Cognitive and Family Therapies for Adolescent Depression: Treatment Specificity, Mediation, and Moderation

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The specificity of cognitive and family therapies, and potential treatment mediators and moderators, was examined in a randomized clinical trial for adolescent depression. After acute treatment, cognitive-behavioral therapy (CBT) exerted specific effects on cognitive distortions relative to either systemic-behavioral family therapy (SBFT) or nondirective supportive therapy (NST). At 2-year follow-up, SBFT was found to impact family conflict and parent–child relationship problems more than CBT; NST and CBT tended to show a greater reduction in anxiety symptoms than SBFT. Nonspecific therapist variables qualified few outcome analyses. No measures of cognitive distortion or family dysfunction mediated or moderated treatment outcome. As in adult studies, relatively few areas of treatment specificity or mediation were identified. The implications of these findings for clinical treatment and research in adolescent depression are discussed.

Recently, the comparative efficacy of cognitive, family, and supportive psychosocial treatments for adolescent major depression was reported (Brent et al., 1997). In general, cognitive-behavioral therapy (CBT) was more efficacious in ameliorating depression than either systemic–behavioral family therapy (SBFT) or nondirective supportive therapy (NST). The findings led us to question the extent to which the three treatments exerted effects in accord with their treatment models and how any changes in model-specific domains were related to outcome. Addressing these issues allows for a check on the convergence of a given therapeutic approach between theory and practice and also facilitates an examination of the centrality of a given domain to the achievement of symptomatic improvement (see Brent & Kolko, 1998). We review issues of treatment specificity, moderation, and mediation in the child and adolescent literature, drawing on research with adults, where applicable.

There has been surprising little work on the specific effects of therapy in young populations (see Kazdin & Weisz, 1998; Kendall, Flannery-Schroeder, & Ford, 1999). By therapy-specific effects, we mean changes in a domain targeted by a specific treatment, such as cognitive distortion targeted by cognitive therapy or family interaction targeted by family therapy. In the general psychotherapy literature, outcome measures that precisely match targeted problems have yielded a larger average effect size (ES) than equally specific but unmatched outcome measures (ES = 0.60 vs. 0.30; see Weisz, Weiss, Han, Granger, & Morton, 1995). This finding suggests that the effects of treatment across studies were specific to the domains targeted in treatment, but it is not clear whether the effects were similar for externalizing versus internalizing problems or actually reflected contrasting, conceptually driven treatment approaches.

Although emerging evidence supports the efficacy of CBT for treating depression in adolescents (see Reinecke, Ryan, & DuBois, 1998; Weisz et al., 1995), to our knowledge there have been no parallel studies of treatment specificity in children or adolescents comparing CBT with other credible psychosocial interventions. Indeed, just four studies have compared CBT with alternative treatments (Reynolds & Coats, 1986; Stark, Reynolds, & Kaslow, 1987; Vostanis, Feehan, Grattan, & Bickerton, 1996; Wood, Harrington, & Moore, 1996), and only the latter two studies examined individual treatment. One of the studies with depressed youths found limited support for treatment specificity for cognitive therapy relative to wait-list controls (Lewinsohn, Clarke, Hops, & Andrews, 1990).

Studies of anxious children have reported greater changes in cognitive variables following cognitive interventions compared with wait-list control conditions (Barrett, Dadds, & R apee, 1996; Kendall, 1994; Treadwell & Kendall, 1996). For example, Treadwell and Kendall found that treatment status (CBT for anxiety vs. wait list) predicted changes in negative self-statements and the ratio of positive to negative statements. Anxious self-statements and a "state-of-mind" ratio were associated with the severity of anxiety problems, supporting the content specificity of these constructs. Highlighting the clinical significance of intervention, treat-
ment also resulted in a change in the mean state-of-mind scores from the dysfunctional to the normative range. An extension of this study found that negative self-talk was related to increasing levels of affective distress among children with anxiety and depression, with comorbid children showing the highest levels of negative self-talk and the most dysfunctional state-of-mind ratios (Ronan & Kendall, 1997). However, support for content specificity was mixed in that anxious self-talk was not always more common among anxious than nonanxious children. Other outcome studies have shown that family interventions influence family interactions more so than other interventions in anxious (Barrett et al., 1996) and delinquent youths (Alexander & Parsons, 1973) but not in depressed youths (Harrington et al., 1998).

Studies of adults with depression or other internalizing disorders have reported mixed results regarding the specific effects of various treatments. For example, patients receiving a combined standard inpatient treatment plus cognitive therapy reported less hopelessness and fewer cognitive biases at posttreatment and two follow-ups, and fewer dysfunctional attitudes at follow-up, than those who received standard inpatient treatment alone (Whisman, Miller, Norman, & Keitner, 1991). However, individual treatment was provided only to patients in the combined condition. Additional studies of treatments for depressed or anxious adults have reported negative evidence (Zeiss, Lewinsohn, & Munoz, 1979) or weak support for mode-specific differences in outcome (Beck, Stanley, Baldwin, Dagle, & Averill, 1994; Imer et al., 1990).

Thus far, the relationship between changes in therapy-specific domains and symptomatic improvement in adolescent depression has not yet been examined (see Reinecke et al., 1998). Such an examination would allow for a test of the fit between theories of etiology and mechanisms of therapeutic improvement (Brent & Kolko, 1998). At the same time, therapist background (e.g., age and experience) and other nonspecific factors (e.g., child age and gender) have been found to be related to treatment efficacy, albeit in complex ways (see Weisz et al., 1995). Thus, it seems important to evaluate both treatment specificity and nonspecific therapist effects in identifying any robust influences on treatment outcome in adolescents. Such an examination should include symptoms often comorbid with depression, such as anxiety and externalizing behaviors (see Kendall, Kortlander, Chansky, & Brady, 1992).

