

Couples- Versus Individual-Based Therapy for Alcohol and Drug Abuse: Effects on Children's Psychosocial Functioning

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The study compared the effect of couples-based versus individual-based therapy for men who entered outpatient substance abuse treatment on the psychosocial functioning of children in their homes. Men were randomly assigned to (a) behavioral couples therapy (BCT), (b) individual-based treatment (IBT), or (c) couples-based psychoeducational attention control treatment (PACT). For both children of alcohol- ($N = 71$) and drug-abusing men ($N = 64$), parents' ratings of children's psychosocial functioning was higher for children whose fathers participated in BCT at posttreatment and at 6- and 12-month follow-up than for children whose fathers participated in IBT or PACT. BCT resulted in greater improvements in parents' dyadic adjustment and fathers' substance use. Thus, couples-based intervention that addresses both issues may have greater benefits for children in these homes.

Of the public health concerns of the 20th century, alcoholism and drug addiction are among the most insidious and devastating. Among the pernicious biological, psychological, and social consequences of these disorders are the deleterious effects of alcohol and drug abuse by one or both parents on the family environment and on the psychosocial development of children in these households. Epidemiological studies estimate that nearly 30% of female and 18% of male adult problem drug users live with children and that more than 6 million children are being raised by substance-using parents (U.S. Department of Health and Human Services, 1992, 1996).

Children of parents who abuse alcohol or other drugs are at risk for developing emotional, behavioral, and social problems. Specifically, children of people with alcoholism have a higher incidence of psychiatric symptoms and are more likely to have a diagnosable childhood psychological disorder than children of people without the disease (e.g., Moss, Mezzich, Yao, Gavalier, &

Martin, 1995; West & Prinz, 1987). Although fewer studies have explored the psychosocial adjustment of children whose parents misuse drugs other than alcohol, the literature suggests children in these homes are also likely to exhibit behavioral and emotional problems (e.g., Billick, Gotzis, & Burgert, 1999; Wilens, Biederman, Kiely, Bredin, & Spencer, 1994).

In one of the few studies to examine the effect of substance abuse treatment for parents on their children, Moos, Finney, and Cronkite (1990) found 11- to 14-year-old boys in remitted alcoholic families and boys in nonalcoholic families exhibited lower rates of physical and psychological problems than children in families in which the alcoholic parent had relapsed. These investigators also found higher levels of functioning (e.g., family cohesion, expressiveness, and organization) and fewer family stressors (e.g., less parental conflict) for remitted alcoholic and nonalcoholic families than for relapsed alcoholic families. They concluded that their findings "point to the pivotal influence of family functioning on treatment outcome" (p. 137). They added that the treatment programs from which they recruited had "almost no emphasis on family treatment" (p. 137). In turn, they argued for the widespread use of family-oriented therapy for alcoholism patients.

Consistent with this recommendation, the findings from several studies suggest couples-based treatment for alcohol and drug abuse may result in superior outcomes for married or cohabiting patients compared with treatments that do not involve spouses. In particular, a series of studies conducted with alcohol-abusing couples over the last 2 decades indicated that behavioral couples therapy (BCT) was associated with reduced drinking behavior and increased relationship adjustment (e.g., McCrady, Stout, Noel, Abrams, & Nelson, 1991; O'Farrell, Cutter, Choquette, Floyd, & Bayog, 1992). In addition, several recent investigations suggest BCT has very similar positive effects for drug-abusing couples (e.g., Fals-Stewart, Birchler, & O'Farrell, 1996; Fals-Stewart, O'Farrell, & Birchler, 2002). Understandably, the emphasis of these studies has been on examining temporal changes in patients' substance use and couples' relationship functioning; the secondary

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effects of BCT on children in these families have not been explored. In response to this oversight, O'Farrell and Feehan (1999) called for research to examine whether BCT for substance-abusing parents may have beneficial effects on the children in these families.

Although individual-based substance abuse treatment for parents has positive effects on their children's functioning, it is plausible that BCT would have greater positive effects on children than individual-based substance abuse treatment. Beyond the importance of parents' reduced substance use, dyadic adjustment is also of critical concern for child functioning. Relationship distress, as well as verbal and physical aggression, are common in families with substance abuse (e.g., Goldstein, Hunt, Des Jarlais, & Deren, 1987; O'Farrell, Van Hutton, & Murphy, 1999). At the same time, marital functioning may mediate children's adjustment in families with a substance-abusing parent. For instance, Velleman and Orford (1993) found all the covariance of childhood difficulties and parental problem drinking could be explained in terms of family disharmony. Although dyads with a drug-using husband reported similar levels of marital dissatisfaction as nonsubstance-abusing, distressed couples, partners in these couple types displayed different patterns of interaction. Specifically, in videotaped observations, couples with drug-using husbands exhibited higher levels of dysfunctional communication (e.g., higher abusiveness, poorer problem-solving skills) than nonsubstance-abusing, distressed couples (Fals-Stewart & Birchler, 1996). Thus, arguments in these couples may escalate quickly, are potentially abusive, and partners may have less ability to resolve conflict successfully. It is important to note that a considerable body of research suggests relationship distress, conflict in the presence of children, and the inability of couples to resolve conflict successfully may undermine children's development (for a review, see Cummings & Davies, 1994). Thus, the dual emphasis of BCT on reducing parental substance use and improving dyadic functioning may additively or synergistically improve children's adjustment above what has been observed with individual-based treatment (IBT) for substance abuse.

The purpose of the present investigation was to examine the effect of couples-based treatment for dyads in which the male partner entered treatment for alcohol or drug use on children of these families. However, data were not aggregated from the alcohol- and drug-abusing couples for two primary reasons. First, BCT research has usually treated data from alcohol- and drug-abusing couples separately. For example, in BCT investigations with drug-using couples, potential participants were excluded if alcohol was the primary substance of abuse (e.g., Fals-Stewart et al., 1996); similarly, studies with alcohol-abusing couples excluded individuals in which the primary drug of abuse was not alcohol (e.g., O'Farrell et al., 1992). In addition, drug-abusing individuals appear to have more severe problems across multiple areas of functioning (e.g., family adjustment, psychiatric functioning, financial stability) than their alcohol-abusing counterparts (Miller, 1993). Because children raised in homes of drug-abusing parents may be exposed to more emotionally disruptive familial influences than children in homes of alcohol-dependent individuals, the psychosocial functioning of children in the homes of drug-using parents may be more adversely affected.

