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Parenting Intervention to Reduce Attention and Behavior Difficulties in Preschoolers: A CUIDAR Evaluation Study

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Abstract In this study, we evaluated CUIDAR, a program that provides community-based 10-week parent training to reduce attention and behavior problems in preschool children. We recruited 154 predominantly low-income and Latino preschoolers and their parents to participate in this evaluation study. We collected data prior to and immediately following intervention and one year later. At the time of follow-up, we also recruited 15 parents who had initially enrolled, but never participated in the program to serve as a comparison group for a limited set of analyses. From pre to post intervention, we observed significant, positive changes in eight out of ten measured parenting behaviors. From pre intervention to follow-up, improvements in the use of transitional statements and planning ahead were significant. Children's SDQ Total Difficulties scores significantly decreased from pre to post intervention (d = .36), and we observed significant, positive changes in all SDQ subscales. From pre intervention to follow-up, children's SDQ Total Difficulties scores significantly decreased (d = .71) and all SDQ subscales reflected significant, positive changes. We observed no significant differences in reported barriers to participation between parents who participated in the program and those who enrolled, but never participated. Intervention gains were moderated by several factors, including history of out-of-home care and family structure. Our results should be interpreted cautiously because not all analyses included a comparison group, and a randomized trial of CUIDAR effectiveness is still needed.

Keywords Parent training · Attention · Behavior · Preschool · Intervention

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Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is currently, in the United States, the most diagnosed form of psychopathology in the preschool years (Armstrong and Nettleton 2004). A recent study (Egger et al. 2006) estimated the prevalence of ADHD at 3.3% in the preschool population and reported that preschoolers with ADHD experience significant functional and psychosocial impairment. Researchers have found that children diagnosed with ADHD in the preschool years are at great risk for poorer outcomes (e.g., Egger et al. 2006; Willoughby et al. 2000).

The ADHD Spectrum and Risk for Diagnosis of ADHD

The conventional approach to assessment of ADHD is based on a *categorical approach* (*condition "present" or "absent"*) as defined by the criteria stated in the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association or the manual for the International Classification of Diseases (ICD) of the World Health Organization. In recent publications (Swanson et al. 2009, 2011), we proposed that psychiatric diagnosis for ADHD could be enhanced if a major paradigmatic shift occurred, resulting in conceptualization of ADHD as a spectrum disorder (the "*continuum approach*"), where diagnosed cases represent

one extreme on the continuum of behavior manifested in the population. Our research has demonstrated that using an ADHD measurement scale derived from the continuum theory of ADHD produces a normal distribution of attention and behavioral regulation in a population-based sample (Lakes, Swanson, Riggs, Schuck, and Stehli, under review). In other words, individual capacities to regulate behavior and attend to tasks occur on a continuum in the population; this continuum approximates a normal curve, with some individuals showing exceptional abilities and with others demonstrating serious deficits. From this perspective, a preschooler may be at risk for a diagnosis of ADHD if he or she has high levels of inattention and hyperactivity that approach the extreme end of the continuum, where symptom severity and impairment warrant a clinical diagnosis.

Interventions for Preschoolers with ADHD Symptoms

The interventions currently used to treat preschoolers with ADHD symptoms include pharmacological and nonpharmacological approaches. In recent years, psychopharmacological treatment for the preschool population has tripled (Zito et al. 2000), in spite of documented reluctance and uncertainties related to the use of such medications and their side effects on such young children (Volkow and Insel 2003; Zito et al. 2000). It has been stated that this trend is likely due, at least in part, to the scarcity of research regarding appropriate psychosocial interventions for preschool ADHD (Sonuga-Barke et al. 2006). It also has been argued that nonpharmacological interventions for preschool children should include parent education programs to address and reduce symptoms of ADHD (Sonuga-Barke et al. 2006; Tamm et al. 2005) and should occur early in development when prevention can be especially effective (Arons et al. 2002). Interventions for preschoolers may be more successful than those for school-age children because behavior is less entrenched and behavioral control is emerging as part of development (Keenan and Wakschlag 2000).

Theoretical Basis for Parent Interventions to Improve Symptoms in Children at Risk for ADHD

The biological basis for Attention Deficit Hyperactivity Disorder (ADHD) has been well established (see Swanson et al. 2007). Swanson et al. demonstrated that children with ADHD who had a genetic risk for ADHD (presence of the DRD4 7–repeat allele) differed from children with ADHD who did not have this risk allele. While the group without the allele had both behavioral and neuropsychological deficits, the group with the allele had only the behavioral deficits. This led the authors to propose that there are different etiologies of ADHD—one that involves environmental factors and results in a full syndrome, and another that involves a genetic predisposition toward ADHD, which the authors suggested might be a temperamental trait. They suggested that gene-environment interactions might explain the developmental course of ADHD, at least for the group of children with the risk allele.

Although the idea that parenting alone causes ADHD has not received support (Doyle 2004), previous research has documented associations between negative parenting and symptoms of ADHD and related conduct problems. Negative parenting, including coercive, intrusive, and restrictive practices, is associated with ADHD and comorbid problems (Doyle 2004), and positive parenting (e.g., praise, positive affect, warmth) has been shown to reduce the risk for conduct problems among children with ADHD (Chronis et al. 2007).

