

# Family Group Cognitive–Behavioral Preventive Intervention for Families of Depressed Parents: 18- and 24-Month Outcomes

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**Objective:** In a long-term follow-up of a randomized controlled trial (Compas et al., 2009) to examine the effects at 18- and 24-month follow-ups of a family group cognitive–behavioral (FGCB) preventive intervention for mental health outcomes for children and parents from families ( $N = 111$ ) of parents with a history of major depressive disorder (MDD). **Method:** Parents with a history of MDD and their 9- to 15-year-old children were randomly assigned to a FGCB intervention or a written information comparison condition. Children’s internalizing, externalizing, anxiety/depression, and depressive symptoms; episodes of MDD and other psychiatric diagnoses; and parents’ depressive symptoms and episodes of MDD were assessed at 18 and 24 months after randomization. **Results:** Children in the FGCB condition were significantly lower in self-reports of anxiety/depression and internalizing symptoms at 18 months and were significantly lower in self-reports of externalizing symptoms at 18 and 24 months. Rates of MDD were significantly lower for children in the FGCB intervention over the 24-month follow-up (odds ratio = 2.91). Marginal effects were found for parents’ symptoms of depression at 18 and 24 months but not for episodes of MDD. **Conclusions:** Support was found for a FGCB preventive intervention for children of parents with a history of MDD significantly reducing children’s episodes of MDD over a period of 2 years. Significant effects for the FGCB intervention were also found on internalizing and externalizing symptoms, with stronger effects at 18- than at 24-month follow-up.

**Keywords:** parental depression, children, prevention, family, cognitive–behavioral

Major depressive disorder (MDD) in parents presents a significant threat to the mental health of children and adolescents. The scope and magnitude of the problem are reflected in a recent report from the Institute of Medicine and the National Research Council (IOM/NRC; England & Sim, 2009). Children of depressed parents are at 3 to 4 times greater risk for developing depression and other disorders than children in the general population. Based on epidemiologic data, the IOM/NRC report estimates that 7.5 million

adults who suffer from depression have on average two children under the age of 18 years living with them, resulting in approximately 15 million children growing up with a parent who has experienced one or more episodes of MDD before these children reach the age of 18 years (England & Sim, 2009). As a consequence, the IOM/NRC report recommends that the U.S. Surgeon General’s Office should identify depression in parents and its effects on children as a major public health priority and that the

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Department of Health and Human Services should launch a national effort to prevent the adverse effects of parental depression on children (England & Sim, 2009). Thus, establishing the efficacy of preventive interventions for children of parents with depression is of the highest importance.

Progress toward this goal can be found in the development and testing of the short-term efficacy (i.e., up to 1-year follow-up) of preventive interventions for children of depressed parents. In a sample of 13- to 18-year-old children (who had elevated but subthreshold depressive symptoms) of depressed parents, Clarke et al. (2001) tested a 16-session group cognitive-behavioral indicated preventive intervention that taught adolescents cognitive restructuring, interpersonal problem-solving skills, and communication skills in a randomized trial compared to usual care. Adolescents in the intervention as compared with controls reported significantly fewer symptoms of depression on the Center for Epidemiologic Studies—Depression scale (CES-D; Radloff, 1977) at 12-month follow-up. Further, adolescents in the cognitive-behavioral intervention had significantly lower rates of MDD at the 12-month follow-up than did the control group; no differences were found for nonaffective disorder diagnoses. Garber et al. (2009) examined the Clarke intervention in a second randomized trial across four sites and found significant effects for reductions in depressive symptoms on the CES-D and significantly lower rates of MDD at 9 months as compared with children who received treatment as usual.

In a randomized controlled trial for which long-term follow-up data are reported here, Compas et al. (2009) tested the efficacy of a family group cognitive-behavioral (FGCB) selective preventive intervention for families of parents with a history of depression and their 9- to 15-year-old children. The intervention focused on teaching parenting skills to parents and teaching children the use of secondary control coping skills (e.g., acceptance, cognitive reappraisal, distraction; Compas, 2009) to cope with stress associated with their parents' depression. The efficacy of this FGCB intervention in reducing and preventing children's internalizing and externalizing psychopathology was examined in a randomized clinical trial in comparison with the provision of written information (WI) to parents and children about depression and its effects on families. Significant effects favoring the FGCB intervention at 12-month follow-up were found on children's self-reports of depressive symptoms, anxiety/depression symptoms, total internalizing symptoms, and total externalizing problems (effect sizes ranged from  $d = 0.31$  to  $0.57$ ). The intervention also led to lower rates of a *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) diagnosis for children at 12 months (odds ratio = 2.13), and the effect for episodes of MDD over 12 months approached significance (odds ratio = 2.68). Parents in the FGCB intervention also had significantly lower depressive symptoms at 12-month follow-up than parents in the WI condition, but parents in the two conditions did not differ in rates of episodes of MDD over the 12-month follow-up period.

Although these findings are promising, prevention effects need to be sustained over longer periods of time to have a meaningful impact on reducing the incidence and prevalence of disorders. Studies of the longer term effects of preventive interventions with children of depressed parents are relatively rare, and the findings have not been as strong as those reported for shorter outcome periods. Beardslee, Gladstone, Wright, and Cooper (2003) and Beardslee, Wright, Gladstone, and Forbes (2007) examined the effects of two selective family

education preventive interventions: a clinician-based psychoeducational intervention (i.e., focused on educating families about mood disorders and risk and resilience in children, decreasing children's self-blame about their parents' depression, and helping children foster relationships and develop independent activities) and a lecture-based intervention to provide information to parents about depression and its effects on families. Follow-up of these interventions found that relative to baseline, children (ages 8 to 15 years old) in both conditions reported significantly fewer internalizing symptoms on the Youth Self-Report (Achenbach & Rescorla, 2001) at 4.5 years (Beardslee et al., 2007), but internalizing symptoms did not differ between the two conditions.

Clarke et al. (2001) examined the effects of their cognitive-behavioral intervention at 24-month follow-up and found that several of the significant effects reported at 12-months were no longer significant. In particular, adolescents in the intervention no longer differed from those in the control group on depressive symptoms on the CES-D at 24-months, no effects were found on child symptoms reported by parents on the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) or for nonmood disorder child diagnoses, and the effects of the intervention on rates of MDD approached significance. Therefore, based on the limited findings to date, evidence that the effects of preventive interventions for children of depressed parents can be sustained is a high priority.