Method

Participants

Heterosexual couples in which men were entering outpatient treatment for alcoholism or other drug abuse were recruited to participate in an investigation of the effects of couples-based treatment. Two clinics specializing in treatment of alcohol problems were used as sites for recruitment of married or cohabiting alcohol-dependent men; two other sites were used to recruit drug-abusing men and their partners.¹ To be included, male partners had to (a) be between 20 and 60 years old, (b) be married for at least 1 year or living with a significant other for at least 2 years, (c) meet abuse or dependence criteria for a psychoactive substance use disorder according to the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; *DSM-III-R*; American Psychiatric Association, 1987), (d) have medical clearance to engage in abstinence-oriented treatment, (e) agree to refrain from the use of alcohol or illicit drugs for the duration of treatment, and (f) refrain from seeking additional substance abuse treatment except for self-help meetings, unless recommended by his primary individual therapist. Couples also had to have at least one child between the ages of 6 and 16 living in their households for whom one or both adults were the legal guardians. This age range was used because it is the age range for which the children's psychosocial adjustment measure (see below) was psychometrically evaluated. Couples were excluded if (a) the female partner met *DSM-III-R* criteria for a psychoactive substance use disorder in the last 6 months; (b) either partner met *DSM-III-R* criteria for an organic mental disorder, schizophrenia, delusional (paranoid) disorder, or other psychotic disorder; or (c) either partner was in a methadone maintenance program.

The *DSM-III-R* system was used instead of the updated *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994). Although the *DSM-IV* was available when recruitment began (i.e., 1997), the *DSM-IV* was not routinely used in our clinical trials until shortly after the project commenced. Rather than discharging participants interviewed using the *DSM-III-R*, the *DSM-III-R* was used for all participants. Because the psychoactive substance use disorder modules of the two systems are similar, it is likely the participants would have received the same diagnosis had we used either version.

Because mothers' prenatal substance use may negatively affect children's social and intellectual development (see Mayes & Bornstein, 1997), we also queried mothers about alcohol and drug use during pregnancy. Among the mothers who reported alcohol use during pregnancy ($n = 6$), the average number of standard drinks during each month of pregnancy was less than one.

Measures

Relationship adjustment. The Dyadic Adjustment Scale (DAS; Spanier, 1989) is a widely used 32-item self-report measure of general relationship satisfaction with acceptable reliability and validity. Scores can range from 0 to 151, with higher scores indicating higher levels of adjustment. A total score of 97 has been the traditional cut-off point for relationship distress.

Substance use. We used the Timeline Followback Interview (TLFB; Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000; Sobell &

¹ An algorithm (Fals-Stewart, 1996) was used to determine the male partner's primary drug of abuse, with decisions based on combinations of his self-report data, diagnostic information, prior treatment information, and frequency of use for each drug over 90 days and 12 months before treatment. A dyad was classified as an alcoholic couple if the male partner's primary drug was alcohol. Conversely, dyads in which male partners primarily abused other psychoactive substances were classified as drug-abusing couples.

Sobell, 1996) to assess frequency of drug and alcohol use. The TLFB uses a calendar and other memory aids to gather retrospective estimates of daily drinking and other drug use over a specified time period. The substance use index derived from the interviews was the *percentage of days abstinent* (PDA), which was operationally defined as the percentage of days in the measurement interval that the male partner reported no substance use and was not in jail or a hospital for reasons related to drug or alcohol use.

At admission, male partners were interviewed concerning their substance use during the 12 months before treatment. After treatment and at 90-day intervals thereafter for 12 months, men provided the same information concerning substance use since their last reporting. Female partners were also asked about their partners' drug and alcohol use at these same intervals; however, only men's data are reported here. Partners' reports showed substantial agreement (i.e., correlations ranged from .71 to .88, all $ps > .001$).

Children's psychosocial adjustment. Both mothers and fathers rated their children using the Pediatric Symptom Checklist (PSC; Jellinek & Murphy, 1990), a 35-item questionnaire that lists a broad range of items that measure emotional and behavioral problems and reflects parents' impressions of their children's psychosocial functioning. The PSC is intended as a brief screening inventory that allows the medical or mental health practitioner to identify psychosocial difficulty in children as rated by the child's parent. Items are scored *never*, *sometimes*, or *often*. An overall score is obtained by assigning a 0, 1, or 2, respectively, to each item and summing the total number of points. Scores range from 0 to 70, with higher scores indicating greater impairment in psychosocial functioning. Sample items include "Is irritable, angry," "Teases others," "Blames others for his or her troubles," "Feels sad, unhappy," and "Worries a lot." A mean PSC score of 15.1 was reported in a study of over 21,000 children who lived in 1 of 44 states, Canada, or Puerto Rico (Jellinek et al., 1999). For children 6 through 16, a score greater than or equal to 28 has been empirically established as a clinical cut-off score (Jellinek et al., 1999). More specifically, a positive score indicates that the child is having significant difficulty in psychosocial functioning and that further evaluation is recommended (Jellinek et al., 1999). Although 22% of children scored above the PSC clinical cut-off in a study of inner-city children from economically disadvantaged homes (Murphy, Reede, Jellinek, & Bishop, 1992), typically, 12% to 17% of children exhibit elevated PSC scores (e.g., Bernal et al., 2000; Murphy et al., 1992; Wildman, Kinsman, & Smucker, 2000). Billick et al. (1999) found that 16.7% of children with substance abusing/dependent parents scored above the clinical cut-off on the PSC.