It is also important to understand key variables that may mediate treatment outcome in depressed adolescents (see Weisz & Weiss, 1989). As suggested by Reinecke et al. (1998), changes in cognitive variables putatively targeted by CBT are believed to contribute to clinical improvement, but this has not yet been demonstrated with adolescents. One of the few studies to evaluate treatment mediation with internalizing youths found that changes in negative self-statements mediated improvement following CBT in child-reported anxiety severity and a specific state-of-mind ratio but not in parent or teacher reports of externalizing or internalizing symptoms (Treadwell & Kendall, 1996). Such findings suggest that attributions may bring about cognitive changes following treatment. An earlier meta-analysis of CBT did not find a significant relationship between changes in cognitive processes and behaviors in children (see Durlak, Fuhrman, & Lampman, 1991), although cognitive developmental level did mediate the relationship between child characteristics and outcome. Studied less often, measures of family dysfunction have mediated the effects of social withdrawal and depressed mood in children (Boivin, Hymel, & Bukowski, 1995), with such factors as expressed emotion contributing to improvement in depression (Warner, Weissman, Wickramaratne, & Moreau, 1992). Thus, both cognitive and family factors may mediate adolescent treatment outcome. Unfortunately, some studies of depressed youths (Harrington et al., 1998; Lewinsohn et al., 1990) or anxious children (Barrett et al., 1996) have not evaluated mediators of treatment outcomes.

Further evaluation of adolescent cognitive distortion and family dysfunction may identify potential moderators of treatment (Weisz & Weiss, 1989). Treatment studies with depressed adults have shown some evidence for cognitive moderators (Spangler, Simons, Monroe, & Thase, 1997). In depressed adolescents, younger age and less social impairment predicted remission following individual CBT (Jayson, Wood, Kroll, Fraser, & Harrington, 1998), whereas greater severity of depression, cognitive distortion, and anxiety predicted poor response to group CBT treatment (Clark, Hops, Lewinsohn, Andrews, & Williams, 1992). In contrast, Brent et al. (1998) found greater improvement after CBT than NST in adolescents with comorbid anxiety and in the presence of maternal depression; even functional impairment and severity of depression have not always been found to moderate treatment effects (Rohe, Lewinsohn, & Seeley, 1994). Similarly, background variables (e.g., gender and age) have been related to treatment outcome in some studies (Barrett et al., 1996) but not in others (Kendall et al., 1997; Lewinsohn et al., 1990). Additional moderators of child symptoms found in descriptive studies have included children's attributions (Allen, Leadbetter, & Aber, 1994), parental discipline (Corder, Lochman, & Wells, 1997), and family conflict (Frank & Jackson, 1996). That both distorted views and parental conflicts have contributed to child maladjustment (Rogers & Holmbeck, 1997) suggests the benefit to evaluating the adolescent's cognitive distortions and family dysfunction as moderators of outcome. Child demographics also warrant examination given outcome differences involving age (adolescents) and gender (girls; see Durlak et al., 1991; Weisz et al., 1995).

To extend the evaluation of treatment specificity and contributors to treatment outcome with adolescent patients, we have drawn on data from a recent randomized clinical trial comparing CBT, SBFT, and NST. The study examined several novel measures of treatment specificity in relation to some key outcomes that were examined in a prior report (see Brent et al., 1997). We predicted that CBT would have a greater acute impact on cognitive distortion and hopelessness than either SBFT or NST and that SBFT would have a greater impact on family conflict, parent-child relationship problems, family dysfunction, and marital discord than either CBT or NST. We also predicted that these effects would not be qualified by "nonspecific" therapist background variables. We further predicted that changes in self-reported and interviewer-rated depression would be mediated, in part, by changes in the above-noted, therapy-specific variables. Finally, several potential moderators of treatment outcome (therapist background and child demographics) based on recent meta-analyses were also examined to determine the robustness of each intervention.

Method

Sample and Recruitment

Adolescents eligible for this clinical trial were of normal intelligence and between 13 and 18 years of age, lived with at least one parent or guardian, met the criteria for Diagnostic and Statistical Manual of Mental Disorders
(3rd ed., rev.; DSM-III-R; American Psychiatric Association, 1987) major depressive disorder (MDD), and had an intake Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) score greater than or equal to 13. The following conditions resulted in exclusion from the study: psychosis, Bipolar I or II disorder, obsessive–compulsive disorder, eating disorder, substance abuse within the past 6 months, recent physical or sexual abuse, pregnancy, and chronic medical illness.

Patients were recruited from the Child and Adolescent Mood and Anxiety Disorder Clinic at the Western Psychiatric Institute and Clinic and through occasional newspaper advertisements. Of the 122 patients who were eligible, 15 eschewed participation either because they refused treatment altogether (n = 4) or because they did not want to be randomized to a treatment (n = 11). The 107 patients who agreed to participate were randomized to one of the three treatments using Begg and Iglewicz’s (1975) modification of Efron’s (1971) biased coin toss, balancing on gender, number of parents in the household, and clinically significant suicidality (i.e., ideation with a plan or an attempt). Four of the randomized participants never came for treatment and, therefore, were not included in any analyses.

Patients assigned to each treatment group did not differ on demographic variables. The mean age of the 103 participants was 15.6 years (SD = 1.4 years). The majority of the sample was Caucasian (85%) and female (75%). The mean socioeconomic status (SES) on the Hollingshead Educational and Occupational Scales (Hollingshead, 1975) was 40.2 (SD = 13.1). Slightly over half (57%) of the patients lived in a two-parent household.

The distribution of diagnoses did not differ significantly across the three treatment conditions at intake. The median number of comorbid diagnoses per patient was one (range = 0–3). Thirty-two percent of the patients had comorbid anxiety, 22% were dyshymic, and 16% were oppositional. Over one third (37%) of the adolescents were suicidal at intake. The median duration of depression was 7 months (range = 0.5–87 months). Across the groups, the mean score on the BDI was 24.1 (SD = 8.1) and the mean score on the Children’s Global Assessment Scale (C-GAS; Shaffer et al., 1983) was 56.5 (SD = 8.5), indicating moderate depressive symptoms and functional impairment.