The long-term effects of preventive interventions with this population may be enhanced through comprehensive interventions that include components for depressed parents and their children (e.g., Collins & Dozois, 2008; Compas, Langrock, Keller, Merchant, & Copeland, 2002; Garber, 2008). In support of the view that it may be important to intervene both with parents and with children, Compas et al. (2010) found that increases in positive parenting skills and increases in children's use of secondary control coping skills to manage the stress of living with depression in their families mediated the effects of a FGCB intervention on children's mental health outcomes at 12 months.

The current study builds on findings reported for this intervention at 2-, 6-, and 12-month follow-ups (Compas et al., 2009) by further examining the effects of this FGCB intervention on children's and parents' mental health outcomes at 18- and 24-month follow-ups. We examined the same outcomes reported by Compas et al. (i.e., parent and child reports of children's internalizing, externalizing and anxious/depressed symptoms and children's reports of depressive symptoms), and we examined rates of *DSM-IV* diagnoses of MDD and other disorders over the 24-month follow-up period. We also examined the effects of the FGCB intervention on parents' depressive symptoms and episodes of MDD. Building on the findings of Compas et al. (2009), we hypothesized that children in the FGCB intervention as compared with the WI condition would have significantly lower levels of child internalizing, externalizing, anxious/depressed, and depressive symptoms and lower rates of MDD and total *DSM-IV* diagnoses and that parents would have lower rates of depressive symptoms and MDD episodes.

## Method

### Participants

Participants included 111 parents with current or past MDD during the lifetime of their child (or children) and 155 children of

these parents from the areas in and surrounding Nashville, Tennessee, and Burlington, Vermont (for additional details, see Compas et al., 2009). Target parents with a positive history of depression included 95 mothers (mean age = 41.2 years,  $SD = 6.8$ ) and 16 fathers (mean age = 48.3 years,  $SD = 8.2$ ). Parents' level of education included less than high school (7.2%), completion of high school (8.1%), some college (31.5%), college degree (27%), and graduate education (26.1%). Eighty-six percent of target parents were Euro American, 5.8% were African American, 2.7% were Hispanic American, 1% were Asian American, 1% were Native American, and 3.9% were mixed ethnicity. The racial and ethnic compositions of the samples were representative of the regions in Tennessee and Vermont from which they were drawn, based on the 2000 U.S. Census data. Annual family income ranged from less than \$5,000 to more than \$180,000, with a median annual income of \$40,000. Sixty-four percent of parents were married, 21.6% were divorced, 3.6% were separated, 9.0% had never married, and 1.6% were widowed. Families randomized to the FGCB and WI conditions did not differ significantly on any of these demographic variables.

Children enrolled in the study ranged from 9 to 15 years old and included 70 girls (mean age = 11.5 years,  $SD = 2.0$ ) and 85 boys (mean age = 11.3 years,  $SD = 2.0$ ). Seventy-nine percent of children were Euro American, 7.7% were African American, 3.2% were Asian American, 1.3% were Hispanic American, and 7.7% were mixed ethnicity. We targeted ages 9 to 15 years in order to intervene with children/adolescents before the documented increase in rates of depression that occurs in early to mid-adolescence (e.g., Hankin et al., 1998) and to include children who were old enough to learn the relatively complex cognitive coping skills taught in the intervention. Seventy-one families included only one child in the age range, 37 families had two participating children, two families had three participating children, and one family had four children. Multiple children from families were included because a portion of the intervention focused on parent-child and family interactions and relationships, and it would have been problematic to exclude some children from a family who were within our target age range while including others.

## Setting and Personnel

All procedures were approved by the institutional review boards at Vanderbilt University and the University of Vermont. All assessments and group intervention sessions were conducted in the Department of Psychology and Human Development at Vanderbilt University and the Department of Psychology at the University of Vermont. Doctoral candidates in clinical psychology, who were naive to condition, conducted the structured diagnostic interviews after receiving extensive training. Each group intervention was co-facilitated by one of three clinical social workers and one of nine doctoral-level students in clinical psychology. Facilitators were trained by reading the intervention manual, listening to audiotapes of a pilot intervention, and discussing and role-playing each session with an experienced facilitator. Ongoing supervision was conducted by two Ph.D.-level clinical psychologists.

## Measures

**Children's depressive symptoms.** Depressive symptoms were assessed with the CES-D (Radloff, 1977), a self-report

measure of the frequency of 20 depressive symptoms over the past week using a 4-point scale. The CES-D is short and easy to read, has been successfully administered in several large school samples (e.g., Fendrich, Weissman, Warner, & Mufson, 1990; Roberts, Lewinsohn, & Seeley, 1991), and has good psychometrics ( $\alpha = .89$ ; test-retest reliability = .61; sensitivity of 83.7 and specificity of 75.2 in predicting current MDD) with youths. Internal consistency in the current sample was  $\alpha = .90$ .

**Children's internalizing and externalizing symptoms.** The CBCL (Achenbach & Rescorla, 2001) was used to assess symptoms of anxiety/depression (as a measure of general emotional distress) and total internalizing and externalizing problems in children and adolescents. These scales were selected to represent the range of problems that have been identified in children of depressed parents and to match the scales reported by Clarke et al. (2001), Beardslee et al. (2007), and Compas et al. (2009). The CBCL includes a 118-item checklist of problem behaviors that parents rate as not true (0), somewhat or sometimes true (1), or very true or often true (2) of their child in the past 6 months. Children and adolescents completed the Youth Self-Report (YSR; Achenbach & Rescorla), the self-report version of the CBCL for adolescents ages 11 to 18 years old. Reliability and validity of the CBCL and YSR are well established (Achenbach & Rescorla). Internal consistency for the scales used in this study ranged from  $\alpha = .84$  to .94 for the CBCL and  $\alpha = .84$  to .90 for the YSR. Test-retest reliability ranged from  $r = .82$  to .91 for the CBCL and  $r = .74$  to .89 for the YSR. Internal consistency in the current sample ranged from  $\alpha = .78$  to .91 for the scales used in this study. Nine- and 10-year-old children completed the YSR to allow for complete data on all measures. The internal consistency for the YSR scales was adequate with this younger age group in the current sample ( $\alpha \geq .80$ ). Raw scores on the CBCL and YSR scores were used in all analyses to maximize variance (i.e., some variability is lost when the raw scores are converted to  $T$  scores, because in some instances more than one raw score corresponds to a single  $T$  score).