The validity of the PSC has been demonstrated in over 100 studies that have been published in pediatric, psychiatry, psychology, and education journals. Furthermore, some states now recommend the PSC be mandated as part of well-child visits and in a variety of nonhealth settings, including annual screenings for children in the Head Start program (e.g., Murphy et al., 1992). Studies using the PSC have assessed children in a wide variety of family situations, including lower and middle-class minority and non-minority children, children in English- and Spanish-speaking homes, children in one- and two-parent homes, and children in civilian and military families (see Bernal et al., 2000; Murphy et al., 1992; Walker, Lagrone, & Atkinson, 1989; Wildman et al., 2000). About two thirds of children with cut-off scores above 28 are identified as impaired by experienced clinicians; conversely, 95% of the children identified as PSC-negative (with scores below the cut-off), typically are identified as not having a diagnosable emotional or behavioral impairment (e.g., Jellinek et al., 1988, 1999). The sensitivity and specificity of the PSC appears comparable to the Children's Global Assessment Scale and the Child Behavior Checklist (e.g., Murphy et al., 1992; Simonian & Tarnowski, 2001; Walker et al., 1989). Test-retest reliability of the PSC was reported at .86 between two administrations approximately 4 weeks apart (Jellinek et al., 1988).

Procedure

After both partners signed consent forms indicating their understanding of the treatments and their willingness to participate, couples were randomly assigned to one of three conditions: (a) BCT, (b) IBT only, or (c) psychoeducational attention control treatment (PACT). Written manuals for each treatment condition were followed as closely as possible, but remained flexible enough to address clinical issues as they arose.

BCT condition. There were 32 sessions conducted as part of this condition. Both partners attended the 12 BCT treatment sessions. The nonsubstance-abusing partner was an active participant in the BCT sessions. The BCT sessions were used to (a) help male partners remain abstinent from drugs and alcohol by reviewing and reinforcing compliance with a verbal contract that served to support the male partners' sobriety on a daily basis, (b) teach more effective communication skills, (c) increase positive behavioral exchanges between partners by encouraging them to acknowledge pleasing behaviors and engage in shared recreational activities, and (d) eliminate verbal and physical aggression between partners. For a review of BCT for substance abuse, see O'Farrell and Fals-Stewart (2000).

In the remaining 20 sessions, substance-abusing patients participated in individual cognitive-behavioral therapy sessions for substance abuse; nonsubstance-abusing partners did not attend these sessions. During the 12-week primary treatment phase, one session consisted of the couples-based intervention, whereas the other weekly session was individual counseling. After the 12-week primary treatment phase, men attended one individual cognitive-behavioral therapy session per week. The individual sessions were drawn from *Cognitive-Behavioral Coping Skills Therapy Manual: A Clinical Research Guide for Therapists Treating Individuals With Alcohol Abuse and Dependence* (Project MATCH Research Group, 1994).

IBT condition. For the 32 sessions conducted as part of this condition, the nonsubstance-abusing partner did not participate after the baseline assessment. Substance-abusing patients attended all 32 sessions by themselves, and the treatment was carried out as an individual cognitive-behavioral therapy for substance abuse. Patients received the 20 individual-based sessions that were received by substance-abusing patients in the BCT condition in addition to 12 other coping skills-based sessions modified from Monti, Abrams, Binkoff, Kadden, and Cooney (1989) describing cognitive-behavioral treatment for alcoholism.

PACT condition. For the 32 sessions conducted as part of this intervention, men received the same 20 individual-based sessions as those attended by patients in the IBT condition. In the remaining 12 sessions, both partners attended. However, the partners did not receive an active couples-based intervention. They were passive participants in 12 lectures about substance abuse (e.g., its epidemiology, etiology, effects on the body and brain). For the two sessions scheduled each week during the primary treatment phase, one consisted of the couples-based psychoeducational intervention, whereas the other was individual counseling.

Treatment phases. During the first 4 weeks, male partners in each condition participated in an orientation phase during which background and medical information was collected and individual counseling sessions began (once weekly). During the following 12-week primary treatment phase, male partners randomly assigned to the BCT and PACT condition attended conjoint sessions with their partners (as described above) once weekly, in addition to one individual session each week. Male partners in the IBT condition continued to attend two individual therapy sessions each week. For the final 4 weeks, or the discharge phase, all men were scheduled to meet with their individual therapists for one 60-minute session each week.

Final sample. Of 329 men who entered treatment and were approached to determine eligibility for the study, 64 declined our request (most of these stated that they did not want their female partners involved in their treatment), 31 couples met one or more of the study's exclusion criteria, and 99 did not have children. No significant differences were found in the

Table 1
Sociodemographic Characteristics for Participants From the Alcohol-Abusing Couples

Characteristic	BCT (<i>n</i> = 25)			IBT (<i>n</i> = 22)			PACT (<i>n</i> = 24)		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Male partners' age	38.0	5.4		38.6	6.2		37.6	6.1	
Female partners' age	36.9	6.1		37.0	7.0		37.7	7.0	
Male partners' education	12.0	1.7		12.2	2.3		12.3	1.8	
Female partners' education	12.2	1.7		12.4	1.9		12.0	2.4	
Years married or cohabiting	10.6	4.2		11.7	3.9		10.9	3.6	
No. of children	2.8	1.4		2.7	1.3		2.9	1.2	
Weekly family income (in U.S. dollars)	270.4	211.1		272.8	209.3		270.6	191.5	
No. of years of male partners' problematic substance use	12.6	5.0		12.2	6.1		12.5	6.6	
Partners' racial/ethnic composition ^a									
Caucasian			17/17			14/16			16/17
African American			6/5			7/4			6/5
Hispanic			2/3			1/2			2/2

Note. BCT = behavioral couples therapy; IBT = individual-based treatment; PACT = psychoeducational attention control treatment.