Belsky's differential susceptibility hypothesis (Belsky 1997) proposes that children with difficult temperaments are more susceptible to the influence of parenting, at least when it comes to outcomes involving externalizing behavior. As others (e.g., Bradley and Corwyn 2008) have noted, this hypothesis is consistent with Rothbart's (2004) argument that sensitivity to environmental events is one of the pathways between temperament and childhood disorders. Bradley and Corwyn tested the differential susceptibility hypothesis, and found that "children with difficult temperaments were more affected by the kinds of parenting they received than children with average and easy temperaments" (p. 128). One exception was noted concerning harsh punishment: "although children with difficult temperaments were adversely affected by harsh parenting, the impacts on them were not significantly different from the impacts on other children" (p. 128).

Recent research has documented a gene-environment interaction that supports both Swanson et al's (2007) hypothesis and the differential susceptibility hypothesis. Sheese et al. (2007) genotyped children between the ages of 18 and 21 months and observed them interacting with their caregivers. In their genetic analyses, the authors focused specifically on the presence or absence of the DRD4 7-R allele, which has been linked to ADHD. The child's temperament was also measured, with a focus on sensation seeking, described by the authors as a temperamental variable related to high levels of activity and impulsiveness. Poor parenting quality predicted higher sensation seeking in children with the DRD4 7-R allele, but not in children without the allele. The authors concluded that the presence of the DRD4 7-R allele increases a child's sensitivity to environmental influences such as parenting.

In summary, although parenting has not been shown to cause ADHD, there is now preliminary evidence that children who have a genetic predisposition toward

hyperactivity and inattention may be more negatively impacted by less optimal parenting practices. For children with such risks, early parenting intervention has the potential to make a marked impact on the child's development of attention and behavioral regulation (and, therefore, his or her risk for a later diagnosis of ADHD or comorbid conduct problems). Moreover, the theoretical basis for parenting intervention for preschool children with symptoms or diagnosis of ADHD is supported by prior research demonstrating positive changes in child behavior following parent intervention (see review by Daley et al. 2009). Parent intervention for preschoolers has the potential to reduce symptoms of ADHD (and, thereby risk of later diagnosis of ADHD) as well as to reduce the risk of comorbid conduct problems among children who have ADHD.

Challenges to Providing Parent Intervention: Early Identification and Intervention Implementation

Currently, a key challenge to treating preschool children at risk for ADHD (and related disorders) is that preschoolers are both under-identified and under-referred. According to one estimate, only a quarter of preschoolers with ADHD are referred for evaluation and treatment (Egger et al. 2006). Another common issue in the treatment of preschool children at risk for ADHD is that underserved populations are often less likely to receive treatment than majority populations. In the United States, researchers have indicated that older (4 and 5 years), white, middle class, and more impaired children represent the group most likely to receive treatment (e.g., Lavigne et al. 1998). It is well documented that in the United States, minorities suffer from mental health disparities, which put them at risk for being under-identified (US Department of Health, Human Services 1999). Therefore, it is of foremost importance for mental health professionals to employ intervention programs that include efforts to reduce barriers to treatment for diverse underserved populations. Previous reviews of parent training programs have urged researchers to study interventions in diverse samples (e.g., Valdez et al. 2005).

Studies also have shown a disproportionate participation rate in parent training programs by families who can most benefit from them (Reyno and McGrath 2006). Thus, significant challenges to clinicians implementing or recommending parent training programs for high-risk preschoolers include promoting parent participation (i.e., recruitment *and* retention) as well as optimizing treatment outcomes (which will be dependent on recruitment and retention, but will be moderated by additional factors). Reyno and McGrath utilized meta-analysis to simultaneously examine predictors of treatment response in parent training participants and found moderate standardized effect sizes for low socioeconomic status (SES), severe pretreatment child difficulty, and maternal psychopathology. These findings suggest that, in addition to providing curricula designed to reduce risk for ADHD, parent-training interventions should include features to reduce dropout and improve outcomes, particularly for families with severe pretreatment child difficulty, low SES, and maternal psychopathology.

CUIDAR (Community University Initiative for the Development of Attention and Readiness)

CUIDAR in Southern California provides *service before diagnosis* (Tamm et al. 2005) using a culturally sensitive, community-based model of service delivery to provide parent education aimed at improving parent–child relationships and reducing child risk for ADHD. Through CUIDAR Community Parent Education (COPE: Cunningham et al. 1995) classes, parents learn about appropriate child development and positive parenting skills, and at the conclusion of intervention, their responses to intervention are assessed and documented. Many families indicate that their needs have been met (e.g., improvements have been noted or parents have realized that their child's behavior was developmentally appropriate) and no further intervention is requested or recommended. Families continuing to experience difficulties receive a clinic referral (Tamm et al. 2005). The parent-training model utilized by CUIDAR and efforts to reduce premature dropout and improve treatment outcomes for families at risk are described further in this manuscript.

Traditional clinic-based programs have been shown to unavoidably possess certain barriers that may prevent families from utilizing needed services (Cunningham et al. 1995). These barriers include travel time, cost, childcare, geographical location, cultural barriers, conflicts with work schedules, and the stigma associated with attending mental health centers. CUIDAR addresses many of these barriers by providing childcare for all children in the family, providing meals for all participating family members during the classes, and providing classes in local community centers (e.g., schools and churches) at various times to increase access and reduce conflicts with work schedules. All CUIDAR services are provided in English and in Spanish and are free of charge to families. CUIDAR is advertised through local community centers, and educators and other community members are encouraged to promote upcoming classes to parents they know. The public funding that supports the CUIDAR programs requires that participation be open to all interested parents; therefore, although CUIDAR recruitment materials target preschool children with attention and hyperactivity difficulties, there are no specific inclusion criteria other than residence in the county where the program is being supported.