**Child diagnostic interview.** The Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997) is a reliable and valid semistructured interview that generates *DSM-IV* Axis I child psychiatric diagnoses. Separate interviews were conducted with parents and children and combined to yield both current and lifetime psychiatric diagnoses. Diagnoses that were assessed included MDD, dysthymia, Bipolar I and Bipolar II disorder, panic disorder, separation anxiety disorder, social phobia, agoraphobia, generalized anxiety disorder, oppositional defiant disorder, conduct disorder, alcohol abuse, alcohol dependence, substance abuse, and substance dependence. Interrater reliability for diagnoses of MDD, calculated on a randomly selected subset of these interviews, indicated 96% agreement ( $\kappa = 0.76$ ). For the current study, we examined the occurrence of MDD and any nonmood disorder *DSM-IV* diagnosis (which included anxiety disorders and disruptive behavior disorders) during the 24 months following baseline assessment.

**Parental depressive symptoms.** Parents' current depressive symptoms were assessed with the Beck Depression Inventory—II (BDI-II), a standardized and widely used self-report checklist of depressive symptoms with adequate internal consistency ( $\alpha = .91$ ) and validity in distinguishing severity of MDD (Beck, Steer, Ball, & Ranieri, 1996; Steer, Brown, Beck, & Sanderson, 2001). Internal consistency in the current sample was  $\alpha = .93$ .

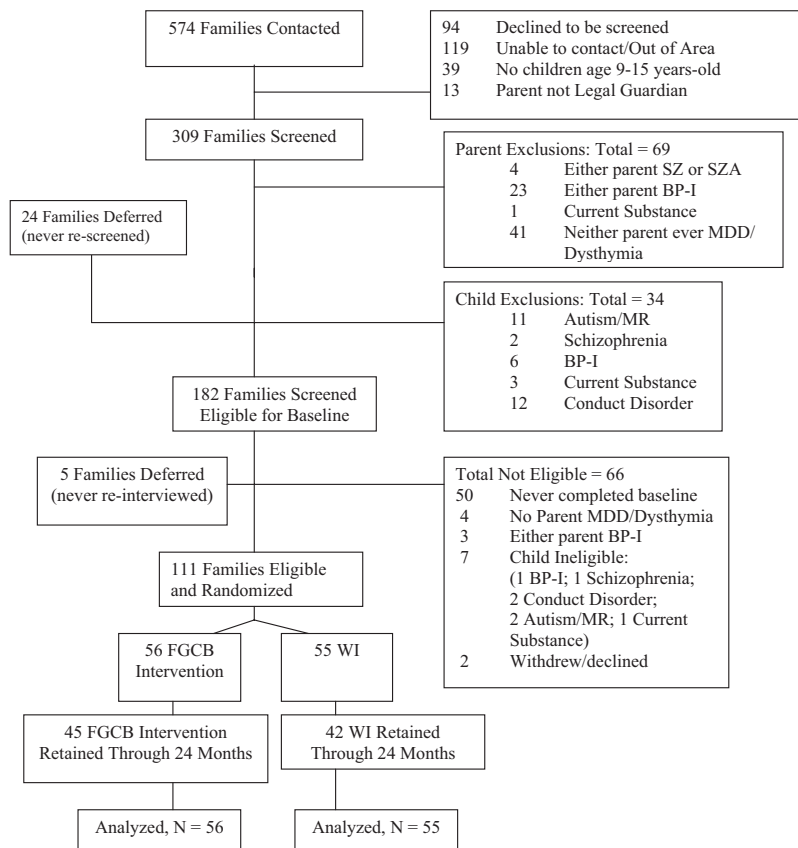
**Parental diagnostic interview.** Parents' current and past history of MDD was assessed and other Axis I disorders were screened with the Structured Clinical Interview for *DSM* (SCID; First, Spitzer, Gibbon, & Williams, 2001), a semistructured diagnostic interview used to assess current and previous episodes of psychopathology according to *DSM-IV* criteria (American Psychiatric Association, 1994). Interrater reliability, calculated on a randomly selected subset of these interviews, indicated 93% agreement ( $\kappa = 0.71$ ) for diagnoses of MDD.

## Procedures

Figure 1 depicts the screening and enrollment process (for additional details, see Compas et al., 2009). In order to enroll a broadly representative sample of parents with past or current depression regardless of their history of seeking or receiving treatment, we recruited the sample from several sources, including mental health clinics/practices, family and general medical practices, and media outlets. A total of 574 parents contacted the research teams. As shown in Figure 1, 309 of the 574 parents who contacted the research team were eligible and available to be screened (i.e., 45% of families who made initial contact with the research team could not be contacted, declined to be screened, or did not meet basic eligibility criteria). The 309 parents were

initially screened by telephone and moved to the next stage if the parent met criteria for major depression either currently or during the lifetime of her or his child (or children) and the following criteria were met: (a) parent had no history of Bipolar I disorder, schizophrenia, or schizoaffective disorder; (b) children had no history of autism spectrum disorders, mental retardation, Bipolar I disorder, or schizophrenia; and (c) children did not currently meet criteria for conduct disorder or substance/alcohol abuse or dependence. Children with conduct disorder were excluded because of evidence that group interventions with children with disruptive behavior disorders can lead to contagion of these problems among group members (Dishion & Dodge, 2005). Therefore, the eligible families may underrepresent families of depressed parents whose children have developmental disorders or conduct disorder and families with parents with Bipolar I.

In addition, eligible families were deferred for later reassessment if a parent was currently suicidal with a global assessment of functioning  $\leq 50$  on the SCID, had current alcohol/substance abuse or dependence with a global assessment of functioning  $\leq 50$ , or if one of the target children had current MDD ( $n = 24$ ). Such families were deemed unsuitable for the intervention at the current time and were assisted in obtaining appropriate mental health services in the community. Deferred families were re-



*Figure 1.* Participant screening, randomization, and retention through 24-month follow-up. FGCB = family group cognitive-behavioral intervention condition; WI = written information comparison condition; SZ = schizophrenia; SZA = schizoaffective disorder; BP-I = Bipolar I disorder; MDD = major depressive disorder; MR = mental retardation.



screened every 2 months (if deferred for suicidality or child depression) or every 6 months (if deferred for alcohol or drug problems), until they screened eligible and could be invited to the next stage of recruitment.

The 182 parents who screened eligible were invited to participate with their child (or children) in an in-person baseline interview to confirm their eligibility. Despite repeated contacts, 50 families never completed the baseline interview. Of those completing the interview, 111 met criteria for the study and were randomized in blocks of eight families to the FGCB intervention (56 families with 80 children) or to the WI condition (55 families with 75 children).