^a First number represents male partners' racial/ethnic composition; second number represents female partners' racial/ethnic composition.

sociodemographic and background characteristics of those patients who decided to participate and those who decided not to participate. Also, PDA and men's scores on the DAS (we did not have DAS scores for the female partners of male patients who chose not to participate) did not differ significantly (all *ps* > .05). Sixty-four couples (22 BCT, 21 IBT, and 21 PACT) were assigned to a drug treatment condition; 71 couples (25 BCT, 22 IBT, and 24 PACT) were assigned to an alcohol treatment condition. Eight of the 64 drug-abusing couples and 8 of the 71 alcohol-abusing couples did not receive a therapeutic dose of treatment (at least 50% of their scheduled sessions; see Winters & Fals-Stewart, 1999). Although the effect sizes from the analyses based on the sample of participants who received a therapeutic dose of treatment were larger than those including both couples who received a therapeutic dose and those who did not, data are presented on all eligible cases (i.e., 64 drug-abusing and 71 alcohol-abusing couples) here (intent-to-treat sample).²

Baseline and posttreatment follow-up data collection. Upon entering the study, at the completion of the discharge phase of treatment, and every 3 months thereafter for 1 year, both partners completed the PSC on all 6- to 16-year-old children living in their households and were queried about the male partners' drug and alcohol use and their dyadic adjustment. Male partners also provided urine and blood-alcohol breath samples at each interview.

Mothers and fathers completed the PSC at pretreatment, posttreatment, and 6- and 12-months posttreatment; however, only analysis of data from mothers' PSC ratings are reported. Our rationale for using mothers' ratings is that, particularly at pretreatment, the nonsubstance-abusing parent (in this case, mothers) would more reliably assess children's psychosocial adjustment. Additionally, mothers' and fathers' PSC scores were significantly correlated (*ps* < .05) for partners in the alcohol- and drug-abusing couples at the different assessments, with *rs* ranging from .54 to .78. We also conducted the analyses with the male partners' PSC scores, and the same pattern of significant results emerged.

For families with more than one child in the age range surveyed, the data from one randomly selected child was used for all statistical analyses involving PSC scores. This procedure was followed to guard against the violation of statistical assumptions regarding independent observations.³

Missing data. In total, we had 1,080 scheduled observations (i.e., male and female partners in 135 couples for the PSC, DAS, and TLFBI interviews at four assessment periods); 107 (10%) were missing. Eighteen percent of couples (*n* = 24; 8 alcohol-abusing couples and 12 drug-abusing couples) had at least one missing observation during one or more of the assessment periods. We found no differences between the treatment con-

ditions or between the couple types (i.e., alcohol vs. drug-abusing) in terms of the amount of data missing. A common approach to dealing with missing data is listwise deletion (i.e., using only cases with complete data and ignoring the rest). However, listwise deletion produces biased parameter estimates, particularly in instances in which more than 5% of cases have missing data (Schafer, 1997). In such circumstances, imputation of missing data is strongly recommended (Graham & Hofer, 2000). With our sample, missing data often resulted when couples were experiencing poor dyadic adjustment or substance use outcomes. Thus, for couples in which participants were missing relationship adjustment or substance use data at an assessment period, the most distressed score (i.e., lowest DAS or PDA score) from the previous assessment periods was used as a replacement for the missing data point.⁴

Results

Sample Characteristics

Tables 1 and 2 present the background characteristics of participants in the three treatment conditions for the alcohol- and drug-abusing couples, respectively. Analysis of variance (ANOVA) and chi-square tests indicated that the participants in the BCT, IBT, and PACT conditions did not differ significantly on any of these characteristics. Table 3 presents the sociodemographics of the children whose PSC scores were randomly selected for analyses. ANOVA and chi-square tests indicated that the sociodemographics of the children whose parents were in the respective treatment conditions did not differ significantly.

² For those patients who did not receive a therapeutic dose of treatment, the mean (*SD*) number of sessions attended was 12 (2.1), with a range of 8 to 15 sessions.

³ Many of the analyses conducted with PSC data from the randomly selected children were also conducted using average PSC scores from all school-aged children in the family. The same pattern of results emerged from these analyses.

⁴ We also completed the analysis with missing data imputed using the expectation maximization algorithm (Schafer, 1997), and the same pattern of findings emerged.

Table 2
Sociodemographic Characteristics for Participants From the Drug-Abusing Couples

Characteristic	BCT (n = 22)			IBT (n = 21)			PACT (n = 21)		
	M	SD	n	M	SD	n	M	SD	n
Male partners' age	35.4	5.3		36.0	5.5		36.8	5.4	
Female partners' age	35.8	5.2		36.1	5.1		35.9	5.0	
Male partners' education	11.9	1.6		12.1	1.9		12.0	1.9	
Female partners' education	12.1	1.9		12.2	1.7		12.0	1.5	
Years married or cohabiting	11.4	4.6		12.0	5.0		11.9	5.7	
No. of children	2.2	1.8		2.7	1.9		2.7	1.6	
Weekly family income (in U.S. dollars)	214.4	102.9		237.4	114.6		230.4	117.0	
No. of years of male partners' problematic substance use	10.6	6.7		11.2	7.0		11.1	7.4	
Male partners whose primary drug abuse was									
Cocaine			8			8			8
Opiates			10			10			11
Cannabis			1			1			1
Other			3			2			1
Partners' racial/ethnic composition ^a									
Caucasian			14/15			12/13			12/12
African American			7/6			9/7			8/7
Hispanic			1/1			0/1			1/2

Note. BCT = behavioral couples therapy; IBT = individual-based treatment; PACT = psychoeducational attention control treatment.

^a First number represents male partners' racial/ethnic composition; second number represents female partners' racial/ethnic composition.

Amount of Therapy Received

For the alcohol-abusing couples, the mean (SD) number of sessions attended by male partners in each treatment condition during the 24 weeks of treatment was 23.7 (4.2) for BCT, 22.8 (4.0) for IBT, and 23.0 (4.2) for PACT. For the drug-abusing couples, the mean (SD) number of sessions attended was 22.4 (5.7) for BCT, 22.9 (5.1) for IBT, and 22.6 (4.0) for PACT. Using ANOVAs for both types of couples, we found no significant

differences ($ps > .05$) in the average number of sessions attended by participants assigned to BCT, IBT, or PACT.