Our first description and preliminary evaluation of the CUIDAR program reported that parents used positive

parenting skills more frequently and effectively and used physical punishment less frequently after completing the 10-week intervention (Tamm et al. 2005). In addition, Tamm et al. reported high levels of parent satisfaction with the program and reductions in child impulsive, oppositional, and social problems. Our second CUIDAR study (Lakes et al. 2009) reported results from the first replication of CUIDAR in another county of California and demonstrated that CUIDAR effectively served a population comparable to local demographics, with minorities and low-income families slightly over-represented (thus, having participation rates that do not reflect racial/ethnic disparities as demonstrated in public and private mental health programs in the same region); successfully recruited parents of children at risk for serious behavioral disorders; and produced high levels of parent satisfaction. Lakes et al. also observed improvements in child SDQ Total Difficulties scores and Conduct Problems scores. Although there are two published studies describing CUIDAR, the program is relatively new and has limited research support, particularly addressing outcomes and predictors of outcomes. The present study extends previous research by examining parent and child intervention outcomes and important predictors of outcomes. In addition, the present study is the first report of outcomes that includes a follow-up survey approximately one year after completion of CUIDAR.

Research Questions and Hypotheses: (1) *Following parent participation in CUIDAR, will parents' behaviors improve and will difficult child behaviors decrease?* We predicted that positive intervention outcomes would be observed at post intervention and sustained at follow-up. (2) *Are there key demographic (e.g., racial/ethnic) or family structure factors that predict treatment outcomes?* As noted earlier, poorer treatment participation and outcomes are associated with factors such as minority status and low socioeconomic status. Due to CUIDAR's focus on access for minority and low-income families, we predicted that socioeconomic factors would have limited impact on outcomes. (3) *Is the CUIDAR model effective in eliminating common barriers to treatment intervention for an under-served population?* We expected parents would report minimal barriers to participation, and there would be no significant differences in reported barriers between parents who completed the program and those who did not.

Method

Participants and Procedures

Participants in this study were children whose parents voluntarily signed up for a free community parent education program. Parents in multiple cities were invited to enroll in local groups if they had concerns about their children's attention and behavior. Between 2004 and 2006, 28 CUIDAR COPE groups were conducted in the region where we conducted this study. Each group had one facilitator with either a master's degree or doctoral degree in psychology or a related field; the average number of caregivers enrolled per group was 11.7 (Total = 327), and on average, participants attended 60% (e.g., 6 out of 10) of their group sessions (see Table 1 for participant demographics at enrollment). Because caregivers often miss classes but later return, our program defines participation in terms of completion (8 or more sessions), partial completion (4–7 sessions), and non-completion (3 or fewer sessions) rather than designating certain participants as "drop-outs." Of the 327 initially enrolled caregivers, 31% completed 8 or more sessions, 35% completed four to seven sessions, and 31% completed 3 or fewer class sessions.

At enrollment, all CUIDAR COPE participants were invited to participate in program evaluation research. During sessions one and ten, participants completed the study instruments. Families of 154 children out of a total of 327 eligible families participated in the pre- and post-program evaluation (some families participated in part of the program evaluation but were not included in this study due to incomplete rating forms or other missing data). Approximately one-year after completion of the COPE course, participants in the completion and partial completion groups who had completed the pre and post evaluations were contacted through mail and/or by telephone and asked to participate in a follow-up study; 71 (46%) families completed the follow-up survey. Many of the remaining families had moved or had provided phone numbers that were disconnected one year later. At the time of follow-up, we also contacted caregivers in the non-completion group; 15 (15%) completed the follow-up study. (See Table 1 for characteristics of participants). Forms were mailed in participants' primary language (English or Spanish) and included: an invitation flyer that explained the study's purpose, study instruments, and a prepaid envelope to return the forms. Participants were also given the option of completing the measures over the telephone rather than mailing them, and some participants chose this option (research staff included both English and Spanish speakers). As an incentive, participants received a small package of toys and books for their child. N's vary for some analyses due to missing data and are noted accordingly.

Instruments

In addition to a Demographic Questionnaire, parents completed the following instruments, which were available in English and Spanish.