**Retention rates.** Ninety-two percent of families remained enrolled at 24 months (i.e., 8% of families withdrew from the study), and 78% of the families completed data collection through the 24-month follow-up (80% of families assigned to the intervention and 76% of the comparison group), as defined by the provision of data at either or both of the 18- or 24-month follow-up data collections.

### Intervention and Control Conditions

**Family group intervention.** The FGCB intervention is a manualized 12-session program (8 weekly and 4 monthly sessions) for up to four families in each group (Compas et al., 2002). The program is designed for participation by parents and children. Goals are to educate families about depressive disorders, increase family awareness of the impact of stress and depression on functioning, help families recognize and monitor stress, facilitate the development of adaptive coping responses to stress, and improve parenting skills. Parents learn parenting skills (i.e., praise, positive time with children, encouragement of child use of coping skills, structure, and consequences for positive and problematic child behavior) from one facilitator, and children learn skills for coping with their parents' depression from the other facilitator. The core coping skills are summarized by the acronym ADAPT: acceptance, distraction, activities, and positive thinking. The skills and teaching procedures are based on previous research on effective parenting skills and coping skills (e.g., Jaser et al., 2005; McMahon & Forehand, 2003). The monthly booster sessions 9–12 are designed to problem solve difficulties with implementation of parenting skills and child coping skills at home, provide additional practice of skills, support positive changes that have occurred, and assign new homework. During sessions, parents and children meet together part of the time and work separately part of the time. The length of the intervention was selected based on a pilot phase in which we identified 12 sessions as optimal for teaching coping and parenting skills (Compas et al., 2002). Further, the length of the FGCB is similar in length to the preventive interventions for family bereavement (12 sessions; Sandler et al., 2003) and children of divorce (11 sessions; Wolchik et al., 2000) that have shown long-term beneficial effects.

**Treatment integrity.** A detailed list of the content of each group intervention session was developed from the manual. Five individuals not involved in delivery of the intervention were trained to code for presence versus absence of each content area or strategy of the intervention for each session. Intervention sessions were audio recorded, and 20% were randomly selected for fidelity coding. The ratio of the number of checklist items covered during

the sessions relative to the number of items that should have been covered was 92%. Reliability across coders was calculated for 31% of the sessions that were coded and yielded 93% agreement.

**Written information (WI) condition.** The comparison condition was modeled after a self-study program used successfully by Wolchik et al. (2000) in their preventive intervention trial for families coping with parental divorce and the lecture information condition used by Beardslee et al. (2007). Families were mailed written materials to provide education about the nature of depression, the effects of parental depression on families, and signs of depression in children. Separate materials were developed for parents and children. Materials for children were based on age, with 9- to 11-year-olds receiving materials written at a lower reading level than those for 12- to 15-year-olds. Following the method used by Wolchik et al., we sent materials in three sets over an 8-week interval to correspond with the first eight sessions of families in the group intervention. Research assistants checked with the families to ensure that they received the materials through the mail.

### Data Analytic Approach

**Analyses of symptom measures: Multivariate mixed-effects model.** We used the same data analytic approach as employed by Compas et al. (2009) to test for the effects of the FGCB intervention within a partially nested design. Compas et al. reported on the 2-, 6-, and 12-month outcomes; here we report on the 18- and 24-month outcomes. In the study of interventions delivered in a group format, participants assigned to the intervention condition were nested within group. The current design is more complicated, however, in that participants were nested within group only within the FGCB intervention condition; there was no such nesting in the WI condition. Therefore, we used a mixed-effects model for the analysis of treatment effects in the context of *partially nested* designs (Bauer, Sterba, & Hallfors, 2008; see also Lee & Thompson, 2005; Roberts & Roberts, 2005). We followed Bauer et al.'s recommendations for obtaining unbiased standard errors and appropriate degrees of freedom. For each of our outcome variables, we implemented a *multivariate, mixed-effects model* to test the effect of condition (FGCB vs. WI) at the 18-month (Time 2) and 24-month (Time 3) follow-ups. We treated our baseline (Time 1) measure of the outcome as a global covariate. Within the FGCB intervention arm of the study, each set of participants was nested within one of 14 intervention family groups. Within the WI comparison arm, there was no such nesting.

We used SAS PROC MIXED in which fixed effects included our Time 1–3 intercepts (baseline, 18 months, 24 months) and our baseline covariate at time points 2–3. Condition was a random effect at time points 1–3, which allowed intervention means at each time point to vary across intervention group. This amounted to estimating a (between-groups) random effect variance for intervention at each of the three time points and estimating one (within-group) residual variance. We used restricted maximum likelihood estimation (i.e., method = REML) within the PROC MIXED procedure, as it typically provides less biased estimates of the variance components when the number of groups is small. We also stipulated  $ddf = kr$ , which requests the computation of standard errors using the Kacker and Harville (1984) approximation and the computation of degrees of freedom using the Kenward and Rogers

(1997) method, as recommended by Bauer et al. (2008) due to the complex covariance structure (for additional details, see Compas et al., 2009). As in analyses reported by Compas et al. (2009), all tests were two-tailed unless otherwise noted.

**Analyses of diagnostic measures.** Categorical outcomes (*DSM-IV* diagnoses on the K-SADS and SCID) were analyzed with chi-square, odds ratio (odds of a diagnosis in the comparison group relative to the odds of a diagnosis in the intervention group), and Kaplan–Meier survival analyses.<sup>1</sup>

## Results

### Preliminary Analyses

Several preliminary analyses were conducted prior to the multivariate mixed effects models to test the primary hypotheses. First, for those families randomized to the FGCB intervention, the number of group sessions attended or made up after an absence by at least one family member ranged from 0 to 12, with a mean of 7.9 sessions. For those who attended at least one session, the mean number of sessions attended or made up after an absence was 10.5.

Second, we compared families assigned to the FGCB intervention or to the WI condition on several variables at baseline. The percentage of parents currently in an episode of MDD was comparable for the two conditions (20% of parents in the intervention and 29% of parents in the comparison condition; chi-square nonsignificant). Although the CES–D was not used as part of the inclusion–exclusion criteria, the percentage of children exceeding the cutoff of 16 on the CES–D for elevated depressive symptoms was comparable for the two conditions (30% of those assigned to the intervention and 24% of those assigned to the comparison condition; chi-square nonsignificant). The percentage of children with no prior history of MDD was also comparable (87% of those in the intervention and 77% of those in the comparison condition; chi-square nonsignificant).