Assessment Measures

All of the below-noted assessments were administered at intake, at the 6th session (i.e., midtreatment), at posttreatment (i.e., after the 12th–16th session), and at five follow-ups (3, 6, 9, 12, and 24 months after treatment), except the Areas of Change Questionnaire (ACQ), which was not assessed at the 6th session assessment. In addition, the BDI was obtained at every treatment session.

Psychiatric Symptomatology

The Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Versions (K-SADS-P/L; Chambers et al., 1985) was used by interviewers blind to treatment status to assess current diagnoses and severity of symptomatology, age of onset of current disorders, and history of previous episodes of psychopathology using DSM-III-R criteria. From the K-SADS-P/E, a depression severity score was calculated using 13 items related to depression (DEP–13; Chambers et al., 1985). In addition, anxiety and conduct disorder symptom severity scores from the K-SADS-P/E were calculated to evaluate treatment effects on comorbid symptoms. The BDI was used to assess self-reported depression (Beck et al., 1988).

Cognitive Functioning

Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). The BHS is a 21-item self-report instrument that taps pessimism. The instrument has been shown to correlate with dropout from treatment and suicidal intent and to predict suicide reattempt and completions (Beck, Steer, Kovaes, & Garrison, 1985; Beck et al., 1974; Hawton, Cole, O’Grady, & Osborn, 1982). This instrument has been used in studies of adolescents with good discriminant validity (Hawton et al., 1982; Lewinsohn, Clarke, Seeley, & Rohde, 1994).

Children’s Negative Cognitive Errors Questionnaire (CNCEQ; Leitenberg, Yost, & Carroll-Wilson, 1986). The CNCEQ is a 24-item self-report that surveys four common types of cognitive distortion (catastrophization, overgeneralization, personalization, and selective abstraction) in three domains (athletic, scholastic, and social). We report on the overall score, with lower scores reflecting greater cognitive distortion, and available normative cutoff scores for an evaluation of clinical significance. The CNCEQ has shown good internal consistency (α = .80), test–retest reliability (r = .75, p < .001), and both convergent and discriminant validity with respect to internalizing symptomatology in children (see Leitenberg et al., 1986).

Family Environment

Conflict Behavior Questionnaire (CBQ; Robins & Foster, 1989). The CBQ is a 20-item self-report questionnaire filled out by both the parent and the adolescent and is designed to assess conflict and negative communication. Analyses were based on both total scale scores and normative cutoff scores. The CBQ has been shown to have high reliability, internal consistency, and treatment sensitivity (see Robins & Foster, 1989).

ACQ (Jacob & Selhhammer, 1985). The ACQ evaluates parent–child relationships across specified problem areas. There are two formats: a 32-item child-report form and a 34-item parent-report form. Each item is rated from −3 (less change) to 3 (much more change) in a Likert format. Internal consistency is high (α = .91–.94), and concurrent and discriminant validity have been demonstrated (see Jacob & Selhhammer, 1985).

Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983). The FAD, completed by both the parent and the adolescent, is a 60-item self-report designed to measure family functioning. There is a General Functioning subscale and six other subscales: Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, and Behavior Control. Higher scores reflect greater family dysfunction on each subscale. Internal consistency and reliability are high, with good discriminant validity. Also reported herein are analyses based on normative cutoff scores (see Miller, Epstein, Bishop, & Keiner, 1985).

Locke–Wallace Marital-Adjustment Test (LW-MAT; Locke & Wallace, 1959). This is a 15-item questionnaire with known reliability and discriminant validity designed to evaluate level of marital satisfaction. The caregiving parent completed the LW-MAT.

Documentation of Additional (Open) Treatment

We also documented any additional treatments received at each follow-up assessment on the basis of several treatment history questions. The questions examined the adolescent’s participation in multiple services received since the prior assessment. Responses were collapsed to reflect two primary treatment variables during follow-up: any medication (e.g., antidepressants, monoamine oxidase inhibitors, tricyclics, or neuroleptics) and any psychotherapy (e.g., individual or family). For this study, we divided the latter domain into separate individual therapy and family therapy variables.

Treatment

Treatment consisted of two phases: an active phase, in which patients received 12 to 16 sessions delivered in 12 to 16 weeks, and a booster phase for those who completed acute treatment in which patients received 2 to 4 sessions in as many months. Of the 107 patients who entered the trial, 78 completed treatment, 10 were censored, 8 dropped out, 7 were removed and placed into open treatment, and 4 never initiated treatment. Sixty-two of 78 treatment completers received 2 to 4 booster sessions in the same model over as many months; the remaining 15 treatment completers went...
into open treatment at the end of the acute treatment period (1 was eligible but declined open treatment). There was no significant difference in the amount of booster sessions received among the three treatment groups. Families in all three treatments received a psychoeducational manual and were invited to discuss questions and concerns about adolescent depression and its treatment, with up to 1 hr dedicated to psychoeducational issues (Brent, Poling, McKin, & Baugher, 1993). All of the remaining treatment sessions followed a treatment manual (protocol) specific to each condition. Table 1 outlines the primary treatment goals of the CBT and SBFT conditions.

## CBT

The CBT used in this study drew heavily on Beck’s approach to depressed adults and was adapted to the specific developmental needs of adolescents (Beck, Rush, Shaw, & Emery, 1979; Brent & Lerner, 1994; Brent et al., 1996). Like Beck’s CBT, this treatment emphasizes collaborative empiricism; the importance of socializing the patient to the cognitive therapy model; and the monitoring and modification of automatic thoughts, assumptions, and basic beliefs, with additional components on problem solving and affect regulation to reflect the needs of adolescent patients.

## SBFT

SBFT is a combination of two treatment approaches that have been used effectively for dysfunctional families of adolescents (Brent et al., 1996; Holder, Miller, & Scale, 1995). The first phase of treatment was drawn from functional family therapy (Alexander & Parsons, 1982), in which the therapist clarifies the concerns that brought the family into treatment and provides a series of refraining statements designed to optimize both engagement in therapy and identification of problematic behavior patterns. During the second phase, which was adapted from the problem-solving model developed by Robin and Foster (1989), the family members focus on parenting and developmental issues, communication and problem-solving skills, and the alteration of dysfunctional family interactional patterns.