Table 1 CUIDAR participant characteristics

Characteristic	All participants (N = 327)	Study sample (N = 154)	Follow-up intervention Group[a] (N = 71)	Follow-up comparison Group[b] (N = 15)
Child gender	164 (50%) Male	80 (52%) Male	32 (45%) Male	7 (47%) Male
Mean child age	3.8 years	3.8 years	3.65 years	3.5 years
Child SDQ means at enrollment (Standard Deviations)				
Total difficulties	12.80 (5.66)	13.05 (5.99)	13.95 (6.00)	12.27 (4.41)
Emotional problems	2.08 (1.93)	2.15 (1.99)	2.33 (2.04)	2.21 (1.67)
Conduct problems	3.34 (2.15)	3.44 (2.21)	3.42 (2.08)	2.58 (1.78)
Hyperactivity/inattention	4.83 (2.35)	4.71 (2.53)	5.18 (2.55)	4.46 (2.47)
Peer problems	2.56 (1.87)	2.72 (1.99)	2.82 (1.96)	2.85 (1.41)
Prosocial behavior	7.23 (1.94)	7.09 (1.87)	7.16 (1.82)	7.38 (2.26)
Child ethnicity				
Mexican–American	191 (58%)	96 (62%)	39 (55%)	6 (40%)
Other hispanic	34 (10%)	17 (11%)	11 (16%)	3 (20%)
African-American	38 (12%)	12 (8%)	5 (7%)	1 (7%)
White, non-hispanic	42 (13%)	20 (13%)	8 (11%)	2 (13%)
Other	22 (7%)	9 (6%)	8 (11%)	3 (20%)
Primary language used in the home				
English	141 (43%)	58 (38%)	27 (38%)	6 (40%)
Spanish	137 (42%)	69 (45%)	35 (49%)	7 (47%)
Both English and Spanish	23 (7%)	13 (8%)	6 (9%)	1 (7%)
Other	26 (8%)	14 (9%)	3 (4%)	1 (7%)
Caregiver relationship to child				
Biological mother	237 (73%)	115 (75%)	58 (79%)	12 (80%)
Biological father	39 (12%)	18 (12%)	5 (7%)	1 (7%)
Grandparent	16 (5%)	9 (6%)	3 (4%)	–
Adoptive mother	11 (3%)	4 (2%)	3 (4%)	1 (7%)
Other/missing	24 (7%)	8 (5%)	4 (5%)	1 (7%)
Caregiver educational level				
Did not complete high school	91 (28%)	35 (23%)	16 (23%)	3 (20%)
High school diploma or equivalent	95 (29%)	45 (29%)	22 (31%)	2 (13%)
Some college or vocational school	99 (30%)	51 (33%)	25 (35%)	6 (40%)
Bachelor's degree	9 (3%)	3 (2%)	4 (6%)	3 (20%)
Advanced degree	8 (2%)	5 (3%)	–	–
Missing	25 (8%)	15 (10%)	4 (6%)	1 (7%)
Caregiver employment status				
Full-time	77 (24%)	32 (21%)	10 (14%)	2 (13%)
Part-time	28 (9%)	17 (11%)	6 (9%)	1 (7%)
Working at home	31 (10%)	11 (7%)	5 (7%)	–
Looking for a job	39 (12%)	19 (12%)	8 (11%)	3 (20%)
Not working by choice	105 (32%)	49 (32%)	29 (40%)	7 (47%)
Other/missing	46 (14%)	26 (17%)	13 (18%)	2 (13%)
Caregiver marital status				
Single, never married	7 (2%)	3 (2%)	2 (3%)	–
Married	128 (39%)	54 (35%)	37 (52%)	8 (53%)
Separated	49 (15%)	20 (13%)	9 (13%)	2 (13%)
Divorced	14 (4%)	8 (5%)	2 (3%)	1 (7%)
Living together as if Married	36 (11%)	22 (14%)	8 (11%)	–
Other/missing	93 (29%)	47 (31%)	13 (18%)	4 (27%)

Table 1 continued

Characteristic	All participants (N = 327)	Study sample (N = 154)	Follow-up intervention Group[a] (N = 71)	Follow-up comparison Group[b] (N = 15)
Mean maternal age at birth of first child	20.6 years	20.3 years	22.0 years	24.65
Mean number of children in family	2.6	2.6	2.7	2.8
Annual household income before taxes				
Less than $20,000	121 (37%)	68 (44%)	26 (37%)	4 (27%)
$20,000 to $30,000	63 (19%)	26 (17%)	18 (25%)	4 (27%)
$30,000 to $40,000	47 (14%)	19 (12%)	13 (18%)	1 (7%)
More than $40,000	36 (11%)	12 (8%)	6 (8%)	1 (7%)
Missing	60 (18%)	29 (19%)	8 (11%)	5 (33%)

In some cells, percentages do not add to 100% due to missing data or rounding

[a] Participants in this group were those in the completion or partial completion categories

[b] Participants in this group had attended 3 or fewer sessions and were in the noncompletion category

Parenting Strategy Assessment (PSA)

Participants completed a self-report measure of parenting behaviors that was developed to evaluate the CUIDAR programs, piloted on more than 1,500 families in both Spanish and English, and used in previous research (Tamm et al. 2005). The PSA asks parents to record the number of times they used each of 10 parenting strategies in the previous week (e.g., "during this past week, how many times did you use praise and positive attention with your child") by selecting a response on a four-point Likert scale ranging from 1 = *not at all* to 4 = *more than six times last week*. The 10 parenting strategies included: giving praise and positive attention, ignoring problem behavior, using a star chart or other point system, giving time-outs, using physical punishment, taking away privileges, giving rewards, using transitional statements, using when-then statements, and planning ahead. A factor analysis of the PSA conducted for this study indicates two factors, which can broadly be described as positive parenting (e.g., using praise and positive attention) and negative parenting (e.g., using physical punishment).

Strengths and Difficulties Questionnaire (SDQ; Goodman 1997)

The parent version of the SDQ evaluates children's behavior in the following domains: Emotional Difficulties, Conduct Problems, Hyperactivity/Inattention, Peer Problems, and Prosocial Behavior. The scale has high reliability and validity (Goodman 1997), and recently, researchers normed the SDQ and published scoring bands in a United States population study including more than 10,000 children (Bourdon et al. 2005). Norms are available at www.sdqinfo.org. To determine a Total Difficulty score, Emotional, Peer, Conduct, and Hyperactivity scores are added together.