Third, intraclass correlations were calculated to test the independence versus nonindependence of children from these families. Intraclass correlations (ICCs) were calculated to ensure that there were no significant differences as a function of parents completing a set of questionnaires on multiple children (a possible violation of independence of informant) and for children from the same family completing the YSR and the CES–D. We conducted 7 two-way mixed effect models on each of our critical variables assessed with the CBCL and YSR (internalizing symptoms, externalizing symptoms, and symptoms of anxiety/depression) and the CES–D to test the average ICCs (Shrout & Fleiss, 1979). The ICCs were nonsignificant and very small in magnitude for the YSR Anxiety/Depression, Internalizing, and Externalizing scales; the CES–D; and the CBCL Anxiety/Depression and Internalizing scales (correlations ranged from  $r = .04$  to  $.09$ ,  $ps > .10$ ). The only significant correlation was found for the CBCL Externalizing scale ( $r = .42$ ,  $p < .01$ ). Given the independence of the data on multiple indices (i.e., there were no differences on six of the seven variables), multiple children within a family were treated as individual units for analyses to ensure sufficient power to detect moderate size effects. However, because the ICC was significant for the CBCL Externalizing scale, we reanalyzed the effects of the intervention on all outcome variables using a sample of children that

included one child randomly selected from those families with multiple children (see below).

Fourth, because not all parents and children provided complete data at all three time points, a variable reflecting the amount of missing data was derived and participants assigned to the FGCB intervention and the WI comparison condition were compared on this variable. The amount of missing data (i.e., missing data at none, one, or two of the follow-up assessments) did not differ between families assigned to the FGCB intervention condition versus the WI condition.

Fifth, *T* scores on the YSR and CBCL scales at baseline were examined to provide a normative reference point for our sample (Achenbach & Rescorla, 2001). Mean *T* scores on the YSR and CBCL were, respectively, 55.9 and 59.2 for Anxiety/Depression, 54.0 and 58.4 for Internalizing, and 49.1 and 53.6 for Externalizing. The percent of children in the clinical range on Anxiety/Depression (i.e., *T* score  $> 70$ ) was 6.8% on the YSR and 13.4% on the CBCL (based on normative data, 2% would be expected to exceed this cutoff). The percent in the clinical range on the Internalizing scale was 22.3% on the YSR and 39.6% on the CBCL; the percent in the clinical range on the Externalizing scale was 10.4% on the YSR and 19.5% on the CBCL (10% would be expected to exceed this cutoff, based on normative data). These scores are similar to those reported for children of depressed parents in other studies, including the STAR\*D trial (Foster et al., 2008). These data indicate that, as expected, this is an at-risk sample as reflected by moderately elevated mean *T* scores and the portion of the sample in the clinical range (2 to 4 times greater than would be expected based on the norms for most scales).

Finally, because families that were randomly assigned to the FGCB intervention met in groups of four families, we compared family groups on the outcome measures at baseline to ensure they were equivalent. A series of analyses of variance were nonsignificant on all of the measures (CBCL, YSR, CES–D, BDI–II).

### Analyses of Intervention Effects: Child Outcomes

Table 1 presents the Type 3 fixed effects of intercept, Time 1 covariate, and condition, on each outcome variable at 18 and 24 months. As expected, the baseline covariate was a significant predictor of the outcome at 18 and 24 months in every analysis. The tests of primary interest were the main effects of condition on each 18- and 24-month outcome variable, controlling for the baseline measure of the same outcome. The findings, delineated in detail below using conservative two-tailed tests (and more liberal analyses using one-tailed tests based on the a priori hypothesis that the FGCB intervention would produce more beneficial effects than the WI condition), indicate that at the 18-month follow-up after entry into the study, the FGCB intervention was more effective than the WI condition on all of the scales on the YSR. At 24 months, the intervention was more effective than the WI comparison condition on the YSR Externalizing scale.

Table 2 provides means for all of the continuous child outcome variables at baseline and each of the follow-up assessments, the

<sup>1</sup> Analytic methods are not currently available to account for partial nesting with categorical data. Therefore, the partial nesting in the FGCB condition is not accounted for in these analyses and should be addressed in future research.

Table 1  
 Type 3 Fixed Effects of Intercept, Time 1 Covariate, and Condition on Each Outcome Variable

Effect	18 months			24 months		
	<i>df</i>	<i>F</i>	<i>p</i>	<i>df</i>	<i>F</i>	<i>p</i>
CES-D						
Intercept	1, 60	19.36	<.001	1, 72	18.75	<.001
Baseline (covariate)	1, 88.3	15.63	<.001	1, 101	13.61	<.001
Condition	1, 35.2	1.76	.194	1, 41.5	1.85	.181
YSR Anxiety/Depression						
Intercept	1, 62.9	19.71	<.001	1, 69.8	20.98	<.001
Baseline (covariate)	1, 92.6	16.80	<.001	1, 101	8.68	.004
Condition	1, 74.4	10.61	.002	1, 30.6	2.84	.102
CBCL Anxiety/Depression						
Intercept	1, 70	1.54	.219	1, 74.1	2.02	.159
Baseline (covariate)	1, 96.8	42.67	<.001	1, 103	61.12	<.001
Condition	1, 46.1	.51	.478	1, 97.6	2.73	.102
YSR Internalizing						
Intercept	1, 64.2	23.43	<.001	1, 72.9	19.36	<.001
Baseline (covariate)	1, 78.3	9.77	.003	1, 102	12.55	<.001
Condition	1, 18.8	8.99	.008	1, 24.4	1.75	.198
CBCL Internalizing						
Intercept	1, 76.3	4.24	.043	1, 81.6	1.39	.242
Baseline (covariate)	1, 93.9	37.53	<.001	1, 103	59.20	<.001
Condition	1, 36.8	1.51	.227	1, 30.6	1.16	.289
YSR Externalizing						
Intercept	1, 66.6	28.09	<.001	1, 75.8	18.84	<.001
Baseline (covariate)	1, 85.6	27.07	<.001	1, 89.1	47.27	<.001
Condition	1, 50.1	9.85	.003	1, 51.7	5.61	.022
CBCL Externalizing						
Intercept	1, 70.8	2.31	.134	1, 75.8	3.57	.063
Baseline (covariate)	1, 85.4	95.55	<.001	1, 92.9	89.57	<.001
Condition	1, 96.7	1.83	.179	1, 104	2.22	.140
BDI-II (parent)						
Intercept	1, 60.8	14.75	<.001	1, 54.6	11.63	.001
Baseline (covariate)	1, 71.7	13.33	<.001	1, 69.3	17.03	<.001
Condition	1, 39.2	3.05	.088	1, 68.2	3.36	.071

Note. All *p* values are two-tailed. CES-D = Center for Epidemiologic Studies—Depression scale; YSR = Youth Self-Report; CBCL = Child Behavior Checklist; BDI-II = Beck Depression Inventory—II.

significance of the effect of the intervention on the dependent variable at each time point, and the effect size (Cohen's *d*).