## NST

As developed for this study (see Brent et al., 1996), NST was designed to control for the nonspecific aspects of treatment—namely, the passage of time, amount of therapist contact; and the support of an empathic, skilled professional (Luborsky, McLellan, Woody, O'Brien, & Auerbach, 1985). The main goals of NST are to establish, maintain, and build rapport; provide support; and aid the patient in affect identification and expression through the use of reflective listening, accurate empathy, and discussions of patient-initiated options for addressing personal problems (Egan, 1990; Saunders, Howard, & Orlinsky, 1989). Unlike in the other treatments, NST therapists refrained from giving advice, setting limits, or teaching specific skills.

## Treatment Distinctness and Flexibility

There were times when it was clinically indicated for a therapist in the CBT or NST cells to meet with the parents or other family members or for a therapist in the SBFT cell to meet with the patient individually. Up to 25% of the total treatment time (4 hr) could be allocated for these auxiliary sessions. SBFT used fewer individual auxiliary sessions than either of the other two treatments, consistent with its emphasis on the treatment of the family as a unit. $F(2, 100) = 15.91, p < .001$ (Tukey procedure, both pairwise contrasts, $p < .01$). Tapes of these sessions were reviewed internally by the treatment supervisors on a weekly basis to guard against therapeutic drift and by the external consultants to ensure distinctness from other therapeutic models, as noted below.

## Therapist Selection and Equivalence

To limit potential therapist effects on outcome, we made every effort to ensure equivalence of therapists across treatment cells. All of the therapists were master’s-level clinicians with a median of 10 years (range = 2-18 years) of experience with clinically referred adolescents, with no differences across groups. The treatment cells were also similar with respect to therapist gender.

## Maintenance of Treatment Integrity

Each therapist had 6 months of intensive training using the treatment manual and a library of training videotapes and was required to treat two cases successfully with the model before admittance as a protocol therapist. The didactic and supervisory experience for therapists was provided by a master’s-level supervisor specifically assigned for that particular treatment modality and included supervisor review of the therapists’ videotapes. Tapes were rated using a therapy-specific scale to ensure adherence to the model. Adherence to CBT was monitored by the 11-item Cognitive Therapy Rating Scale (Valias, Shaw, & Dobson, 1986), adherence to SBFT was monitored by a modification of the 12-item Family Therapist Rating Scale (Percy, Liard, & Mohammad, 1983), and adherence to NST was monitored by 8 items adapted from the Vanderbilt Psychotherapy Process Scale (Suh, Strupp, & O’Malley, 1986).

### Table 1

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<th>Therapeutic Goals of the Two Primary Psychotherapy Conditions</th>
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<td><strong>Cognitive-behavioral therapy</strong></td>
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<td>Provide information about depression.</td>
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<tr>
<td>Socialize patient to the treatment model, emphasizing development of autonomy and trust.</td>
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<tr>
<td>Monitor and modify automatic thoughts, assumptions, and beliefs, especially cognitive distortions.</td>
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<tr>
<td>Teach social skills.</td>
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<tr>
<td>Address issues of impulsivity and risk taking by teaching problem-solving skills.</td>
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<tr>
<td>Use feeling thermometer to teach affect regulation.</td>
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| **Systemic-behavioral family therapy**                      |
| Conduct psychoeducation about depression.                   |
| Join with the family using reframing to enhance engagement and family commitment. |
| Clarify family problems.                                    |
| Socialize to treatment model.                               |
| Clarify parenting and developmental issues.                |
| Family assessment of dysfunctional interactional patterns. |
| Teach communication and problem solving to the family.      |
| Encourage family member self-monitoring and positive practice of new routines at home. |
An external consultant using the same scales noted above reviewed 25% of the tapes. Both the internal and external consultants rated over 90% of treatment sessions in each cell as "acceptable." The consultants also reviewed, at random, tapes that were from a different modality to establish discriminative validity. The external consultants successfully discriminated psychoeducational sessions in both CBT and NST cells from SBFT family sessions. $F(2, 80) = 146.80$, $p < .01$, and CBT from both NST and individual sessions conducted in the family cell, $F(2, 165) = 36.25$, $p < .001$.

**Additional (Open) Treatment Received**

On the basis of responses to the treatment history questions, 30 of 90 patients (33%) reported that they received medication and 48 of 92 patients (52%) reported receiving psychotherapy during follow-up. There were no significant treatment differences in the proportion of CBT, SBFT, or NST patients who received either medication (26%, 37%, and 38%, respectively; $p < .56$) or psychotherapy (51%, 50%, and 55%, respectively; $p < .92$) at any of the eight assessments. Also, there were no group differences in the proportion of patients who received individual therapy during follow-up (49%, 46%, and 46%, respectively; $p < .98$), but there was a difference in the proportion of patients receiving family therapy (12%, 15%, and 36%, respectively). $\chi^2(2) = 6.00$, $p < .05$, with more NST (than CBT) patients receiving this treatment, $\chi^2(1) = 5.04$, $p < .02$.

**Data Analysis**

All of the analyses used the 103 patients who were randomized to treatment in accord with the intent-to-treat approach (Kendall, Flannery-Schroeder, & Ford, 1999). We used random effects regression analyses to test for Treatment X Time interactions at the end of acute treatment (i.e., intake, 6 weeks, and posttreatment) and then through the end of the 24-month follow-up (i.e., all three acute treatments and the five follow-up assessments). The analyses were separated in this manner because the acute phase reflected the experimental design of the study, whereas the long-term phase reflected time periods in which open, uncontrolled treatments were applied. For all of the significant follow-up analyses, we reran the analysis using medication, individual therapy, and family therapy as fixed covariates.