CUIDAR Follow-up Questionnaire (FQ)

The FQ was developed for this study after a review of the literature on barriers to treatment for low socioeconomic status and minority families. We developed the FQ to identify the degree to which participants rate certain factors identified in the literature (e.g., transportation, location, time, comfort level, perceived benefits of the intervention, connection with the facilitator) as barriers to their participation in CUIDAR. Responses to seven core items (e.g., "location of the class") were measured on a five-point Likert scale ranging from 1 = *does not apply me at all* (*had nothing to do with my attendance*) to 5 = *strongly applies to me* (*this was a major issue affecting my attendance*). Questionnaires for different groups (completers and non-completers) had additional open-ended questions designed to gather qualitative program feedback.

Intervention Model

Community Parent Education (COPE; Cunningham et al. 1995)

COPE is a community-based parent-training model for families with children who have or may have ADHD, Oppositional Defiant Disorder (ODD), and/or other behavioral difficulties, which has been adapted for use by CUIDAR. It aims to improve child behavior by promoting a healthy parent–child relationship through a culturally sensitive and flexible large group model designed to facilitate collaborative problem solving and the development of social support. The COPE parenting course provided by CUIDAR includes ten weekly sessions. Following the introductory session, each session consists of homework assignment and review, identifying videotaped

parenting errors, brainstorming solutions, modeling strategies, and rehearsing.

In *Session 1* (*Introduction and Information*), the facilitator provides an overview of COPE and leads discussions of goals and expected outcomes. *Session 2* (*Attending and Rewards*) focuses on the importance of strengthening the parent–child relationship. Parents discuss strategies, such as praising and providing social rewards (e.g., hugs). Facilitators emphasize that basic skills that show warmth, encouragement and cooperation between the parent–child dyad are needed to later solve more complex behavioral problems. *Session 3* (*Planned Ignoring*) focuses on anger management and conflict resolution. Parents practice skills such as ignoring comments that may escalate into arguments. *Session 4* (*Transitional Warnings and When-Then*) introduces transitional warnings and when-then strategies. Transitional warnings encourage children to plan and anticipate changes in tasks throughout the day. When-Then (also referred to as "Grandma's rule") pairs a parent demand with a reward to increase compliance (e.g., "When you pick up your toys, then you can watch Sesame Street"). In *Session 5* (*Planning Ahead*) parents learn to anticipate difficult situations for their children (e.g., going to the grocery store) and to develop a step-by-step plan to prepare the child for that situation. The plan includes informing the child of the upcoming event, asking the child to plan for strategies to help, providing specific guidelines for desired behaviors, and providing multiple, frequent reminders. *Session 6* (*Point Systems*) introduces the use of simple, developmentally appropriate point systems. *Session 7* (*Time Out*) introduces time-out as a last resort strategy to use in particularly difficult situations. Parents practice giving commands in a firm and neutral manner, and practice implementing the time out procedure. *Session 8* (*Response Cost*: *Time Out from Privileges*) introduces taking away a privilege as a form of punishment. Emphasis is put on developing realistic (e.g., developmentally appropriate) consequences. This session also includes a discussion on punishment options (both positive and negative), and parents are asked to identify the advantages and disadvantages of each option. Groups discuss the short term and probable long-term impacts of each punishment option. This session provides an opportunity for parents who use negative behavior control strategies, such as physical discipline, to identify and discuss the long-term effects of physical discipline, and often serves as an opportunity for parents to determine to replace physical discipline with less harmful forms of discipline. In *Session 9* (*Problem Solving*) parents review and reflect on their newfound skills and implement those skills in a strategy framework that involves selecting a single skill and evaluating its usefulness in a particular situation. Parents learn the acronym PASTE: P (Pick a problem), A (consider Alternative solutions), S (Select the best strategy), T (Try it out), and E (Evaluate it). *Session 10* (*Closing*) is the final session; parents review skills learned over the 10 weeks and discuss the advantages and appropriate uses of each.

Analyses

General effectiveness of the COPE intervention was initially tested using paired *t*-tests on pre and post measures from the PSA and SDQ, and on pre to follow-up PSAs and SDQs. Relative effectiveness for three different ethnic groups (Latino, Caucasian, and African American) was analyzed using ANCOVA, with pre-test SDQ scores used as a covariate and ethnicity as the main effect for differences in post-test SDQ scores. Tests of predictors of SDQ post-test levels were accomplished with independent groups *t*-tests or Pearson *r*'s, depending on the nature of the predictor. Finally, systematic differences for significant predictors by ethnicity were tested using either one-way ANOVA's or Chi-Squares, depending on the nature of the predictor.

