and Interpretation assisted in the informed consent process if necessary. Parents of 264 children were invited to sign informed consent. Consent was obtained for 224 (85%) children, and their eligibility for the study was then assessed. Fifty-one children with IQs of less than 85 were excluded (the cognitive content of the training was expected to be too difficult for these children), resulting in an intent-to-treat sample of 173 children. Two children were excluded prior to intervention: In the case of one child, the consent was withdrawn, and one child was placed into custody of a youth mental health care service. Each child's primary teacher completed a set of questionnaires, including the DBDRS and TRF (Time 2), and participated in the study. Seventy children were assigned to the intervention condition and 103 children to the waitlist control condition. Child, teacher, and parent (questionnaire) information was obtained 1–2 weeks postintervention (Time 3). For children participating in the first intervention wave, Time 4 represents the follow-up assessment (treatment completers: $n = 68$ out of $n = 70$). Children in the waitlist control condition received the intervention between Time 3 and Time 4 (second intervention wave); for these children Time 4 represents the postintervention assessment ($n = 100$). At the start of the following school year, follow-up data were collected for children from the second intervention wave (Time 5; $n = 80$). It should be noted that there are no follow-up waitlist data available as children from the waitlist control condition received intervention following Time 3 (see Figure 1 for the flowchart). The Ethics Committee of the University of Amsterdam approved the study. The study was included in the Dutch trial register (NTR1352).

Intervention. "Keep Cool ... Start at School" is a nine-session group CBT adapted from the *Self-Control* manual by van Manen, 2001 (van Manen et al., 2004). This manual is based on the social information processing framework by Crick and Dodge (1994). The framework of the intervention states that aggression results from deficits in one or more steps through which social information is processed (Step 1: encoding of cues; Step 2: interpretation of cues; Step 3: clarification of goals; Step 4: response access or construction; Step 5: response decision; and Step 6: behavior enactment; see also Arsenio, 2010). The *Self-Control* treatment targets these social information processing steps and includes social cognitive behavioral components, problem-solving skills, social cognitive skills, and social skills. A randomized controlled treatment outcome study for boys with oppositional defiant disorder, conduct disorder, or disruptive behavior disorder–not otherwise specified was conducted in which the social–cognitive intervention described in *Self-Control* was compared with social skills training and a waitlist control condition. Results revealed a significant difference between treatment and no treatment and between the Self-Control program and social skills training on various child, parent, and teacher measures, in favor of the Self-Control program (van Manen et al., 2004). We modified the Self-Control intervention protocol (e.g., phrasing, examples, cartoons) for the current study to reflect the school setting, preventive intervention purposes, and inclusion of children from a low SES background; deprived neighborhoods, and ethnically diverse backgrounds. The benefits of child therapy for disruptive behavior have been found to extend to parent and family functioning, even though these were not focused on directly (Kazdin & Wassell, 2000).

"Keep Cool ... Start at School" is a manualized social–cognitive behavioral treatment program. The first (individual) session involves goal setting. In the following nine group sessions, social information processes and social skills are targeted with CBT techniques such as cognitive restructuring, emotive education, role-playing, positive reinforcement of adequate behavior, and modeling. Exercises are illustrated by four characters (Hot Harry, Hot Hester, Cool Kevin, and Cool Kim) designed as representatives of the youth culture in low-SES areas (manuals available from first author). All parents were invited for a one-session parent meeting at mid-intervention. The trainer conducting the child CBT group also conducted the (individual) teacher sessions. Teachers received either five sessions of active teacher support (ATS) or five sessions of educational teacher support (ETS). Psycho-education was similar in the ETS and ATS conditions and included information on social information processing; the content