The three treatment groups first were compared for their differential impact on treatment-specific variables and comorbid symptom measures. To evaluate the impact of nonspecific therapist background characteristics (age, gender, and years of experience) in relation to treatment effects on these variables (Weisz et al., 1995), we included Therapist Characteristic X Treatment Condition X Time regression analyses (see Gibbons et al., 1993). Thus, we report only on the specific effects of treatment and any interactions between treatment and therapist background. Where significant interactions were found, we examined the nature of these effects by conducting Treatment X Clinician X Time analyses within each condition. The overall scores on the cognitive and family measures that were included in the broader hypotheses for which predictions were made were not Bonferroni corrected. The subscales for family measures, which were part of more detailed exploratory analyses, were Bonferroni corrected within each domain.

We also used normative comparison data for three child-reported measures (i.e., the CBQ, the FAD General Functioning subscale, and the CNCEQ) to evaluate the clinical significance of these treatment-specific responses over time (see Kendall, Marns-Garcia, Natt, & Sheldrick, 1999). Specifically, we created dichotomous dummy variables for each of the measures that reflected patient scores falling into a normative or nonnormative range. For the CBQ, the clinical cutoff for the child report on the mother was 2.0 and the clinical cutoff for the child report on the father was 1.6 (Robin & Foster, 1989). The clinical cutoff score on the FAD General Functioning subscale was 2.0 (Miller et al., 1985). Using a nondepressed group (i.e., low BDI score), Leitenberg et al. (1986) found a CNCEQ total score of 42.1, which served as our clinical cutoff. Because our outcome of interest was a series of correlated binary responses, we analyzed these data using random effects regression probit models (Gibbons & Hedeker, 1994) and applied the MIXOR 2.0 computer program for ordinal regression analysis (Hedeker & Gibbons, 1996).

Mediation and moderation hypotheses were examined based on the data obtained from three assessment points obtained during the acute treatment period and then all eight assessment points to evaluate effects over long-term follow-up. Random effects regression analysis was used to determine whether the conditions for mediation were met, as outlined by Baron and Kenny (1986) and Holmbeck (1997), and applied by Treadwell and Kendall (1996). Prior to completing initial tests for mediation examining the relationship between predictor (i.e., treatment) and our hypothesized mediators (e.g., demographic variables, cognitive distortion, and family dysfunction), we examined whether treatment was significantly associated with clinical outcome by the end of acute treatment and final follow-up because such tests were not so examined in our prior study (see Brent et al., 1997). The proposed cognitive distortion mediators included the CNCEQ and BHS scores, whereas the proposed family dysfunction mediators were the parent- and child-reported CBQ, ACQ, and FAD subscales and the parent-reported L.W.-MAT.

We also used random effects regression to test whether treatment-specific and nonspecific variables moderated the relationship between treatment and depressive outcome (BDI and DEP-13) at acute treatment and long-term follow-up. For these analyses, all continuous hypothesized moderator variables were subjected to a median split. Potential treatment-specific moderators included two cognitive variables (the CNCEQ and the BHS) and nine child-reported family variables (the CBQ, ACQ, and seven FAD subscales). Potential nonspecific moderators included the three therapist background variables and six child background variables (age, gender, race, single parenthood, family SES, and C-GAS score), many of which have been related to the outcomes of prior studies (Weisz et al., 1995). Correction for multiple comparisons used Bonferroni's correction for each family of tests in this section.

**Results**

**Treatment Specificity: Cognitive and Family Measures**

Tables 2 and 3 present descriptive statistics for child and parent reports, respectively, on overall scores for the cognitive and family variables assessed in the three treatment groups. Both tables include the means and standard deviations for measures obtained at intake, 6 weeks, posttreatment, and the 24-month follow-up. We conducted separate random effects regression analyses to evaluate acute treatment effects and long-term follow-up effects. Treatment Group X Therapist Background interactions also were examined.

**Acute Effects**

On the basis of the child-reported cognitive and family variables (see Table 2), the regressions revealed no significant Treatment X Therapist Background interactions using Bonferroni-adjusted significance levels ($p < .005$). A significant Treatment X Time interaction was found for the CNCEQ total score, $\chi^2(2) = 6.31$, $p < .04$, but not for the BHS. Pairwise comparisons showed that CBT had a greater impact on reducing cognitive distortion than both SBFT, $\chi^2(1) = 4.81$, $p < .03$, and NST, $\chi^2(1) = 3.79$, $p < .05$. No other interactions were statistically significant.

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1 Descriptives for the initial four follow-up assessments may be obtained from David J. Kolko.
p < .04, with CBT having a greater impact on marital satisfaction data at follow-up. Difficulty of conducting these analyses, we did not examine normative (ps = .29-.88). Because of the difficulty of conducting these analyses, we did not examine normative
differences within each of the treatment groups, but the interactions were noted not to be significant (ps = .29-.88). Because of the difficulty of conducting these analyses, we did not examine normative
data at follow-up. Note. CBT = cognitive-behavioral therapy; SBFT = systemic-behavioral family therapy; NST = nondirective supportive therapy; CNCEQ = Children’s Negative Cognitive Errors Questionnaire; BHS = Beck Hopelessness Scale; CBQ = Conflict Behavior Questionnaire; ACQ = Areas of Change 
Questionnaire; FAD-GF = Family Assessment Device—General Functioning.

On the parent-reported family variables (see Table 3), the regressions revealed no significant Treatment \times Therapist Background interactions based on an adjusted significance level (p < .003). The analyses did reveal a significant Treatment \times Time interaction on the FAD General Functioning subscale, \(\chi^2(2) = 13.89, p < .001\). Pairwise comparisons showed that both CBT and SBFT led to significantly higher improvement over time than NST on the general functionalizing: for CBT versus NST, \(\chi^2(1) = 11.60, p < .0007\); for SBFT versus NST, \(\chi^2(1) = 7.84, p < .005\). There was also a significant Treatment \times Time interaction for the LW-MAT, \(\chi^2(2) = 6.60, p < .04\), with CBT having a greater impact on marital satisfaction than NST, \(\chi^2(1) = 7.26, p < .007\). Random regression analyses were conducted for the child- and parent-reported subscales of the aforementioned family variables. After Bonferroni correction, only the parent-reported FAD Behavioral Control subscale showed a significant Treatment \times Time interaction, \(\chi^2(2) = 10.22, p < .006\). Pairwise comparisons showed that CBT had a greater impact than NST on behavior control, \(\chi^2(1) = 10.45, p < .001\).