Results

Following parent participation in the CUIDAR Community Parent Education (*COPE*) *program*: *will parents' behaviors and attitudes become more positive towards their children*; *and will difficult child behaviors decrease?* Means and standard deviations for the PSA are displayed in Table 2. A series of paired *t*-tests were performed to examine whether the frequency of reported parenting behaviors significantly changed from pre to post intervention and were sustained at follow-up intervention. From pre to post intervention eight out ten parenting behaviors positively changed: praise/positive attention; ignoring problem behavior; using a star chart; reducing the use of physical punishment; rewarding for positive behavior; using transitional statements; using when-then statements; and planning ahead. From pre to follow-up intervention, differences in the use of transitional statements, planning ahead, and star charts were significant. Differences in the use of star charts were not in the predicted direction; for this variable only, the pre intervention mean for the follow-up sample was substantially different than for the full sample ($M = 2.22$ vs. $M = 1.57$). In response to an open-ended question, parents also reported that they learned important information about their children, which resulted in having more positive attitudes toward their child (e.g., understanding their child better, reducing the use of adverse parenting, having more patience with their child, and improving communication with their child).

Means and standard deviations for SDQ subscales and Total Difficulties scores are listed in Table 3. Based on the

Table 2 Means, Standard Deviations, and *t*-test results: parent behavior (n = 123)

PSA items	Pre	Post	Follow-up	Pre to post (n = 123)			Pre to follow-up (n = 37)		
	M(SD)	M(SD)	M(SD)	*t*	*p*	*d*	*t*	*p*	*d*
Praise/positive attention	3.34 (.78)	3.52 (.65)	3.35 (.92)	−2.58	.011**	.25	.00	1.0	0
Ignoring problem behavior	1.98 (.80)	2.31 (.76)	2.16 (.93)	−4.05	.000***	.46	−1.39	.17	.29
Star chart	1.50 (.92)	2.41 (1.10)	1.57 (.93)	−7.59	.000***	.90	3.10	.004**	−.66
Time-outs	2.04 (.96)	2.16 (.92)	2.24 (.96)	−1.25	.214	.13	.50	.62	−.09
Physical punishment	1.61 (.68)	1.40 (.67)	1.28 (.74)	3.11	.002**	−.31	1.14	.26	−.25
Take away privileges	2.02 (.78)	2.07 (.80)	2.00 (.78)	−.74	.463	.06	.16	.88	−.04
Rewards	2.42 (.93)	2.75 (.75)	2.59 (.83)	−3.46	.001**	.39	−1.14	.26	.28
Transitional statements	2.06 (.87)	2.79 (.91)	2.62 (.92)	−6.97	.000***	.82	−3.31	.002**	.78
When-then statements	2.60 (1.00)	2.86 (.82)	2.86 (.93)	−2.39	.018*	.29	−1.48	.15	.31
Planning ahead	2.28 (.99)	2.56 (.87)	2.83 (.91)	−2.61	.010*	.30	−3.11	.004**	.61

* $p < .05$, ** $p < .01$. *** $p < .001$

Table 3 Means, Standard Deviations, and *t*-test results: child behavior (n = 154)

SDQ subscales	Pre	Post	Follow-up	Pre to post (n = 154)			Pre to follow-up (n = 71)		
	M(SD)	M(SD)	M(SD)	*t*	*p*	*d*	*t*	*p*	*d*
Emotional difficulties	2.21 (2.00)	1.77 (1.93)	2.04 (2.01)	2.82	.006**	.26	2.17	.036*	.38
Conduct problems	3.34 (2.21)	2.66 (2.19)	2.61 (2.08)	3.60	.000***	.30	5.08	.000***	.74
Hyperactivity/inattention	4.56 (2.47)	4.05 (2.59)	4.09 (2.47)	2.35	.021*	.17	3.72	.001***	.50
Peer problems	2.53 (1.89)	2.30 (1.87)	1.98 (1.74)	2.71	.008**	.25	2.48	.017*	.42
Prosocial behavior	7.30 (2.01)	7.85 (1.95)	8.25 (1.76)	−4.14	.000***	.33	−5.53	.000***	.82
Total difficulties	12.57 (6.10)	10.84 (6.78)	10.61 (5.76)	4.00	.000***	.36	4.42	.000***	.71

* $p < .05$, ** $p < .01$, *** $p < .001$

United States SDQ normative reference group (www.sdqinfo.org) the mean score for CUIDAR for Total Difficulties was at the 87th percentile. The means fell outside of the normal range on all subscales, with percentile rankings for problem behavior scales ranging from the 78th percentile to the 91st percentile. On the positive scale (Prosocial Behavior), the CUIDAR mean was at the 30th percentile.

The results of the paired *t*-tests and the effect sizes (Cohen's *d*) are also reported in Table 3. Participant's SDQ Total Difficulties scores significantly decreased from pre intervention to post intervention. In addition, there was a significant decrease in the Emotional Difficulties, Conduct Problems, Hyperactivity, and Peer Problems subscales, with a significant increase in the positive Prosocial Behavior scale. Though follow-up SDQ scores were available only for a smaller subset of those completing pre and post intervention SDQ scales, sustainability of the program's effectiveness was supported with a significant decrease in participant's SDQ Total Difficulties scores from pre intervention to follow-up intervention. As for pre to post, there also was a significant decrease in the scores from pre to follow-up intervention for Emotional Difficulties, Conduct Problems, Hyperactivity, and Peer Problems subscales, with the expected increase in Prosocial Behavior.