**Child depressive and internalizing symptoms.** We assessed three levels of internalizing problems: child-reported depressive symptoms (CES-D), child- and parent-reported anxiety/depression symptoms (YSR and CBCL syndrome scales), and child- and parent-reported internalizing problems (YSR and CBCL broadband scales; see Tables 1 and 2). For the CES-D, the main effect of condition was not significant at 18 or 24 months. For anxiety/depression symptoms, the main effect of condition was significant for the YSR at 18 months ( $p = .002$ ,  $d = 0.46$ ) but was no longer significant at 24 months ( $d = 0.30$ ); on the CBCL Anxiety/Depression scale the effect of condition was not significant at 18 or 24 months. In analyses of the Internalizing scales, the effect of condition was significant on the YSR at 18 months ( $p = .008$ ,  $d =$

0.41) but was not significant at 24 months ( $d = 0.22$ );<sup>2</sup> effects on the CBCL Internalizing scale were not significant at either follow-up. In addition, one-tailed tests at 24 months approached significance for the YSR and CBCL Anxiety/Depression scales ( $p = .051$ ).

**Child externalizing problems.** Externalizing problem behaviors were assessed by parent and child report at a broadband

<sup>2</sup> Beardslee et al. (2007) reported a decrease of  $d = 0.30$  from preintervention to follow-up on the YSR Internalizing scale for children in both of their intervention conditions. For purposes of comparison, we calculated similar estimates of within-group change from preintervention to 24-month follow-up for the current study. Children in the WI condition decreased by  $d = 0.31$ , and children in the FGCB condition decreased by  $d = 0.71$

Table 2  
Means and Effect Sizes for Each Outcome Variable at Each Time Point

Time	FGCB ( <i>M</i> )	WI ( <i>M</i> )	Cohen's <i>d</i>
CES-D			
Baseline	13.25	12.67	-0.06
18 months	9.42	10.57	0.11
24 months	7.67	9.55	0.21
YSR Anxiety/Depression			
Baseline	4.83	5.01	0.04
18 months	2.26	3.73	0.46**
24 months	3.20	4.54	0.30
CBCL Anxiety/Depression			
Baseline	5.26	5.59	0.09
18 months	3.31	3.86	0.16
24 months	3.09	3.77	0.21
YSR Internalizing			
Baseline	13.46	12.06	-0.15
18 months	5.54	8.30	0.41**
24 months	7.46	9.37	0.22
CBCL Internalizing			
Baseline	10.73	10.58	-0.02
18 months	6.63	8.26	0.25
24 months	6.64	7.55	0.15
YSR Externalizing			
Baseline	9.21	9.32	0.02
18 months	6.02	9.03	0.48**
24 months	7.30	9.99	0.37*
CBCL Externalizing			
Baseline	9.68	8.56	-0.14
18 months	6.16	7.40	0.20
24 months	5.81	6.97	0.19
BDI-II (Parent)			
Baseline	16.30	16.79	0.04
18 months	13.44	17.52	0.26
24 months	12.46	16.05	0.22

Note. Baseline means are raw scores. Means for 18 and 24 months are adjusted for the baseline means. FGCB = family group cognitive-behavioral intervention condition; WI = written information comparison condition; CES-D = Center for Epidemiologic Studies—Depression scale; YSR = Youth Self-Report; CBCL = Child Behavior Checklist; BDI-II = Beck Depression Inventory—II.

\*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed.

level (YSR and CBCL Externalizing problems; see Tables 1 and 2). For the Externalizing problems scale on the YSR, there were significant effects for condition at 18 months ( $p = .003$ ,  $d = 0.48$ ) and 24 months ( $p = .022$ ,  $d = 0.37$ ). On the CBCL, the effect for condition was not significant at 18 or 24 months.

**Ancillary analyses of effects on child symptom outcomes: One randomly selected child per family.** As an additional step to account for possible nonindependence of children within the same family, all of the intervention effects on the CES-D, CBCL, and YSR at 18 and 24 months were reanalyzed with one randomly selected child per family. The effects on the YSR Externalizing

scale remained significant at both 18 and 24 months. The effects on YSR Internalizing ( $p = .127$ ) and YSR Anxiety/Depression ( $p = .065$ ) were no longer statistically significant (two-tailed tests) at 18 months. However, the effect sizes at these time points were virtually identical to the effects found with the full sample. The effect sizes for the full sample versus for the one-child-per-family sample were, respectively,  $d = 0.46$  vs.  $0.42$  for anxiety/depression at 24 months;  $d = 0.41$  vs.  $0.31$  for internalizing at 24 months;  $d = 0.48$  vs.  $0.55$  for externalizing at 18 months, and  $d = 0.37$  vs.  $0.64$  for externalizing at 24 months. Therefore, it is likely that the loss of statistical significance for some analyses is due to the loss of statistical power with the reduced sample. For the CES-D and the CBCL scales, the results yielded nonsignificant effects at both 18 and 24 months, which was consistent with the full sample.

**Child DSM-IV diagnoses.** Table 3 presents the results of dichotomous child outcomes (first two columns): MDD diagnosis and occurrence of any nonmood DSM-IV disorder. Odds ratios, chi-square analyses, and Kaplan-Meier survival analyses (Mantel-Cox log rank and generalized Wilcoxon analyses) were utilized to analyze each of these outcomes.

Child diagnoses of MDD and presence of any nonmood diagnosis were assessed on the K-SADS at baseline, 6, 12, and 24 months (see Table 3 and Figure 2). Child and parent completion of the K-SADS at each time point were combined to determine the number of children who met criteria for an episode of MDD and for any nonmood DSM disorder during the baseline to 24-month follow-up period. Based on parent and child interviews, the percentage of children in the FGCB intervention who experienced an episode of MDD from baseline to 24 months was 14.3% compared to 32.7% of children who experienced an episode of MDD in the WI condition. This resulted in an odds ratio of 2.91, 95% CI [1.12, 7.58], and the chi-square test was significant,  $\chi^2(1) = 5.00$ ,  $p = .025$ . Odds ratios can be converted to effect sizes with a formula developed by Chinn (2000), and, based on this conversion, the effect size for the MDD odds ratio was 1.68, equivalent to a large effect. The duration of major depressive episodes did not differ for those children in the FGCB intervention (mean duration of episode = 13.75 weeks,  $SD = 13.29$ ; however,  $M = 9.29$ ,  $SD = 4.46$ , when one extreme outlier with a duration of 45 weeks was removed) and those in the WI comparison condition (mean duration = 10.00 weeks,  $SD = 8.19$ ).