Finally, we conducted random effects probit analyses based on normative cutoff scores for the CNCEQ, the CBQ, and the FAD General Functioning subscale to evaluate Treatment \times Therapist Background \times Time interactions. A check of the model showed that the interaction yielded substantially high estimates and standard errors, suggesting that the model did not converge. As an alternative, we computed Therapist Background \times Time interactions within each of the treatment groups, but the interactions were found not to be significant (ps = .29–.88). Because of the difficulty of conducting these analyses, we did not examine normative data at follow-up.

**Long-Term Effects**

The analyses across all eight assessment points revealed no significant Treatment \times Therapist Background interactions using adjusted significance levels for child reports (p < .005) or parent reports (p < .0125). However, a Treatment \times Clinician \times Time interaction reached the adjusted level for cognitive distortion, \(\chi^2(2) = 10.81, p < .0045\). Pairwise analyses revealed a significant difference between CBT and NST, \(\chi^2(1) = 10.16, p < .001\), with greater improvement and less variability in improvement among CBT therapists.

Random regression revealed no significant Treatment \times Time effects for child reports on any of the cognitive or family measures (see Table 2). The analyses for parent reports yielded a significant Treatment \times Time interaction on the CBQ, \(\chi^2(2) = 17.49, p < .001\) (see Table 3). As depicted in Figure 1, pairwise comparisons showed that both SBFT and NST led to greater improvement over time than CBT: for SBFT versus CBT, \(\chi^2(1) = 12.64, p < .001\); for NST versus CBT, \(\chi^2(1) = 12.62, p < .001\). The analysis remained statistically significant when the three additional (follow-up) treatment status variables were entered as fixed covariates, \(\chi^2(1) = 23.38, p < .0001\), along with the significant pairwise comparisons: for SBFT versus CBT, \(\chi^2(1) = 16.29, p < .001\); for NST versus CBT, \(\chi^2(1) = 14.25, p < .001\). A second interaction was found on the parent-reported ACQ, \(\chi^2(2) = 5.94, p < .05\). Pairwise comparisons showed that SBFT had a greater impact over time than CBT, \(\chi^2(1) = 4.77, p < .03\); NST tended to show a greater impact than CBT (p < .06). The analysis remained statistically significant when the three additional treatment variables were entered as fixed covariates.
Acute Effects

Behavioral therapy; SBFT = systemic-behavioral family therapy; NST = nondirective supportive therapy; wk = weeks; Post = posttreatment; m = months.

Effects on Comorbid Symptoms: Anxiety and Conduct Disorder Measures

The effects of treatment on the frequency of reported K-SADS-P/E anxiety and conduct disorder symptoms were examined because of their common comorbidity with depression (Kendall et al., 1992). Using random effects regressions (see Table 4), there were no Treatment × Therapist Experience interactions that were significant based on the adjusted level ($p < .025$). Further, there were no significant treatment effects on anxiety or conduct disorder symptoms.

Long-Term Effects

Child and parent reports revealed no significant Treatment × Therapist Background interactions on either symptom measure across all of the assessments. The regressions did reveal a Treatment × Time interaction on anxiety symptoms based on the adjusted significance level, $\chi^2(2) = 7.85, p < .02$ (see Figure 2). Multiple comparison tests indicated that CBT and NST showed a steady decline in symptoms, whereas SBFT showed a slight increase in symptoms before converging with the other groups by the 24-month follow-up: for CBT versus SBFT, $\chi^2(1) = 7.27, p < .007$; for NST versus SBFT, $\chi^2(1) = 6.45, p < .01$. The analysis was barely nonsignificant when the three treatment variables were entered as fixed covariates, $\chi^2(1) = 5.82, p < .05$. Multiple comparison tests indicated that CBT and NST showed a steady decline in symptoms compared with SBFT: for CBT versus SBFT, $\chi^2(1) = 5.56, p < .02$; for NST versus SBFT, $\chi^2(1) = 5.96, p < .01$. There was a Treatment × Clinician × Time interaction for anxiety symptoms, $\chi^2(2) = 7.85, p < .02$, that showed a pairwise difference between CBT and NST, $\chi^2(1) = 8.25, p < .004$. No significant Treatment × Time interaction was found on conduct symptoms.

Table 3

<table>
<thead>
<tr>
<th>Measure</th>
<th>Intake</th>
<th>Midtreatment</th>
<th>Posttreatment</th>
<th>24-month follow-up</th>
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<td>NST</td>
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<tr>
<td>Midtreatment</td>
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Note. CBT = cognitive-behavioral therapy; SBFT = systemic-behavioral family therapy; NST = nondirective supportive therapy; CBQ = Conflict Behavior Questionnaire; ACQ = Areas of Change Questionnaire; FAD-GF = Family Assessment Device—General Functioning; LW-MAT = Locke-Wallace Marital-Adjustment Test.
Table 4
Number of Comorbid Anxiety and Conduct Disorder Symptoms on the K-SADS-P/E

<table>
<thead>
<tr>
<th>Measure</th>
<th>Intake</th>
<th>Midtreatment</th>
<th>Posttreatment</th>
<th>24-month follow-up</th>
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<tr>
<td>M</td>
<td>4.8</td>
<td>4.4</td>
<td>3.0</td>
<td>1.5</td>
</tr>
<tr>
<td>SD</td>
<td>5.4</td>
<td>4.4</td>
<td>1.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Conduct disorder symptoms</td>
<td>0.3</td>
<td>0.4</td>
<td>0.2</td>
<td>0.6</td>
</tr>
</tbody>
</table>
| Note. K-SADS-P/E = Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Versions; CBT = cognitive—behavioral therapy; SBFT = systemic—behavioral family therapy; NST = nondirective supportive therapy.