Are there key demographic or family structure factors that predict treatment outcomes? The tests of pre to post intervention differences by ethnicity were low in power due to small numbers of participants in the African American (n = 12) and Caucasian (n = 20) groups. Consequently, any omnibus differences significant at the $p < .10$ level were further investigated using Tukey Least Significant Difference post hoc tests (also selected due to low power). The results are reported in Table 4. As expected, the pre test covariates were significant in all results. Corrected post test score differences were near significant ($p < .10$) for the main effect of ethnicity in the tests of SDQ Emotional Difficulties, Conduct Problems, and Hyperactivity. The pattern of differences in the LSD post-hoc tests indicated some significantly superior scores for Latino participants, their scores being significantly better than Caucasians for Emotional Difficulties and Conduct Problems, and better than African Americans for Hyperactivity.

Table 4 ANCOVA results for post SDQ's by ethnicity corrected by Pre SDQ's (n = 154)

SDQ subscales	*F* score	*df*	*p*	η^2	MD	*p*
Emotional difficulties	34.49	1	.000***	.218	–	–
Ethnicity	3.00	2	.054*	.046	–	–
Hispanic to Caucasian	–	–	–	–	−.80	.045*
Hispanic to African American	–	–	–	–	−.79	.105
Caucasian to African American	–	–	–	–	.011	.985
Conduct problems	58.23	1	.000***	.338	–	–
Ethnicity	2.51	2	.086	.042	–	–
Hispanic to Caucasian	–	–	–	–	.90	.049*
Hispanic to African American	–	–	–	–	−.43	.46
Caucasian to African American	–	–	–	–	−1.33	.054*
Hyperactivity/inattention	99.22	1	.000***	.461	–	–
Ethnicity	2.44	2	.092	.040	–	–
Hispanic to Caucasian	–	–	–	–	−.29	.543
Hispanic to African American	–	–	–	–	−1.22	.031*
Caucasian to African American	–	–	–	–	−.93	.172
Peer problems	26.85	1	.000***	.192	–	–
Ethnicity	1.41	2	.250	.024	–	–
Hispanic to Caucasian	–	–	–	–	−.68	.105
Hispanic to African American	–	–	–	–	−.29	.562
Caucasian to African American	–	–	–	–	.39	.526
Prosocial behavior	61.56	1	.000***	.353	–	–
Ethnicity	.44	2	.646	.008	–	–
Hispanic to Caucasian	–	–	–	–	−.19	.626
Hispanic to African American	–	–	–	–	−.38	.392
Caucasian to African American	–	–	–	–	−.19	.724
Total difficulties	47.55	1	.000***	.320	–	–
Ethnicity	2.13	2	.124	.040	–	–
Hispanic to Caucasian	–	–	–	–	−1.39	.289
Hispanic to African American	–	–	–	–	−3.0	.061
Caucasian to African American	–	–	–	–	−1.61	.401

* $p < .05$, ** $p < .01$, *** $p < .001$

Demographic and family patterns previously determined in the literature to have associations with children's behavior and mental health were tested as potential predictors of the SDQ post-test scores. For each of these predictor variables that influenced post-intervention SDQ outcomes, potential differences by ethnicity also were analyzed. In the first analysis, whether or not the child was currently enrolled in pre-school predicted a near significant difference in the SDQ pro-social score. Ethnic groups were not different in reference to the probability that the child was or was not enrolled in preschool. Whether or not the child had ever been diagnosed with a medical condition significantly predicted post-test scores for Conduct Problems, Hyperactivity, and the Total Difficulties score. In all cases, having been diagnosed was associated with higher scores in these problem subscales. For this predictor variable, ethnic groups did differ in their relative probabilities of the child's diagnostic status (χ^2 (2) = 22.59, $p < .001$). Standardized cell residuals (in *z*-scores) indicated a disproportionate over-representation of African Americans whose child had been diagnosed ($z = 3.9$), and an under-representation of Hispanics whose child had been diagnosed ($z = -1.9$).

ANOVA's based upon parental education levels and SDQ outcomes all were insignificant. Gross family income (measured in categories) was not associated with any outcomes. Neither the age of the biological mother at the birth of the first child nor the total number of children in the family predicted SDQ outcomes, but the time in months that the primary parent/guardian had lived with the child during the previous year did correlate with Emotional Difficulties (r (136) = −.23, p = .007), Peer Problems (r (132) = −.17, p = .04), and Total Difficulties (r (123) = −.19, p = .04). Ethnic groups did not differ on the variable of months lived with child. A variable representing three types of family structure (biological mother and father both present, two parents/guardians present but not both biological, and only one parent/guardian

Table 5 Independent samples *t*-tests: comparison of possible factors impacting participation between completers and non-completers (n = 69)

Potential factors impacting participation	Completers (n = 54) M(SD)	Non-completers (n = 15) M(SD)	*t*	*p*
Transportation	1.86 (1.32)	1.68 (1.18)	.58	.567
Location of class	1.75 (1.28)	1.64 (1.15)	.36	.723
Time of class	1.57 (1.07)	2.16 (1.55)	−1.88	.065
Comfort level with class	1.45 (.98)	1.48 (.87)	−.11	.914
Perceived classes as beneficial	1.59 (1.04)	1.40 (.87)	.78	.440
Enjoyed class sessions	1.55 (1.11)	1.40 (.87)	.57	.574
Felt connected with the facilitator	1.82 (1.21)	1.44 (.92)	1.36	.179

* $p < .05$, ** $p < .01$, *** $p < .001$

biological or not present) was predictive of Emotional Difficulties (F (2,130) = 5.38, $p = .006$). Post-hoc tests indicated that the category of "both biological parents present" had better scores than either of the other two groups ($p = .03$ when compared to "two parents/guardians, and $p = .005$ when compared to "one parent/guardian"). Ethnic groups did differ on this predictor (χ^2 (4) = 29.06, $p < .001$), with African Americans under-represented in the two biological parents group (z = −3.0) and over-represented in the one parent/guardian group ($z = 3.0$). Latinos had larger than expected numbers in the both biological parent category ($z = 1.5$) and lower than expected observations in the one parent/guardian category ($z = -1.6$).