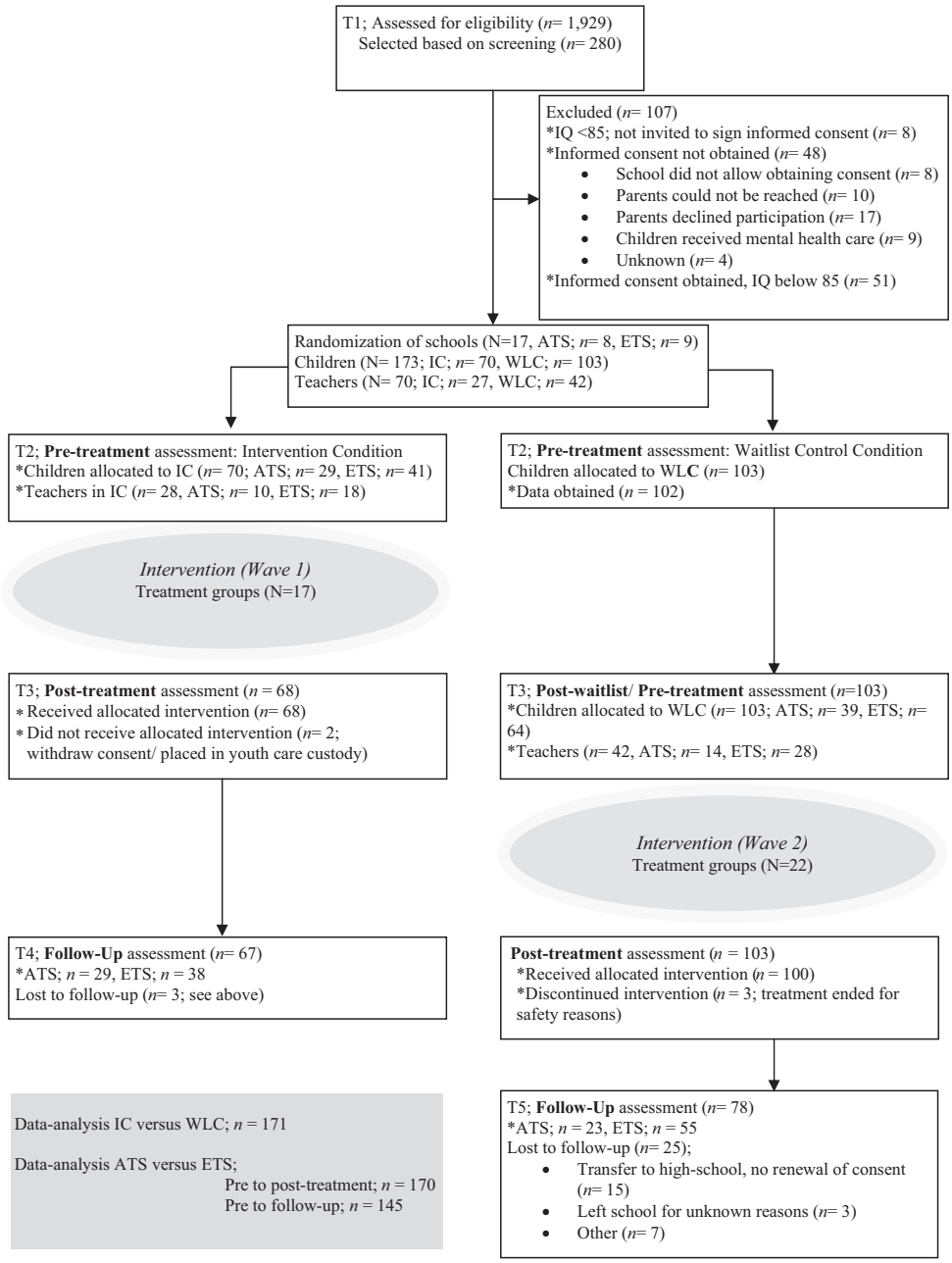

Figure 1. Consolidated Standards of Reporting Trials (CONSORT) flow diagram. T1–T5 = Time 1–Time 5; ATS = active teacher support; ETS = educational teacher support; IC = intervention condition; WLC = waitlist control condition.

of upcoming child sessions; and the role of teachers, parents, and peers in the development, maintenance, and remission of disruptive behavior. In addition, the ATS sessions included instructions in the use of contingency management, in how to assist children with the completion of exercises in their workbooks, and in the in-vivo classroom modeling of positive behavior (e.g., giving compliments). See Table 2 for the shared treatment components in the ATS and ETS conditions and those specific to either ATS or ETS.

Design. We conducted a randomized controlled trial comparing the intervention to a waitlist control condition with preintervention, postintervention and follow-up measurements (follow-up was not obtained for waitlist controls). The active teacher condition (ATS) was in a random design compared with the educational teacher condition (ETS). The ETS is similar to the ATS but excludes components requiring teachers to *act*, to actively support children in the classroom (e.g., by working with them on their home assignments or working with a contingency management strategy). Our aim was to

Table 2
Comparison of Active Teacher Support and Educational Teacher Support

Session	Active teacher support (ATS) condition	Educational teacher support (ETS) condition
1 (prior to Child Session 1)	Both conditions: Psycho-education (e.g., self-control, temperament, social information processing, content of upcoming child sessions)	
	Specific to ATS: (a) Instructions in the use of contingency management. (b) Instructions to assist children daily with the workbook exercises. (c) Instructions in the life in-classroom modeling of exercises.	Specific to ETS: (a) Empathic attitude toward teachers. (b) Redirect questions back to teachers. (c) No instructions or suggestions can be given.
2 (between Child Session 2 or 3)	Both conditions: Psycho-education (e.g., affective education, teacher as role model, rewarding, thoughts–feelings–behavior associations, content of upcoming child sessions)	
	Specific to ATS: (a) Trainer and teacher work on a token system for behavior change. (b) Instructions to assist children daily with workbook exercises.	Specific to ETS: (a) Empathic attitude toward teachers. (b) Redirect questions back to teachers. (c) No instructions or suggestions can be given.
3 (between Child Sessions 5–7)	Both conditions: Psycho-education (e.g., behavior and consequences, benefits of "being nice," use of compliments, content of upcoming child sessions)	
	Specific to ATS: (a) Token system; update and working out barriers to implementation. (b) Planning of in-class modeling of use of compliments. (c) Instructions to assist children daily with workbook exercises.	Specific to ETS: (a) Empathic attitude toward teachers. (b) Redirect questions back to teachers. (c) No instructions or suggestions can be given.
4 (prior to Child Session 9)	Both conditions: Psycho-education (e.g., importance of [positive] parent-teacher communication, peer influences and interactions, content of upcoming child-sessions)	
	Specific to ATS: (a) Token system; update and working out barriers to implementation. (b) Instruct teacher to meet the parents. (c) Instructions to assist children daily with workbook exercises.	Specific to ETS: (a) Empathic attitude toward teachers. (b) Redirect questions back to teachers. (c) No instructions or suggestions can be given.
5 (posttreatment)	Both sessions: Evaluation and follow-up.	