Child Psychosocial Functioning, Relationship, and Drug Use Outcomes of BCT, IBT, and PACT From Pretreatment to 12-Month Follow-Up

For the alcohol- and drug-abusing couples, means (SD) for the measures of children's psychosocial adjustment (i.e., PSC scores),

Table 3
Sociodemographic Characteristics of Children

Characteristic	BCT			IBT			PACT		
	M	SD	n	M	SD	n	M	SD	n
Children from alcohol-abusing couples									
Age	10.1	2.4		11.3	1.9		10.7	2.6	
Grade	5.3	2.1		6.0	2.0		5.8	2.4	
Boys			13			11			10
Live in household with									
1 biological parent			7			5			5
2 biological parents			15			15			16
Children from drug-abusing couples									
Age	8.9	2.4		9.4	2.0		9.6	2.3	
Grade	4.0	1.8		4.4	1.9		4.6	2.2	
Boys			10			10			9
Live in household with									
1 biological parent			6			4			4
2 biological parents			14			14			15

Note. For the children from alcohol-abusing couples, $ns = 22, 20,$ and 21 for BCT, IBT, and PACT, respectively; for the children from drug-abusing couples, $ns = 20, 18,$ and 19 for BCT, IBT, and PACT, respectively. BCT = behavioral couples therapy; IBT = individual-based treatment; PACT = psychoeducational attention control treatment.

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Table 4
 Mean and Standard Deviation Children's Pediatric Symptom Checklist (PSC) Scores,
 Percentage of Days Abstinent, and Dyadic Adjustment Scale (DAS)
 Scores for Alcohol-Abusing Couples

Treatment group	Treatment period							
	Pretreatment		Posttreatment		6-month		12-month	
	M	SD	M	SD	M	SD	M	SD
PSC scores								
BCT	16.9	12.6	7.2 ^{a,b}	16.2	9.3 ^{a,b}	10.2	9.0 ^{a,b}	11.6
IBT	17.6	14.4	10.2 ^b	11.4	13.7 ^b	9.6	13.0 ^b	15.1
PACT	18.7	12.8	11.4 ^b	8.6	14.4 ^b	10.2	13.9 ^b	13.2
Percentage of days abstinent								
BCT	40.0	33.5	90.2 ^c	21.9	80.6 ^{a,c}	27.2	70.9 ^{a,c}	25.6
IBT	36.9	33.3	86.6 ^c	17.4	71.4 ^c	26.2	60.4 ^c	22.4
PACT	37.4	29.2	87.4 ^c	18.2	70.4 ^c	25.3	57.9 ^c	32.1
Mothers' DAS scores								
BCT	74.2	21.3	104.7 ^{a,c}	17.4	95.7 ^{a,c}	18.4	85.7 ^{a,c}	18.1
IBT	70.6	23.4	94.2 ^c	19.9	75.2	19.4	76.6	22.7
PACT	71.5	19.9	92.8 ^c	23.3	74.6	23.6	75.0	18.9
Fathers' DAS scores								
BCT	85.3	21.4	115.4 ^{a,c}	18.2	103.9 ^{a,c}	16.2	91.4 ^{a,c}	19.9
IBT	84.6	22.2	102.2 ^c	19.1	86.7	19.2	82.1	20.7
PACT	83.3	22.4	104.6 ^c	21.6	85.8	23.0	80.0	19.6

Note. Lower scores on the PSC indicated better functioning; higher scores on the couple DAS scores and percentage of days abstinent indicated better functioning. At all assessment periods and in all groups, fathers' DAS scores were significantly higher (i.e., $p < .05$) than mothers' DAS scores. BCT = behavioral couples therapy; IBT = individual-based treatment; PACT = psychoeducational attention control treatment.

^a This mean is significantly different ($p < .05$) than the means for participants in the other treatment conditions. ^b This mean is significantly lower ($p < .05$) than scores from pretreatment. ^c This mean is significantly higher ($p < .05$) than scores from pretreatment.

male partners' frequency of substance use (i.e., PDA from the TLFB), and partners' dyadic adjustment (i.e., mothers' and fathers' DAS scores) are located in Tables 4 and 5, respectively. Because some research has found that parental drug use may have different effects on boys versus girls (e.g., see von Knorring, 1991), we performed a series of preliminary analyses to examine whether PSC scores differed as a function of child gender. PSC scores did not differ as a function of child gender; thus, scores for boys and girls were pooled for the analyses.

For the alcohol-abusing couples, analyses of the PSC scores revealed a significant effect for group, $F(2, 60) = 8.42, p < .001, \eta^2 = .22$; time, $F(3, 58) = 12.61, p < .001, \eta^2 = .39$; and a Group \times Time interaction, $F(6, 118) = 3.96, p < .01, \eta^2 = .17$. For PDA, we also found significant effects for group, $F(2, 68) = 7.96, p < .001, \eta^2 = .19$; time, $F(3, 66) = 8.69, p < .001, \eta^2 = .28$; and a Group \times Time interaction, $F(6, 204) = 2.90, p < .05, \eta^2 = .08$. Because mothers' and fathers' DAS scores are dependent, we treated this analysis as doubly multivariate, with time as one within-subjects factor and DAS assessment (i.e., mothers' and fathers' DAS scores) as another within-subjects factor. In this analysis, we found significant effects for group, $F(2, 68) = 7.07, p < .001, \eta^2 = .17$; time, $F(3, 204) = 4.44, p < .001, \eta^2 = .06$; Group \times Time interaction, $F(6, 204) = 2.60, p < .05, \eta^2 = .07$; and DAS assessment, $F(1, 68) = 12.23, p < .001, \eta^2 = .26$. We did not find significant effects for DAS Assessment \times Group interaction, $F(2, 68) = 2.39, ns, \eta^2 = .06$; Time \times DAS Assessment, $F(3, 204) = 1.94, ns, \eta^2 = .03$; or Time \times Group \times DAS Assessment, $F(6, 204) = 2.11, ns, \eta^2 = .06$. For the four assess-

ment periods, mothers' and fathers' DAS scores had correlations ranging from .53 to .64 (all $ps < .001$).