Is the CUIDAR model effective in eliminating common barriers to treatment intervention for an under-served population? Means and standard deviations for barriers to participation are provided in Table 5. Participants were split into two groups (completers; non-completers). Multiple independent samples *t*-tests were performed, and results confirmed no significant barriers between completers and non-completers. Non-completers were only included in evaluating barriers to participation and were not included in the preceding analyses.

Discussion

Our findings suggest that that substantial improvements in both parent and child behavior can be achieved and sustained for at least one year through participating in the COPE program offered by CUIDAR. Positive changes included the increased frequency of parental use of praise and positive attention as well as transitional and when-then statements. Additionally, parents reported that the classes helped them understand their child better, reduce the use of adverse parenting skills, and have more patience and improved communication with their child. Children exhibiting early difficulties with attention and behavior may be extremely sensitive to harsh parenting styles, which make it most critical for parents of these children to utilize positive parenting practices (Sonuga-Barke et al. 2006).

This evaluation study also documented improved child behavior. Parents reported a significant decrease in Emotional Difficulties, Conduct Problems, Hyperactivity/Inattention, and Peer Problems. Prosocial Behaviors significantly increased from pre to post intervention. At follow-up, parents again reported a decrease in Total Difficulties. More specifically, significant decreases were found for Emotional Difficulties, Conduct Problems, Hyperactivity/Inattention, and Peer Problems. Prosocial Behaviors significantly increased from pre to follow-up intervention.

We predicted that because of CUIDAR's focus on access for minority and low-income families, socioeconomic factors would have limited impact on treatment outcomes. While many demographic factors had limited impact as predicted, intervention gains still were moderated by several factors, including the presence of a medical condition in the child (which was most frequently reported as asthma and allergies). In addition, involvement in out-of-home care (e.g., having been in foster care) and away from the parent during the previous year also predicted weaker treatment outcomes. Consistent with previous research (Frampton et al. 2008), family structure also predicted outcomes, with the strongest outcomes reported in families in which both biological parents were still in the home with the child. Latinos were disproportionately represented in the category of both parents in the home, and African-Americans were disproportionately represented in the category of single-parent homes.

Because the CUIDAR service delivery model employs strategies to reduce barriers to participation for low-income and minority populations, we expected parents to report minimal barriers to participation. None of the common barriers noted in previous research (e.g., Vega and Lopez 2001), such as awareness of services, health insurance, childcare, and transportation, were significant barriers in this study. Among the assessed barriers, the only difference between completers and noncompleters that neared significance was the time of class, suggesting that potential

scheduling conflicts may have been a reason for the lack of participation among the latter group.

Limitations

Since participants were self-referred to the CUIDAR program, there may be a self-selection bias that could contribute to positive results. In this study, this limitation was unavoidable given the community-based nature of CUIDAR. Additionally, stipulations of grants that support CUIDAR require that services remain available to all residents with a child under the age of six, which means that random assignment, wait lists, or control groups were not permissible.

Another limitation in this study and ongoing challenge to CUIDAR is the modest percentage of participants who fully complete the program. However, these challenges are not unique to CUIDAR. Premature termination and high no-show rates are a key concern for mental health providers delivering services to families of children. A meta-analysis by Macharia et al. (1992) reported that the average rate of noncompliance with scheduled patient appointments in 88 studies found in PsychLit and Medline was 42%. Another study specifically examining outpatient mental health clinics, found that 30 to 75% of patients do not keep their initial scheduled appointment, and that the no-show rates for follow-up appointments vary from 20 to 60% (Westra et al. 2000). Higher no-show rates are found in the Medicaid population (e.g., Majeroni et al. 1996; Smith and Yawn 1994); one study found that Medicaid recipients had a no-show rate that was two times as high as the rate for non-Medicaid participants ($p < .0001$) (Guck et al. 2007). Many of our CUIDAR participants were enrolled in Medicaid or public insurance plans or shared socioeconomic similarities with the populations studied in this previous research. Thus, our participation rates are within the range of what is commonly observed in the community.

Moreover, our results are based on parent-self report data, which are limited and subject to bias. Given the constraints of CUIDAR funding for evaluation as well as practical limitations (almost half of the participants were not enrolled in a preschool or Head Start program), we were not able to obtain teacher ratings.

Conclusion

Through CUIDAR, we provide an accessible early intervention, parenting program for underserved parents and children. Evaluation indicates that following completion of the COPE intervention offered by CUIDAR, parents report using more positive parenting practices with their children and report decreases in child attention and behavior problems. More research is needed to address new program efforts that might reduce the disparate outcomes for children and families affected by additional stressors, including those associated with single-parent homes. In addition, more research is needed to identify specific parent behaviors that produce better child outcomes. Moreover, a randomized, controlled study of CUIDAR is still needed. In addition, in future research, we plan to conduct in-depth, qualitative interviews with CUIDAR participants as well as to obtain follow-up measurements on children who are now in school.

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