find a difference in outcome that would highlight specific teacher activities that may enhance treatment outcome. Therefore, the educational condition was not designed as a placebo condition (see Kirsch, 2005).

Power. We conducted an a priori power calculation using Raudenbush & Liu's (2000) method for multilevel designs. Cohen's *d* was set at .70, the intraclass correlation at 0.1 and 0.05, and alpha at 0.05. To obtain an a priori power of .8, we estimated that 54 children were required in each of the three conditions (required sample size 162). Consent was obtained for 224 children. Given that a relatively large number of children was excluded (IQ < 85; $n = 51$), the final sample consisted of 173 children.

Randomization strategy. Prior to the study, 20 numbers were assigned to sealed envelopes; each envelope included the outcome of two randomization procedures. The first randomization procedure resulted in allocation of schools to either CBT + ATS ($n = 8$) or CBT + ETS ($n = 9$). Schools were randomized to either the ATS or ETS condition to prevent spill-over effects between teachers. The second randomization procedure resulted in allocation of Grades 5–6 to the intervention condition and Grades 7–8 to the waitlist control condition, or allocation of Grades 5–6 to the waitlist control condition and Grades 7–8 to the intervention condition. If schools consented to participate, they received a number, and the corresponding envelope was opened. In nine schools, Grades 5–6 (children ages 8–10 years) were allocated to the intervention condition. In eight schools, Grades 7–8 (children ages 10–12 years) were allocated to the intervention condition. The randomization resulted in 38 children in Grades 5–6 and 32 children in Grades 7–8 in the intervention condition, and 50 children in Grades 5–6 and 53 children in Grades 7–8 in the waitlist control condition.

Treatment integrity. Treatment integrity was ensured through instruction and supervision of the trainers. Adherence data were collected to verify implementation.

Training of trainers in the child-treatment. Prior to participation, trainers and co-trainers were supplied with the treatment manual, all necessary materials, and information on the intervention. Weekly supervision meetings paralleled the intervention and included instructions and supplemental information per session. During these supervision meetings (which lasted 90–120 min), the implementation of and adherence to the protocol were discussed. Furthermore, video fragments of trainers were discussed to enhance adequate implementation.

Training of trainers in the teacher-components. Trainers were provided with either the ETS or ATS manual. The details of each intervention were discussed during weekly supervision sessions prior to each upcoming ATS or ETS session. Trainers were not randomized to condition, and as some participated in more than 1 study year, some were trained in the implementation of both conditions. In order not to ensure the trainers did not give any *active* instructions to teachers in the ETS condition, trainers were given specific instructions. For example, questions asked by teachers on how to cope with child behavior problems were to be answered with the question "How would you normally handle this situation?" Trainers in this ETS condition were further instructed not to give any differential reinforcement for teacher behaviors.

Adherence to the treatment protocol. Parents of 17 children did not give consent for us to videotape their child. Therefore, 14 out of 39 treatment groups could not be recorded. Adherence to the treatment protocol was rated by life observers. For 146 children, all sessions were rated; for 19 children, seven to eight sessions were rated; and for four children, four sessions were rated. Adherence ratings for four children (including treatment drop-outs) were missing. The adherence checklist included a 4-point Likert scale ranging from 1 (*not met*) to 4 (*well met*) to determine how well goals and criteria for goal attainment were met for each session. Mean adherence scores were calculated for all available sessions and divided by 4, resulting in a mean adherence score of .86 (SD = .07; range .72–.99; n = 68) in Wave 1 and .85 for the combined waves (Waves 1 and 2; SD = .07; range .68–.99; n = 169).

Treatment attendance. One hundred forty-six children (84%) received all nine sessions, and 23 (13%) children received seven or eight out of nine sessions. Seven out of 70 teachers received less than four sessions of teacher support; the others received at least four out of five sessions. Data were unavailable for one child and one teacher. While most parents did attend the parent meeting (n = 107, 62%), the parents of 40 children (23%) did not do so. The attendance of the parents of 26 children was unknown (15%).

Planned Data-Analytic Strategy

Two sets of data were used. With the first set of data, we compared results of the intervention condition with the waitlist control condition (Wave 1 vs. Wave 2) using multilevel modeling, means, standard deviations, and Cohen's d, as well as indices of reliable change and remission rates. In the second set of data, Wave 1 and Wave 2 data were combined for power purposes (Waves 1 + 2). We performed analyses of the combined data set to compare ATS with ETS, and follow-up data with pretreatment data using multilevel modeling, means, standard deviations, and Cohen's d, as well as indices of reliable change and remission rates.