For the drug-abusing couples, the results were substantively the same as those found among the alcohol-abusing couples, with the same significant effects for each variable. For the PSC, significant effects were found for group, $F(2, 55) = 11.14, p < .001, \eta^2 = .29$; time, $F(3, 53) = 8.01, p < .001, \eta^2 = .31$; and the Group \times Time interaction, $F(6, 108) = 4.01, p < .01, \eta^2 = .18$. For PDA, we also found significant effects for Group, $F(2, 60) = 9.31, p < .001, \eta^2 = .24$; time, $F(3, 180) = 6.69, p < .001, \eta^2 = .10$; and a Group \times Time interaction, $F(6, 180) = 2.74, p < .05, \eta^2 = .08$. For partners' DAS scores, we found significant effects for group, $F(2, 60) = 8.31, p < .001, \eta^2 = .21$; time, $F(3, 180) = 6.61, p < .001, \eta^2 = .10$; Group \times Time interaction, $F(6, 180) = 2.36, p < .01, \eta^2 = .07$; and DAS Assessment, $F(1, 60) = 12.02, p < .001, \eta^2 = .17$. We did not find significant effects for DAS Assessment \times Group interaction, $F(2, 60) = 2.22, ns, \eta^2 = .07$; Time \times DAS Assessment, $F(3, 180) = 1.94, ns, \eta^2 = .03$; or Time \times Group \times DAS Assessment, $F(6, 180) = 2.00, ns, \eta^2 = .06$. For the four assessment periods, mothers' and fathers' DAS scores had correlations ranging from .49 to .70 (all $ps < .001$).

For each variable, we used simple effects analyses to further analyze the significant effects, which are summarized in Table 4 (for the alcohol-abusing couples) and Table 5 (for the drug-abusing couples). The same significant effects emerged for both types of couples. These analyses revealed no significant differences between the participants in the different treatment conditions at pretreatment. However, PSC scores were lower (indicating

Table 5
 Mean and Standard Deviation Children's Pediatric Symptom Checklist (PSC) Scores,
 Percentage of Days Abstinent, and Dyadic Adjustment
 Scale Scores (DAS) for Drug-Abusing Couples

Treatment group	Treatment period							
	Pretreatment		Posttreatment		6-month		12-month	
	M	SD	M	SD	M	SD	M	SD
PSC scores								
BCT	24.2	16.9	10.4 ^{a,b}	12.2	14.4 ^{a,b}	15.1	14.0 ^{a,b}	13.6
IBT	25.4	18.4	17.1 ^b	13.6	20.8 ^b	16.8	20.4 ^b	15.1
PACT	23.6	17.8	16.9 ^b	14.8	18.9 ^b	14.1	18.0 ^b	13.2
Percentage of days abstinent								
BCT	30.4	33.7	85.9 ^c	22.7	77.6 ^{a,c}	25.8	66.9 ^{a,c}	35.6
IBT	32.7	33.6	81.8 ^c	26.2	63.6 ^c	24.3	53.4 ^c	24.8
PACT	34.9	36.9	83.4 ^c	24.4	61.5 ^c	26.8	51.2 ^c	32.2
Mothers' DAS Scores								
BCT	66.7	19.9	93.6 ^{a,c}	20.2	82.4 ^{a,c}	16.9	81.9 ^{a,c}	21.4
IBT	67.2	22.5	80.0 ^c	22.5	68.9	20.1	68.5	20.4
PACT	64.9	19.0	78.6 ^c	20.9	69.9	19.1	67.0	23.6
Fathers' DAS Scores								
BCT	75.2	22.7	103.6 ^{a,c}	22.1	93.6 ^{a,c}	17.2	90.7 ^{a,c}	22.3
IBT	77.3	19.8	88.7 ^c	16.4	77.8	18.7	75.8	20.4
PACT	74.4	20.2	86.4 ^c	21.7	80.0	19.2	77.2	21.6

Note. Lower scores on the PSC indicated better functioning; higher scores on the couple DAS scores and percentage of days abstinent indicated better functioning. At all assessment periods and in all groups, fathers' DAS scores were significantly higher (i.e., $p < .05$) than mothers' DAS scores. BCT = behavioral couples therapy; IBT = individual-based treatment; PACT = psychoeducational attention control treatment.

^a This mean is significantly different ($p < .05$) than the means for participants in the other treatment conditions. ^b This mean is significantly lower ($p < .05$) than scores from pretreatment. ^c This mean is significantly higher ($p < .05$) than scores from pretreatment.

higher adjustment) at posttreatment and throughout follow-up for the children whose fathers were in BCT than for children whose fathers participated in IBT or PACT. Also, parents who participated in BCT had better functioning, in terms of men's reduced substance use and partners' improved dyadic adjustment, than parents who participated in IBT or PACT during the follow-up period.⁵

Changes in Proportions of Children Exceeding the Clinical Cut-Off for the PSC

As noted earlier, PSC scores at or above 28 are indicative of impaired psychosocial adjustment. The number and percentage of children from the alcohol-abusing couples and the drug-abusing couples who surpassed this cut-off score at each assessment period are located in Table 6. We used Cochran's Q tests for repeated measures categorical data to assess changes in the proportion of children who had PSC scores at or greater than 28 within each treatment condition during the follow-up assessment period. A significant reduction in the proportion of children surpassing the cut-off score was observed for children whose parents received BCT in both the alcohol- and drug-abusing couples. However, this effect was not significant for children whose parents were in the other conditions. For the significant omnibus effects, follow-up pairwise comparisons revealed that a significantly lower proportion of children's PSC scores were above the cut-off score at each posttreatment assessment period compared with the preassessment

for children of both the alcohol- and drug-abusing couples who received BCT.