A higher percentage of children in the WI condition met criteria for any nonmood DSM-IV disorder (51.0%) than children in the FGCB intervention (33.9%) from baseline to 24 months, but the difference only approached significance with an odds ratio of 2.03, 95% CI [0.93, 4.42], and  $\chi^2(1) = 3.19$ ,  $p = .074$ .

### Analyses of Intervention Effects: Parent Outcomes

**Parent depressive symptoms.** The last outcome measure included in Tables 1 and 2 reports data on parent depressive symptoms according to self-report on the BDI-II. The effect for condition was not significant at either follow-up point (18 months,  $p = .088$ ,  $d = 0.26$ ; 24 months,  $p = .071$ ,  $d = 0.22$ ). However, it is noteworthy that on the basis of one-tailed tests, the effects for condition on parent depressive symptoms was significant ( $p < .05$ ) at 18 and 24 months.



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**Table 3**  
*Group Comparisons of Child and Parent DSM-IV Diagnoses From Baseline Through 24 Months*

Diagnosis	Condition				Between-groups analyses				
	FGCB		WI		Odds ratio analyses			Kaplan-Meier survival analyses (chi-square)	
	No. participants	No. (%) participants who had an episode	No. participants	No. (%) participants who had an episode	Odds ratio	95% CI	Chi-square (p value)	Mantel-Cox log-rank (p value)	Breslow-Wilcoxon (p value)
MDE Any nonmood disorder	56	8 (14.3)	49	16 (32.7)	2.91	[1.12, 7.58]	5.00 (.025)	4.81 (.028)	4.57 (.033)
	56	19 (33.9)	51	26 (51.0)	2.03	[0.93, 4.42]	3.19 (.074)	n/a	n/a
MDE	40	22 (55.0)	36	24 (66.7)	1.63	[0.64, 4.16]	1.08 (.298)	n/a	n/a

*Note.* DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); FGCB = family group cognitive-behavioral; WI = written information; MDE = major depressive episode; CI = confidence interval; n/a = not applicable.

**Parent DSM-IV MDD diagnoses.** The last row in Table 3 presents the outcome data for parent diagnosis of MDE on the SCID from baseline to 24 months. The percentage of parents in the WI comparison condition (66.7%) and in the FGCB condition (55.0%) experiencing an episode of depression since baseline did not differ significantly,  $\chi^2(1) = 1.08, p = .298$ , with an odds ratio of 1.63, 95% CI [0.64, 4.16].

**Discussion**

The current findings of the effects of a family group cognitive-behavioral (FGCB) intervention provide some of the strongest evidence to date for the efficacy of a preventive intervention for children of depressed parents. Building on the findings at 2, 6, and 12 months reported by Compas et al. (2009), significant effects were found on some, but not all, measures of children’s mental health at 18- and 24-month follow-ups for an intervention teaching parenting skills to parents and coping skills to children as compared with the provision of WI about depression. In particular, at 18 months significant effects were maintained favoring the FGCB intervention on children’s self-reports of anxiety/depression, internalizing and externalizing symptoms, and effects were maintained for children’s self-reports of externalizing symptoms at 24 months. Most important, significant effects were found at 24-month follow-up for rates of MDD: More than twice as many children in the WI condition (32.7%) than children in the FGCB intervention (14.3%) had experienced an episode.

With regard to the measures of symptoms, findings were generally stronger on children’s self-reports on the YSR than on parents’ reports on the CBCL. Significant effects were found on all three of the YSR scales (Anxiety/Depression, Internalizing, Externalizing) at 18 months and on one of the scales (Externalizing) at 24 months. Effect sizes on the YSR scales at 18 months ranged from  $d = 0.41$  to  $0.48$ , which are near the criterion ( $0.50$ ) suggested by Cohen (1992) for medium effects. Effects on the YSR at 24 months were smaller in magnitude ( $d = 0.37$  for the Externalizing scale and  $d = 0.30$  for the Anxiety/Depression scale). Further, the rate of change from preintervention to follow-up on the YSR Internalizing scale was calculated following the approach used by Beardslee et al. (2007). The change in the WI condition ( $d = 0.31$ ) was comparable to that reported by Beardslee et al. (2007), whereas the change in the FGCB intervention ( $d = 0.71$ ) was over twice as large. In contrast, effects on the CBCL scales at 18 months were small in magnitude ( $d = 0.16-0.25$ ) and nonsignificant at 18 months and 24 months. These findings are consistent with those of Clarke et al. (2001), who failed to find significant effects on the CBCL at 24 months in their outcome study. Together these findings suggest that reports by parents with a history of past or current MDD may be relatively less sensitive indicators of the effects of interventions for their children. These findings are consistent with recent evidence that depressed parents may be prone to a degree of distortion in reports of their children’s emotional/behavioral problems (Gartstein, Bridgett, Dishion, & Kaufman, 2009). In addition, the current findings compare favorably with those of universal interventions for the prevention of depressive symptoms in adolescents, which have typically reported effects that are smaller in magnitude and shorter duration (for reviews, see Brunwasser, Gillham, & Kim, 2009; Garber, Webb, & Horowitz, 2009; Stice, Shaw, Bohon, Marti, & Rohde, 2009).