Treatment outcome: Intervention versus waitlist control condition. For each outcome measure, we report means, standard deviations, and pre–post effect-sizes (Cohen's d) with confidence intervals for both the intervention condition and waitlist control condition (Wave 1 vs. Wave 2). In order to test differential pre–post change between the intervention and waitlist control condition, we coded pre–post difference scores such that higher positive scores reflect greater improvement. The data have a multilevel structure, as participants are nested in trainers, treatment groups, and schools; therefore the data were analyzed with multilevel modeling.

Model comparison with and without random effects for trainer or schools showed only small, yet significant random effects of trainer; the model improved for DBDRS oppositional defiance disorder; $\chi^2(1) = 4.13$, $p < .05$. Multilevel analyses therefore accounted for random effects of trainer. In a first set of analyses, we only tested pre–post effects of intervention versus waitlist control condition. In a second set of analyses, we addressed the impact of child-level variables such as gender, ethnicity, and SES and the school-level variable of percentage of at-risk children per school. The latter variable was calculated by dividing the number of children selected by screening by the total number of children screened, resulting in a percentage ranging from 6% to 40% (mean 18%). It should be noted that only 7% is expected in the normal population (van Leeuwen & Bijl, 2003). Each child- and school-level variable was included separately. If necessary, variables were centered and/or standardized.

Educational teacher support (ETS) versus active teacher support (ATS). We investigated differential effects for the ETS and ATS conditions using MLM with the combined data set (Waves 1 + 2). The combined data set with pre-, post- and follow-up intervention data showed significant random effects of treatment groups; therefore, the multilevel analyses included a random effect of treatment groups: improvement of the model ranged from $\chi^2(2) = 4.38$, $p = ns$ for TRF oppositional defiant disorder to $\chi^2(2) = 129.34$, $p < .001$ for DBDRS conduct disorder.

Follow-up intervention effects. Means, standard deviations, and effect sizes with confidence intervals were calculated (combined data set Waves 1 + 2). Time effects were examined with multilevel modeling to assess whether intervention gains were maintained at follow-up. Follow-up was compared with preintervention assessment and postintervention assessment. In a second set of analyses, we explored the impact of the aforementioned child-level and school-level variables.

Reliable change indices and clinical significance. Jacobson and Truax's method (1991) was used to calculate reliable change scores. Change scores were recoded into categorical variables reflecting clinically significant change. Change scores of 0.84 or higher reflect reliable change (improvement, recovery); change scores below 0.84 reflect no reliable change or deterioration (Wise, 2004). Percentages of recovered or improved children are reported for children in the intervention condition and waitlist control condition in Table 3. We conducted chi-square analyses to compare the reliable change rates in the intervention and waitlist control condition. Further chi-square tests were conducted to compare ATS versus ETS for the combined Waves 1 + 2 and for follow-up.

Missing observations. At Times 2, 3, and 4, a few teacher- and peer-rated questionnaires were missing: DBDRS 1%–3%, TRF 1%–3%, and PMIEB 5%. Missing observations for parents were higher (SDQ 19%–54%). At Time 5, the number of missing questionnaires was considerably higher for several reasons. First, informed consent was not obtained for 15 out of 21 participants who went to high school between Time 4 and Time 5. Second, five children did not return to their former school between Time 4 and Time 5. Therefore, at Time 5, the percentage of missing question-

Table 3
Means (SDs), Cohen's d, and Confidence Intervals for the Intervention and Waitlist Conditions

Instrument	Pretreatment means		Posttreatment mean		Cohen's *d* mean		
	Waitlist (*SD*)	Treatment (*SD*)	Waitlist (*SD*)	Treatment (*SD*)	Waitlist [CI]	Treatment [CI]	Difference score[a]
DBDRS							
ODD	9.03 (5.64)	9.49 (5.16)	8.71 (5.59)	7.30 (5.18)	0.06 [−0.18, 0.29]	0.42 [0.18, 0.67]	**0.45 [0.14, 0.76]**
CD	3.46 (3.35)	4.15 (5.18)	2.54 (2.65)	1.96 (2.43)	0.31 [0.10, 0.51]	0.58 [0.31, 0.84]	**0.33 [0.02, 0.65]**
TRF							
ODD	5.12 (2.74)	5.16 (2.77)	4.77 (2.91)	4.34 (2.77)	0.12 [−0.07, 0.32]	0.30 [0.05, 0.54]	**0.22 [0.09, 0.53]**
CD	8.25 (4.97)	8.40 (5.10)	7.49 (4.78)	5.96 (4.38)	0.16 [−0.04, 0.35]	0.51 [0.26, 0.77]	**0.33 [0.02, 0.64]**
Externalizing	21.62 (11.31)	21.66 (12.00)	19.37 (11.58)	16.87 (10.46)	0.20 [0.00, 0.39]	0.43 [0.18, 0.67]	0.27 [−0.04, 0.58]
SDQ Total	14.00 (6.18)	14.07 (6.10)	12.47 (6.18)	10.61 (5.68)	0.25 [−0.02, 0.51]	0.59 [0.22, 0.94]	**0.50 [0.07, 0.93]**
PMIEB externalizing	12.34 (8.03)	10.95 (8.46)	12.30 (8.62)	10.04 (8.55)	0.00 [−0.19, 0.20]	0.11 [−0.14, 0.35]	0.08 [−0.23, 0.40]