Interrelationships of PSC, PDA, and DAS Scores for Treatment Conditions

We sought to examine the influence of changes in male partners' frequency of substance use and changes in partners' relationship adjustment on the changes in psychosocial adjustment of alcohol- and drug-abusing couples' children in the BCT, IBT, and PACT conditions during the posttreatment follow-up period. First, we created three change scores each for PDA—mothers' DAS scores, fathers' DAS scores, and PSC scores—by subtracting (a) pretreatment from posttreatment scores, (b) posttreatment scores from 6-month follow-up scores, and (c) 12-month follow-up scores from 6-month follow-up scores. Then, in three separate regression models, we regressed PSC change scores on PDA and mothers' and fathers' DAS change scores at each change period (e.g., in the first model, PSC change scores from pretreatment to posttreatment

⁵ Although not examined as part of our hypothesis testing, we compared the PSC scores of children from alcohol- and drug-abusing homes. After controlling for sociodemographic differences between the alcohol- and drug-abusing couples and their respective children, we found that children in the homes of drug-abusing parents had higher PSC scores than children in the homes of alcoholic parents. The results of these analyses are available from the corresponding author upon request.

Table 6
 Number and Percentage of Children Whose Scores Surpass the Clinical Cut-Off
 of 28 on the Pediatric Symptom Checklist at Each Assessment

Treatment group	n	Treatment period								Cochran's <i>Q</i>
		Pre-treatment		Post-treatment		6-month		12-month		
		n	%	n	%	n	%	n	%	
Drug-abusing couples										
BCT	20	10	50	3	15 ^a	4	20 ^a	3	15 ^a	18.55**
IBT	18	9	50	7	38	7	39	8	44	4.71
PACT	19	9	47	6	32	7	37	8	42	6.00
Alcohol-abusing couples										
BCT	22	7	32	1	5 ^a	1	5 ^a	1	5	18.00**
IBT	20	7	35	5	25	5	25	5	25	6.00
PACT	21	7	33	5	24	6	29	5	24	4.00

Note. All omnibus Cochran's *Q* statistics had 3 degrees of freedom. Pairwise comparisons within the BCT treatment groups for the alcohol- and drug-abusing couples were conducted using Cochran's *Q* tests (with 1 degree of freedom). BCT = behavioral couples therapy; IBT = individual-based treatment; PACT = psychoeducational attention control treatment.

^a This proportion is significantly lower (i.e., all *ps* < .01) than the proportion observed at pretreatment.

** *p* < .01.

were regressed on PDA and mothers' and fathers' DAS change scores from pretreatment to posttreatment). The standardized coefficients and intercepts for the regression analyses, conducted at each change period, for the alcohol- and drug-abusing couples are shown in Tables 7 and 8, respectively.

Table 7
 Standardized Regression Coefficients, Intercepts, and Overall
*R*²s for Predictors of Change in Pediatric Symptom
 Checklist Scores for Alcohol-Abusing Couples

Variable	Change period		
	Pre to post	Post to 6-mo	6-mo to 12-mo
Behavioral couples therapy			
PDA	-0.18*	-0.28*	-0.28**
DAS-M	-0.31**	-0.26**	-0.26*
DAS-F	-0.17*	-0.35**	-0.20*
Intercept	12.92	5.01	4.98
<i>R</i> ²	.29**	.44**	.46**
Individual-based treatment			
PDA	-0.28*	-0.24*	-0.18*
DAS-M	-0.25*	-0.20*	-0.29**
DAS-F	-0.40**	-0.27**	-0.20*
Intercept	7.09	5.31	5.06
<i>R</i> ²	.35**	.28**	.32**
Psychoeducational attention control treatment			
PDA	-0.27**	-0.22*	-0.28**
DAS-M	-0.20*	-0.29*	-0.20*
DAS-F	-0.24*	-0.28**	-0.25**
Intercept	7.07	4.03	3.52
<i>R</i> ²	.35**	.33**	.36**

Note. Pre = pretreatment; post = posttreatment; mo = months; PDA = Percentage of days abstinent; DAS-M = mothers' Dyadic Adjustment Scale scores; DAS-F = fathers' Dyadic Adjustment Scale scores.

* *p* < .05. ** *p* < .01.

It should also be noted that, as part of exploratory analyses, all possible interaction terms were entered into all of the tested models (e.g., PDA Change Score × Mothers' DAS Change Scores, PDA × Fathers' DAS Change Scores). None were found to be significant; all had relatively small effect sizes (ΔR^2 range = .01 to .05).

For the alcohol- and drug-abusing couples, across all treatment conditions and in each assessment period, changes in PDA and DAS scores were significantly related to changes in PSC scores. To compare the influence of PDA and mothers' and fathers' DAS scores between the different conditions, we used a multistep procedure described by Pedhazur (1982) to compare the regression coefficients and intercepts of the regression models for BCT, IBT, and PACT.

Alcohol-abusing couples. We compared regression coefficients for the BCT, IBT, and PACT conditions for PCS regressed on PDA and mothers' and fathers' DAS scores. At each change period, homogeneity of regression slopes was tested and none were significant (i.e., all *ps* > .05). Thus, the regression slopes for each of the conditions at each change period were homogeneous, indicating the effects of changes in PDA, mothers' DAS scores, and fathers' DAS scores on changes in PSC were the same across the three groups at each change period. The equation intercepts at each change period were then compared; none were significant (i.e., all *ps* > .05). As noted in Pedhazur (1982), testing the difference between intercepts is the same as testing the difference between groups' adjustment means; in the present case, it is a test of the group differences between changes in PSC scores after covarying changes in PDA, mothers' DAS scores, and fathers' DAS scores. This analysis indicates, in each assessment period, that the effect of treatment group on changes in PSC scores is mediated by changes in PDA and parents' DAS scores (i.e., group differences observed on PSC scores are explained by group differences on PDA and DAS scores at each change period).