Acute Effects

Random effects regressions (Treatment × Specificity Variable × Time) yielded no significant treatment moderators of depressive outcomes (the BDI and the DEP-13) for baseline cognitive (the CNCEQ and the BHS) or family (the CBQ, the ACQ, and the FAD) functioning based on the adjusted significance level (p < .005). Similar analyses evaluating the three therapist background variables noted above (i.e., age, gender, and years of experience) as treatment moderators yielded no significant interactions for either outcome variable. Finally, there were no significant treatment moderators when using the child’s demographic background for either depressive outcome.

Long-Term Effects

Random effects regressions using all eight assessment points for child or parent reports found no significant Treatment × Moderator interactions on depressive outcomes for the cognitive or family variables based on the adjusted level. In terms of the evaluation of therapist effects, there were no significant interactions involving any of the clinician background characteristics on either of these depressive outcomes. Finally, none of the six child background variables entered into significant interactions with treatment on either the BDI or the DEP-13.

Discussion

This study found some support for treatment-specific effects of cognitive therapy assessed after treatment. After acute treatment, cognitive therapy showed a specific impact on one of two cognitive variables, the CNCEQ total score. Although family therapy did exert a greater effect on general family functioning than did supportive therapy, so did cognitive therapy. Moreover, cognitive therapy showed a greater impact on two other family variables (behavioral control and marital satisfaction) compared with supportive therapy, whereas family therapy did not. Family therapy did show a specific effect on family conflict by the end of the 2-year follow-up relative to CBT, but so did supportive therapy. Family therapy also differed from cognitive therapy in improving parent–child relationship problems. Planned tests to evaluate whether cognitive or family variables mediated changes in self-reported depression were precluded because of the absence of significant Treatment × Time differences in depression. Similarly, these variables were not found to moderate the effects of treatment. Several potential implications of these results are discussed before delineating the strengths and limitations of this study.

We were able to demonstrate that cognitive therapy exerted specific effects on cognitive distortions relative to two other psycho-social treatments after acute treatment. This test was relatively stringent for treatment specificity and extends prior studies showing improvement in cognitive distortion for cognitive interventions relative to wait-list controls (Barrett et al., 1996; Kendall, 1994; Lewisohn et al., 1996; Treadwell & Kendall, 1996; Weiss, Thurber, Sweeney, Proffitt, & LaGagnoux, 1997). These findings are also consistent with those of Whisman et al. (1991), who reported greater changes in hopelessness and automatic thoughts following a combined cognitive therapy-inpatient treatment program relative to inpatient treatment alone. On the other hand, we found no differential effect on hopelessness, contrary to our hy-
pothesis. Other studies of depressed adult patients comparing cognitive therapy to either other psychosocial interventions or medication have not found evidence of treatment specificity (Imber et al., 1990; Zeiss et al., 1979). Also, as discussed below, although we demonstrated modest treatment specificity, changes in cognitive distortion did not mediate outcome. Given that few treatment effects were found on child measures, it is unlikely that the adolescents were simply taught how to minimize showing any problems on a specific measure, such as learning how to minimize reports of cognitive distortion on the CNCEQ, because they reported heightened dysfunction on other cognitive and family measures.

The juxtaposition of the acute effects of cognitive therapy on family functioning relative to supportive treatment after acute treatment and the lack of specific effects of family therapy on all but one of these same domains was doubly surprising, especially because over 90% of family therapy sessions were rated by an external expert as adequate or better. Similarly, a recent study by Harrington et al. (1998) found that brief, home-based family intervention did not add to the efficacy of routine care in reducing family dysfunction on the FAD and hopelessness on the BHS in adolescent suicide attempters. It was also surprising that cognitive therapy had an impact on family variables when the amount of parent contact in this treatment was quite limited. Although the effects of cognitive therapy on family climate were most likely influenced by changes in the adolescent patient, there was no relationship between changes in self-reported depression and family climate. These findings run counter to the view that family therapy is necessarily the best approach for depressed adolescents in families with family conflict, both because individual cognitive treatment was more effective in modifying family climate and because changes in family climate and in depression appear to have been unrelated. Although family intervention may augment treatment response of younger internalizing children to CBT, it may not be as helpful for internalizing adolescents (Barrett et al., 1996).

A somewhat different set of findings occurred by the conclusion of follow-up. Specifically, family therapy was found to be superior to CBT in improving parent-rated family conflict and, to some extent, parent-child relationship problems. However, we are at a loss to explain why no differences were found between SBFT and NST. These results suggest that the effects of family therapy may require a longer period of time to permit changes to take place in complex family interaction patterns. This finding is consistent with the results of some family intervention studies that have found somewhat greater effects on certain family variables at follow-up than posttreatment (Barrett et al., 1996; Harrington et al., 1998; Lewinsohn et al., 1990; Szapocznik et al., 1989). In the Szapocznik et al. study, a structural family intervention differed from individual psychodynamic child therapy on family structure at follow-up but not at posttreatment. This outcome is consistent with the finding that family factors (e.g., family conflict) may contribute to prolonged depressive episodes in children (Warner et al., 1992) and recurrence in adolescents (Birmaher et al., 2000). Subsequent studies must attempt to not only replicate these results but also examine other potential reasons for the longer term effect of family treatment.

There were no acute effects of treatment on measures of comorbid symptoms, namely, anxiety or conduct problems. By the end of the follow-up, however, CBT and NST tended to be associated with a more consistent reduction in anxiety symptoms than SBFT, which showed a slight increase by the 24-month follow-up. If the effects of family treatment on family problems occur mostly in the long run, its limited impact on patient anxiety highlights the need to target the child's internalizing symptoms more directly; further, our findings are consistent with those of other studies that have found greater benefits of family treatment for child than adolescent patients (Barrett et al., 1996; Harrington et al., 1998). A general difficulty in understanding these findings is the absence of a family treatment study with long-term follow-up data in this area (see Reinecke et al., 1998).