Note. There was no significant pretreatment difference for intervention condition versus the waitlist condition and no significant pretreatment difference for active teacher support and educational teacher support. DBDRS = Disruptive Behavior Disorders Rating Scale; ODD = oppositional defiant disorder; CD = conduct disorder; TRF = Teacher Report Form; SDQ = Strengths and Difficulties Questionnaire; PMIEB = peer measure of internalizing and externalizing behavior; externalizing = externalizing problems; CI = confidence interval.
[a] Cohen's *d* for intervention condition versus waitlist condition using the difference score (Time 2 − Time 3). Bold indicates mean difference scores in which the confidence interval does not include zero or a negative value.

naires was 22% for the DBDRS and TRF, 37% for the PMIEB, and 78% for the SDQ. Severity of behavior problems, reliable change, and ethnicity (TRF Externalizing, PMIEB externalizing) were not significantly different for parents who did and did not return the SDQ at follow-up. There was a significant difference with regard to SES in that parents with lower SES were less likely to return the SDQ, $\chi^2(2) = 13.32$, $p < .01$. One of the advantages of using multilevel modeling rather than a repeated-measures analysis of variance is that the analysis can still be performed, even if observations are missing.

Results

We first report analyses that address the hypothesis that children in the intervention would show significantly better outcomes than children in the waitlist control condition. We then proceed with analyses testing the second hypothesis that ATS would outperform ETS.

Intervention Condition Versus Waitlist Control Condition

Table 3 shows effect sizes (T2 minus T3; Cohen's *d*) for the intervention condition and waitlist control condition. Positive effect sizes reflect reductions in disruptive behavior. Cohen's *d* effect sizes for teacher reports (DBDRS, TRF) ranged from .30 to .59 in the intervention condition compared with effect sizes ranging from .00 to .31 in the waitlist control condition. Cohen's *d* for parent-reported total problems (SDQ) was .59 in the intervention condition and .25 in the waitlist control condition. Cohen's *d* for peer-reported externalizing problems (PMIEB) was .11 in the intervention condition and .00 in the waitlist control condition.

The mean effect size of the intervention control versus the waitlist control condition on the pre–post difference score (T2 minus T3) is .31 (see Table 3). Effect sizes (T2 − T4) at follow-up show a slight increase for all outcome measures; the mean effect size is .39 (DBDRS scales for oppositional defiant disorder and conduct disorder; TRF scales for oppositional defiant disorder, conduct disorder, externalizing problems; SDQ total scale; PMIEB scale for externalizing behavior; Table 4).

Multilevel modeling. MLM with the pre–post difference score as the dependent variable and intervention condition versus waitlist control condition as the independent variable revealed, as expected, that treatment outperformed the waitlist condition for the Oppositional Defiant Disorder Scale of the DBDRS, estimate (Est) = 1.85, $t(164) = 2.74$, $p < .01$, and for parent-reported problem behavior (SDQ total), Est = 2.31, $t(91) = 2.36$, $p < .05$. These results indicate that the intervention was successful in reducing both disruptive behavior and parent-reported problems.

Follow-up versus pre-intervention assessment. At follow-up (Index 3), treatment effects remained positive. More specifically, significant reductions in problem behavior were found at follow-up compared with pretreatment (Index 1): Oppositional Defiant Disorder Scale of the DBDRS $Est_{1vs3} = 1.67$, $t(170.62) = 3.94$, $p < .001$; SDQ total $Est_{1vs3} = 2.73$, $t(71.91) = 3.77$, $p < .001$. Significant positive effects were also found for outcomes measures that did not show significant effects at posttreatment: DBDRS conduct disorder, $Est_{1vs3} = 1.23$, $t(180.73) = 4.61$, $p < .001$; TRF conduct disorder $Est_{1vs3} = 2.21$, $t(182.29) = 5.10$, $p < .001$; TRF oppositional defiant disorder $Est_{1vs3} = 1.10$, $t(179.46) = 4.50$, $p < .001$; TRF externalizing problems $Est_{1vs3} = 4.67$, $t(191.02) = 4.75$, $p < .001$, PMIEB externalizing behavior $Est_{1vs3} = 1.34$, $t(142.44) = 2.73$, $p < .01$. These findings indicate that significant reductions in disruptive behaviors were reported by all informants at follow-up.

Follow-up versus post-intervention assessment. Significant gains from post-intervention (Index 2) to follow-up were found: DBDRS conduct disorder $Est_{2vs3} = 0.48$, $t(298.47) = 2.06$, $p < .05$.