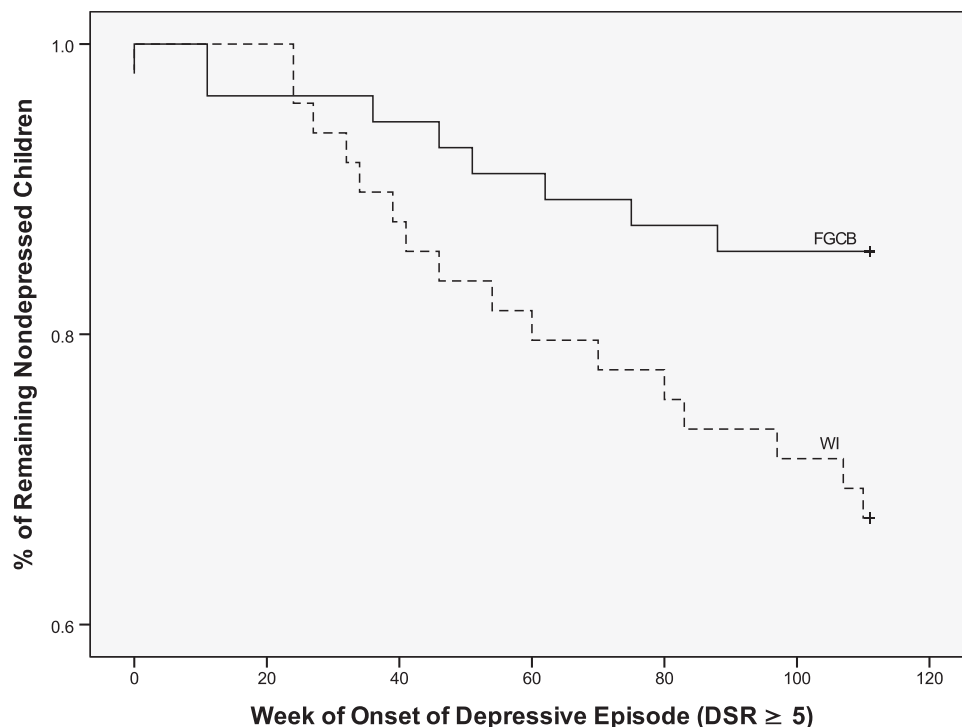


Figure 2. Survival curve illustrating the percentage of children who remained nondepressed during the 2-year follow-up. FGCB = family group cognitive-behavioral condition; WI = written information comparison condition; DSR = depression symptom rating.

No significant differences were found between the FGCB and the WI conditions on the CES-D at either 18 or 24 months. In fact, the only significant effect with the current sample on the CES-D was found at 12 months (Compas et al., 2009). This is consistent with the findings of Clarke et al. (2001) who reported no difference between their intervention and controls on the CES-D at 24-months. One possible explanation for the failure to find effects may lie in the time frame that is encompassed by the CES-D. The CES-D instructs respondents to report how they have felt in the last week, whereas on the YSR respondents report on the previous 6 months. The longer time frame used in the YSR may provide a more stable sample of behavioral and emotional problems than the 1-week time frame used in the CES-D. Alternatively, the CES-D may not be a sensitive measure of depressive symptoms with the younger (ages 9–12 years) portion of the age range in the current sample, as it has been used primarily with older adolescents (e.g., Roberts et al., 1991).

The most striking finding for the current study is found in the rates of MDD over 24 months, which were reduced by more than half in children in the FGCB intervention (14.3%) as compared with children in the WI condition (32.7%), with an odds ratio of 2.91. The magnitude of this effect is larger than that found by Clarke et al. (2001). Therefore, relative to a written information comparison condition, the FGCB in the current study produced the largest reduction in rates of MDD that has been reported in the literature for a preventive intervention with children of depressed parents over a period of 2 years. A decrease in the incidence of MDD in children of depressed parents would represent a substan-

tial public health impact if these rates could be achieved and sustained at the population level.

The relatively stronger long-term effects found in this FGCB intervention as compared with findings reported by Clarke et al. (2001) and Beardslee et al. (2007) may be the result of including cognitive-behavioral intervention components for parents and for children. Consistent with this possibility, the FGCB intervention led to significant changes in children's coping and positive parenting, and these changes in coping and parenting mediated the effects of the intervention at 12 months (Compas et al., 2010).

It is noteworthy that the significant effect of the FGCB intervention on parents' depressive symptoms on the BDI-II found by Compas et al. (2009) at 2, 6, and 12 months was no longer statistically significant at 18 months using two-tailed tests ( $d = 0.26$ ) and 24 months ( $d = 0.22$ ). However, the magnitude of these effects was similar to the effect size found at 12 months ( $d = 0.26$ ; Compas et al., 2009), and the effects were statistically significant based on one-tailed tests. This suggests that the FGCB may have maintained a small effect over the course of 24 months. However, more important, 66.7% of the parents in the WI condition and 55.0% of parents in the FGCB intervention experienced at least one recurrence of MDD over the 24-month follow-up period. These rates are strikingly high, reflecting the recurrent nature of depression in adulthood. They underscore the potential importance of teaching children skills to cope with the chronic and recurrent stress that is likely to accompany recurrent episodes of depression in their parents. These rates also highlight the need for parents to

receive effective treatment that will reduce and manage their own depression.

The current study had several limitations that can be addressed in future research. First, it will be important to replicate these findings with a sample that has greater ethnic and cultural diversity; it is unclear whether the FGCB intervention would require modification for use with more diverse populations. Second, the exclusion of youths who met criteria for conduct disorder and the exclusion of parents with certain comorbid conditions (e.g., current substance abuse) may limit the generalizability of the findings. Third, possible moderators of the FGCB intervention should be examined in future research, including parental depression status, child age and gender, and family socioeconomic status; larger sample sizes will be required for these analyses to have sufficient power to test for moderation. Fourth, the effects of the intervention on the YSR and CBCL were less robust at 24 months than at 18 months. This suggests that additional booster sessions may be needed to maintain the changes in children's coping skills and parenting skills. The "family check-up" model used by Dishion and colleagues (e.g., Dishion et al., 2008; Gardner et al., 2009) may be applicable with the current FGCB intervention. Fifth, the high rates of recurrence of MDD in parents in the FGCB condition (55%) suggest that effective treatment and management of parents' depression may be an important additional target for intervention to further reduce the level of risk for children in these families (Garber et al., 2009). Sixth, the effects of this intervention should be assessed over even longer periods of time as youths move through adolescence and young adulthood, a period of development characterized by high risk for depression. Seventh, these findings should be replicated in a second randomized trial in order to meet the criteria for an efficacious intervention (Chambless & Hollon, 1998). Finally, these findings have implications for the long-term dissemination of the FGCB intervention. Concerns have been raised that the current health care system in the United States does not provide adequate support for preventive interventions (e.g., Kazak et al., 2010; Schoenwald & Henggeler, 2004). Evidence that the effects of prevention programs such as the one tested here, along with data on the long-term cost savings of such interventions, could provide support for the importance of increased financial investment in the prevention of depression and other mental disorders.

In summary, the present findings provide further support for the efficacy of a FGCB preventive intervention for children of depressed parents. The largest effects were found on the outcomes that covered the full 2-year period (K-SADS), with less robust effects on those measures covering intermediate (6 months on the YSR and CBCL) and short periods of time (1 week on the CES-D). The significant reduction in the rates of MDD found in this sample of children over a period of 2 years adds to the growing literature suggesting that major depression is a preventable disorder (Muñoz, Cuijpers, Smit, Barrera, & Leykin, 2010).

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