Treatment condition did not interact with any of the three therapist background variables on any of the cognitive or family specificity variables, comorbid symptom measures, or depressive outcomes at either assessment period. However, there were clinician effects on both cognitive distortion and anxiety symptoms showing that CBT, but not SBFT, resulted in greater improvement with less clinician variability than NST. This result is compatible with the view that a specific manualized treatment may result in more consistent change in the targeted domains than a nonspecific treatment, which may yield more variable and unpredictable results. As noted earlier, most treatment studies with depressed youths have not evaluated therapist effects or the impact of therapist characteristics on outcome (see Reinecke et al., 1998), and two studies with anxious youths failed to find any therapist effects (Barrett et al., 1996; Treadwell & Kendall, 1996). The use of specialized manuals and ongoing supervision with tape reviews and expert feedback may have limited the influence of the therapists' characteristics in this study. Of course, given the small number of therapists per condition (four), it may have been difficult to disentangle the specific characteristics associated with a single therapist. Overall, these findings indicate that characteristics of the therapist's background were unrelated to treatment outcome but that variance in outcome due to clinician factors may emerge in less structured treatments. Future studies should certainly incorporate adequate attention to the evaluation and interpretation of therapist effects (see Elkin, 1999).

Our results showed that neither cognitive distortion nor family dysfunction could have mediated treatment outcome because of the absence of group differences over time in severity of depressive symptoms. Certainly, mediation may be difficult to show within the relatively brief time frame of our acute treatment, given the focus on MDD and its episodic nature. Perhaps several adolescents did not experience a subsequent episode of MDD and/or the expected change in mediational processes during acute treatment. The few studies with depressed adolescents generally have not evaluated treatment mediation following cognitive therapy (e.g., Harrington et al., 1998; Lewinsohn et al., 1990). In the area of anxiety, negative (i.e., anxious or depressed) self-statements in one study were found to predict treatment outcome and, to some extent, mediate it (Treadwell & Kendall, 1996). Related cognitive and situational mediators of the sequelae of other child or adolescent experiences, such as child abuse, also have been identified (Cohen & Mannarino, 1998; Dodge, Bates, & Pettit, 1990; Spaccarelli, 1995). Whether depressed self-statements exert a similar influence could not be determined in the present study and, thus, awaits further empirical evaluation (see Reinecke et al., 1998).

Further examination of adolescents' attributions and perceptions of their depressive experiences, and other more traditional indicators of cognitive capacity, may enhance our understanding of potential...
mediators of treatment with this population (Weisz & Weiss, 1989). Other variables that predict remission in this population, such as young age and less social impairment, also may be important to evaluate (Jayson et al., 1998).

Neither cognitive nor family measures were found to moderate the acute effects of treatment. Thus, patients varying in levels of cognitive distortion or family dysfunction would not be expected to show initial differential response across these three treatments, although Clark et al. (1992) did find that high distortion predicted worse outcome. There are inconsistencies across studies in the role of various moderators, including characteristics of the child’s background or clinical status. With few exceptions (Barrett et al., 1996), most studies with internalizing youths have not found moderators of treatment (e.g., Kendall et al., 1997). Such findings may suggest the robustness of these intervention programs, but it is equally plausible that salient moderator variables have simply not been adequately studied (e.g., history of trauma or exposure to violence, limited intellectual functioning, and presence of Axis II disorders).

Two of the strengths of this study were that the sample was representative of clinically referred, moderately depressed patients and that the treatments were delivered with fidelity in accord with the three distinct treatment models. Further, this study was one of the few to include multiple follow-up assessments throughout a 2-year follow-up period. At the same time, this study had some limitations related to measurement. First, the measurements of specific domains may have been limited. For example, the assessment of cognitive distortion was accomplished by use of a self-report instrument rather than by the use of direct probes (Dodge et al., 1990). Second, it is possible that other factors (latent variables) that were not assessed after the trial had ended may have contributed to the findings obtained by the end of the follow-up period. Finally, domain and source were confounded, insofar as we found significant differences for parent, but not child, reports in some instances, and in others, only child reports were available. Other measures that showed an effect, however, were based on child and parent interviews. In addition, the measurement of treatment-specific domains may have been confounded by depression. The latter problem is particularly true with respect to measures of cognitive distortion that overlap substantially with self-reported depressive symptoms.

Recent recommendations suggest the importance of evaluating short-term psychotherapies with depressive disorders, especially cognitive treatments (Jarrett & Rush, 1994; Persons, Thase, & Crits-Christoph, 1996). This direction is supported by increasing evidence as to its efficacy in adults (Fava, Savron, Grandi, & Raffaneli, 1997) and children (Weisz et al., 1997) for the role of cognitive distortion in influencing treatment outcome (Spangler et al., 1997). Additionally, biological studies may permit an alternative paradigm for identification of treatment mediators and moderators given emerging findings regarding the relationship between certain psychotherapies and specific biological outcomes (see Thase & Kupper, 1996).

In sum, we found limited evidence for treatment specificity and no evidence for treatment mediation, consistent with the extant literature, indicating that other “nonspecific” factors like treatment consistency and therapeutic empathy may account for a large proportion of the variance in cognitive, psychodynamic, and behavioral interventions alike (Burns & Nolen-Hoeksema, 1992; Luborsky et al., 1985). However, we found some suggestion that one of the two more specific treatments (i.e., CBT but not SBFT) did result in a more consistent and positive impact on such problems as cognitive distortion and anxiety symptoms by the end of follow-up. These findings have implications for the training of therapists in an era of “manualization,” where achievement of technical proficiency seems to take precedence over relationship-building skill (Henry, Strupp, Butler, Schacht, & Binder, 1993). Perhaps having a consistent therapeutic orientation, such as in cognitive therapy, may be helpful to patients because it lends meaning and structure to a difficult set of personal circumstances, regardless of actual conformance of the treatment model to etiopathogenesis (Luborsky et al., 1985). Continued empirical evaluation with child and adolescent populations is needed in order to understand further the elusive mechanism by which cognitive and family therapies exert their clinical effects.

References


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