Impact of child and school variables. Next, we investigated whether the effects of intervention were moderated by child and school characteristics. We fitted models with condition (intervention vs. waitlist condition, Time 2 pre-intervention and Time 3 post-intervention), a child or school characteristic, and their interaction. Only interaction effects are reported, as they are of primary interest.

Table 4
Treatment Outcome Results From Children of Wave 1 + Wave 2

Instrument	Pretreatment (*SD*)	Posttreatment (*SD*)	Follow-up (*SD*)	Cohen's *d*		Percentage of recovered/improved		
				Pre–post [CI]	Pre–follow-up [CI]	Wave 1 pre–post[a]	Waves 1 + 2 pre–post[b]	Pre–follow-up[b]
DBDRS								
ODD	9.03 (5.42)	**7.43 (5.58)**	**7.24 (5.36)**	**0.29 [0.14, 0.44]**	**0.33 [0.16, 0.50]**	**51.4 (52.2)**	43.9 (44.4)	34.1 (41.0)
CD	3.18 (3.93)	2.26 (2.90)	**1.77 (2.58)**	**0.27 [0.11, 0.43]**	**0.43 [0.25, 0.60]**	28.6 (30.8)	12.7 (13.5)	15.0 (19.0)
TRF								
ODD	4.92 (2.85)	4.15 (2.86)	**3.82 (2.72)**	**0.27 [0.12, 0.42]**	**0.39 [0.22, 0.56]**	50.0 (51.5)	19.1 (49.7)	42.8 (52.5)
CD	7.85 (4.92)	6.21 (5.05)	**5.58 (4.91)**	**0.33 [0.18, 0.48]**	**0.46 [0.29, 0.63]**	32.9 (33.8)	28.3 (28.7)	30.6 (37.3)
Externalizing	20.29 (11.77)	16.25 (11.70)	**15.57 (11.86)**	**0.34 [0.19, 0.49]**	**0.40 [0.23, 0.57]**	42.2 (43.7)	46.2 (46.8)	39.9 (49.3)
SDQ total	13.31 (6.30)	**11.18 (5.83)**	**10.41 (5.00)**	**0.35 [0.12, 0.58]**	**0.51 [0.20, 0.81]**	**28.6 (57.1)**	19.7 (44.2)	15.0 (55.3)
PMIEB externalizing	11.80 (8.20)	11.01 (8.11)	**9.96 (8.07)**	0.10 [−0.06, 0.25]	**0.23 [0.05, 0.41]**	24.3 (27.9)	22.5 (24.5)	27.8 (20.2)

Note. Findings in bold indicate (a) significant value following multilevel-modeling analyses for pre- vs. posttreatment and pretreatment vs. follow-up treatment; (b) the confidence interval for Cohen's *d* does not include zero/a negative value; or (c) a significant difference in the percentage of recovered/improved children. DBDRS = Disruptive Behavior Disorders Rating Scale; ODD = oppositional defiant disorder; CD = conduct disorder; TRF = Teacher Report Form; SDQ = Strengths and Difficulties Questionnaire; PMIEB = Peer Measure of Internalizing and Externalizing Behavior; Externalizing = externalizing problems; CI = confidence interval.
[a] Within parentheses is the valid percentage (i.e. missings not included). [b] Comparison of percentages could not be calculated at follow-up as there were no follow-up data for the waitlist condition.

Child characteristics did not interact with condition ($ps > .05$). However, the variable for the percentage of children at risk did interact with condition for both DBDRS oppositional defiant disorder—$Est_{condition\ by\ \%\ at\text{-}risk} = 2.13$, $t(60.04) = 2.82$, $p < .001$)—and DBDRS conduct disorder—$Est_{condition\ by\ \%\ at\text{-}risk} = 0.94$, $t(159) = 2.10$, $p < .05$. In both cases, intervention effects were most pronounced at schools with a higher percentage of at-risk children.

Reliable change indices. Reliable change indices are reported in Table 4. Chi-square tests were conducted to compare reliable change-rates in the IC versus WL condition (improved/recovered versus no reliable change/deterioration). Comparisons showed significant benefits for children in the IC on DBDRS oppositional defiant disorder, $\chi^2(1) = 13.82$, $p < .001$, and SDQ-tot, $\chi^2(1) = 6.08$, $p < .05$. Percentages of recovered/improved children at posttreatment (both waves combined) ranged from 12.7% (DBDRS conduct disorder) to 46.2% (TRF externalizing problems). At follow-up, percentages of recovered/improved children ranged from 15.0% (DBDRS conduct disorder) to 42.8% (SDQ total).

Active Teacher Support (ATS) Versus Educational Teacher Support (ETS)

No effects were found for ATS versus ETS with multilevel modeling at posttreatment.

ATS versus ETS at follow-up. In order to examine whether differences between the two types of treatment were more pronounced at follow-up, we repeated the MLM analysis with the difference score between pretest and follow-up as the dependent variable. The ETS training was more effective than the ATS training, as was evidenced by a significant effect of training for oppositional problems (DBDRS oppositional defiant disorder Est = −3.29, $t(41.64) = -3.40$, $p < .01$; TRF oppositional defiant disorder Est = –1.41, $t(36.77) = -2.46$, $p < .05$), conduct problems (DBDRS conduct disorder Est = –1.61, $t(37.24) = -2.45$, $p < .05$), and externalizing problems (TRF externalizing Est = –5.69, $t(37.18) = -2.29$, $p < .05$). Contrary to the findings at posttreatment, the negative estimate values indicated greater reductions at follow-up for the ETS condition.

ATS versus ETS and the impact of child-level and school-level variables. Next we investigated whether the effects of ATS versus ETS were moderated by child- and school-level variables. No significant interaction effects of ATS and ETS with child-level or school-level variables were found either for the pre–post analyses or for the pre–follow-up analyses.

Reliable change indices. At posttreatment, no significant differences in recovery rates were found for ATS versus ETS. At follow-up, ETS showed higher recovery rates for oppositional defiant disorder (DBDRS oppositional defiant disorder $\chi^2(1) = 10.78$, $p = .001$, TRF oppositional defiant disorder $\chi^2(1) = 5.64$, $p < .05$), conduct disorder (DBDRS conduct disorder $\chi^2(1) = 4.88$, $p < .05$), and for externalizing problems (TRF externalizing $\chi^2(1) = 7.27$, $p < .01$).

Reduction in prevalence of clinical ratings. The results show that at pretreatment, 63% ($n = 108$) of all selected children were in the clinical range of the TRF Externalizing Scale, 18% in the borderline clinical range ($n = 30$), and 19% in the normal range ($n = 33$). At posttreatment, there was a significant shift toward lower rates of children scoring in the (borderline) clinical range: 45% in the clinical range ($n = 77$), 20% in the borderline clinical range ($n = 35$), and 35% ($n = 59$) in the normal range, $\chi^2(4) = 42.96$, $p < .001$. At follow-up, 44% were in the clinical range ($n = 63$), 20% in the borderline clinical range ($n = 28$), and 36% in the normal range ($n = 52$), $\chi^2(4) = 21.54$, $p < .001$. Overall, 15% and 16% of children moved into the normal range at posttreatment and follow-up, respectively.

Discussion

In this school-based randomized controlled trial, we investigated the effectiveness of a targeted intervention program for disruptive behavior problems in children ages 8–12 years. The specific aim of this intervention was to access a difficult-to-reach at-risk pop-

ulation and to enhance treatment completion by delivering the intervention at school. Two hypotheses were tested. First, we examined whether the child focused CBT program "Keep Cool . . . Start at School" was more effective in reducing disruptive behavior problems than a waitlist control condition and whether short-term gains persisted at follow-up. Second, we evaluated whether active teacher support (ATS) enhanced intervention effects more than teacher education (ETS) alone.

The intervention succeeded in significantly reducing disruptive behavior problems on several outcome measures. The mean effect-size (difference score intervention vs. waitlist condition) was .31, which is modest, though similar to effect sizes reported in recent meta-analyses for school-based interventions (Gansle, 2005; Wilson & Lipsey, 2007). The current results show a consistent pattern (effect sizes, multilevel analyses, reliable change scores): Oppositional behavior problems and parent-reported problems were reduced at posttreatment, and treatment gains were stable or had increased at 3 months follow-up (mean effect size of .39). At follow-up, significant positive effects were also found for conduct problems and externalizing problems. These results therefore support our first hypothesis that this school-based intervention program is effective in reducing disruptive behavior problems. It was expected that ATS would outperform ETS. However, no differential effects of teacher condition were found at posttreatment. Surprisingly, children appeared to benefit more from ETS at follow-up on some of the teacher-reported outcome measures (oppositional problems, conduct problems, and externalizing problems).

Given earlier findings, several potential moderators were selected to explore their impact on outcome: SES (Beauchaine, Webster-Stratton, & Reid, 2005), ethnicity, percentage of children at risk per school (Sukhodolsky et al., 2004; Tremblay, 2006), and gender (Sukhodolsky et al., 2004). Findings revealed a modest impact of percentage of children at risk per school on treatment outcome at posttreatment: Children at schools with more at-risk children showed more improvement. At follow-up, none of the moderators showed a moderating effect on outcome, and no differential outcomes were found for SES, ethnicity, or gender. This finding indicates that children at schools with a high proportion of at-risk children may benefit from school-based targeted interventions. It should be noted that this does not mean that such effects cannot be found in other populations, nor that all children will benefit sufficiently.

Potential Limitations

The current study has several potential limitations. First, ratings were obtained from teachers, who were directly involved in the treatment and therefore may have been biased. We accounted for this potential bias by also including parent and peer reports. At posttreatment, significant gains were reported by two out of three informants: teachers and parents. Parents reported promising results; effect sizes were in the medium range. Because many parents did not return the questionnaires, the generalizability of these results is limited. At follow-up, all informants reported treatment gains with a mean effect size of 0.39 (Cohen's *d*); peers reported an effect size significantly different from zero (Cohen's $d = 0.23$). The finding that peers *did* report significant changes at follow-up is noteworthy. Recent views on informant discrepancies suggest that discrepancies should not be set aside as measurement error, but rather should be considered an important source of information regarding features of contexts or time course of behavior problems (De Los Reyes, 2011). Earlier findings on discrepancies between informant reports of childhood disruptive behavior have suggested that informant discrepancies are indicative of cross-contextual variability in children's behavior and informants' perspectives on this behavior (De Los Reyes, Henry, Tolan, & Wakschlag, 2009). In line with this reasoning, our results may suggest that behavioral change occurs initially (at posttreatment) in the context of parent and teacher supervision but generalizes over time to nonsupervised settings (e.g., among peers). However, it is difficult to determine whether the overall percentage of at-risk children in our screening population has dropped, as only data from the at-risk children whose parent(s) signed informed consent were examined.

Second, children in the waitlist condition also improved, though to a lesser extent than children in the intervention condition. Post-waitlist benefits may have resulted from therapeutic effects of assessment (e.g., Smith, Handler, & Nash, 2010), expectancy effects (e.g., Snyder, Michael, & Cheavens, 1999), or spontaneous recovery. For ethical reasons, we did not include a waitlist condition at follow-up. Therefore, we could not compare follow-up treatment data with follow-up waitlist data. However, given the persistence of disruptive behavior problems (see Broidy et al., 2003), it is likely that the positive follow-up results can be attributed to the intervention, not to a general improvement. Although the results show that children with disruptive behavior may profit from school-based targeted intervention, not all children do so sufficiently. In the parent and classroom intervention study by Reid et al. (2007), parent participation led to improved outcomes for at-risk children despite low parental attendance. It is therefore important that researchers are creative in finding supplemental ways to help children and parents of difficult-to-reach families to access interventions. Previous research has shown that community-based participatory research can help overcome such barriers (Calzada et al., 2005).

Third, results for the ATS and ETS conditions were contrary to expectations. Significant effort was undertaken to ensure that trainers implemented the teacher-support conditions according to the protocol. However, posttreatment adherence checks of the implementation by trainers of the ATS and ETS conditions were not possible. We also could not check whether teachers in the ATS condition actually implemented active ingredients in the classroom (e.g., implementation of the contingency management system for the target children). These checks of treatment integrity deserve attention in future research. At this point, we cannot conclude that trainers implemented the ATS and ETS conditions as intended, nor conclude that teachers' actual behaviors changed.

Previous treatment differentiation research has shown that there may be differences in the frequency of treatment components in treatment conditions but still yield equal outcomes. For example, in a study by Weisz et al. (2009), more CBT was delivered in the CBT condition and more psychodynamic and family components were delivered in the usual clinical care condition. Equal outcomes in the two conditions of that study may have resulted from different (or a different combination of) treatment components. As we did not investigate the implementation of treatment components in our study, the equal outcomes at posttreatment and the better

results at follow-up for ETS may be related to the unintentional implementation of treatment components in the ETS condition. For instance, when we redirected questions to teachers to prevent the implementation of active ingredients in the ETS condition ("How would you normally handle this situation?"), this may have strengthened their sense of self-efficacy in finding a solution that "fits."

Psycho-education plus attention in the ETS condition may have created higher expectations in teachers regarding improvement of child behavior in comparison to the ATS condition, in which teachers themselves were expected to act and change their behavior. Living up to the expectations to change their behavior may have added to teachers' experience of extra workload, which was in previous research a primary reason for teachers to leave their profession (Barmby, 2006). Experiencing higher expectations may have caused teachers in the ATS condition to view the children in the intervention negatively, which might be a reason why the results of the ATS condition were lower than expected or equal to the results of the ETS condition. In the future, researchers could assess the moderating impact of teacher characteristics such as the teacher–student relationship (Sabal & Pianta, 2012), client motivation (e.g., Nock & Photos, 2006; Westra, Aviram, & Doell, 2011), age, teaching experience, teachers' workload, teachers' expectations regarding their ability to change their own behavior, and interaction effects of these moderators with active versus educational teacher involvement.

Fourth, while previous research has shown that severity of problem behavior and comorbidity may moderate outcome in complex ways (e.g., Liber et al., 2010), exploration of these variables was beyond the scope of the current article. Future studies should include an analysis of comorbid attention-deficit/hyperactivity disorder and comorbid emotional problems, such as anxiety. Such analysis could result in a better understanding and identification of the children for whom school-based interventions work best and under what conditions.

In sum, the present study indicates that a difficult-to-reach high-risk population of children with behavior problems can be effectively treated with a school-based intervention program. The treatment completion rate was over 95%, the intervention proved (clinically) significant, and effects were maintained at follow-up. Given that disruptive behavior tends to be stable over time, the results of this study suggest that for some of the participants, a potential life-course-persistent pathway of behavior problems may have been limited to childhood. As childhood disruptive behavior problems are associated with higher rates of psychiatric problems, bullying, vandalism, and crime in adolescence and adulthood, an adjusted "developmental curve" is beneficial not only for children but also for their peers, parents, teachers, and society at large.

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