Table 8
Standardized Regression Coefficients, Intercepts, and Overall R^2 s for Predictors of Change in Pediatric Symptom Checklist Scores for Drug-Abusing Couples

Variable	Change period		
	Pre to post	Post to 6-mo	6-mo to 12-mo
Behavioral couples therapy			
PDA	-0.17*	-0.18*	-0.21*
DAS-M	-0.29**	-0.34**	-0.28**
DAS-F	-0.23**	-0.26**	-0.19*
Intercept	11.31	7.27	7.04
R^2	.35**	.42**	.39**
Individual-based treatment			
PDA	-0.22*	-0.25*	-0.21*
DAS-M	-0.20*	-0.31**	-0.29**
DAS-F	-0.33**	-0.28**	-0.21*
Intercept	8.31	4.00	4.22
R^2	.33**	.31**	.39**
Psychoeducational attention control treatment			
PDA	-0.23*	-0.29**	-0.21*
DAS-M	-0.24*	-0.25**	-0.23**
DAS-F	-0.24**	-0.26**	-0.18*
Intercept	8.01	4.02	4.21
R^2	.34**	.35**	.42**

Note. Pre = pretreatment; post = posttreatment; mo = month; PDA = Percentage of days abstinent; DAS-M = mothers' Dyadic Adjustment Scale scores; DAS-F = fathers' Dyadic Adjustment Scale scores.

* $p < .05$. ** $p < .01$.

Drug-abusing couples. The same pattern of results emerged for the drug-abusing couples as was obtained with the alcohol-abusing couples. Homogeneity of regression was found at each change period (all $ps > .05$); in addition, the equation intercepts were not significantly different at any of the change periods (all $ps > .05$). Thus, as with the alcohol-abusing couples, the effect of PDA and parents' DAS scores on PSC scores were the same across the three groups at each change period, and the effect of treatment group on PSC scores was mediated by PDA and parents' DAS scores.⁶

Discussion

Our findings indicate that children of substance-abusing fathers who participated in BCT had higher levels of psychosocial functioning than children whose fathers participated in the IBT or PACT conditions. More specifically, although PSC scores of children whose fathers participated in BCT, IBT, or PACT did not differ at pretreatment, children whose parents participated in BCT had lower PSC scores (indicating higher psychosocial functioning) after treatment completion and at 6 and 12 months posttreatment. In addition, this pattern of results was found for both alcohol- and drug-abusing couples. Thus, compared with the more traditionally used IBT or an attention control, BCT appears to be a more effective form of treatment for the men in these families and is more beneficial in terms of its secondary effects on children.

The examination of the interrelationships among children's PSC scores, partners' DAS scores, and fathers' PDA revealed that fathers' frequency of substance use and partners' relationship

adjustment significantly influenced ratings of children's psychosocial functioning in all treatment conditions. However, BCT resulted in greater reductions in substance use frequency and higher dyadic adjustment compared with IBT or PACT, which, in turn, resulted in lower PSC scores. Again, this pattern of results was found among both the alcohol- and drug-abusing couples.

These findings are of particular importance given that at pretreatment, approximately one third of children living with an alcohol-dependent father and one half of children living with a substance-abusing father exhibited symptomology suggestive of significant psychosocial impairment. Both previous research using the PSC (see Jellinek et al., 1999) as well as epidemiological studies (e.g., Costello et al., 1988) generally find that approximately 15% of children experience psychosocial problems in a given year.

Several authors contend family, couple, parent, and child influences are reciprocal, bidirectional, and interdependent (e.g., Deater-Deckard, 1998). From this perspective, problems in any one level of the family system (e.g., family environment, dyadic adjustment, individual disorders) are likely to impact negatively on other levels (e.g., children's adjustment). The results of our study also suggest a dynamic interrelatedness of child, parent, couple, and family adjustment. Because both parental substance abuse and relationship problems are related to poor psychosocial adjustment in children, an intervention such as BCT that addresses both of these interrelated issues concurrently is likely to have the most positive effects on children.

What remains unclear, however, are the components of BCT that result in increased psychosocial adjustment for children. It is possible the skills taught in BCT may benefit the family environment by improving parental communication, reducing stress, and facilitating positive parent-child interactions. Although the reduction or cessation in substance use for participants in any of the treatment conditions is likely to reduce family distress, the added benefits of BCT may allow couples to address conflict more constructively. In particular, the reductions in partner violence after BCT (O'Neill, Freitas, & Fals-Stewart, 1999) may have particular benefit for children's adjustment. It would be interesting to examine videotaped samples of communication among family members, using data from a standardized family observational coding system (see Kerig & Lindahl, 2000), before treatment and at periodic intervals after treatment to determine the nature of changes in family communication patterns that might occur in response to treatment.

It is important to note that none of the individual-based, couples-based, or psychoeducational modules were designed to address parenting skills, parent-child interactions, or child behavior. In fact, parenting is not a topic in any of the manualized sessions, and a review of all session notes and debriefing interviews with the

⁶ A superior alternative analytic strategy would have been to examine these data using a multiple group parallel process model in a covariance structure framework (Willett & Keiley, 2000), with slope and intercept growth factors predicting slope and intercept growth factors for PSC scores. Unfortunately, given the number of participants available, such an analysis is underpowered. A Monte Carlo simulation to estimate power for such an analysis, using parameter estimates from the analysis presented, the parallel process model had a power of only .34, which is inadequate.

clinicians who conducted the sessions revealed that parenting and problems with children were not discussed with any of the participants as part of the treatment provided. Because BCT did not address parenting directly, greater improvement among children in this condition appears to be a secondary effect of a treatment designed to facilitate couple functioning. Although these findings indicate that couples-based treatment may benefit children, our data clearly suggest that many children living with a substance-abusing father experience significant difficulty. These data also demonstrate that greater attention is needed to address the ways in which parent substance abuse and treatment affect children in these families.

The present investigation has several strengths that should be highlighted. This is the first investigation to examine systematically the secondary effect of couples-based treatment for substance-abusing parents on children in their homes. In addition, subsamples of both alcohol- and drug-using couples, randomly assigned to conditions and evaluated over time with widely used psychometrically sound measures, participated in the study. Very similar results, in terms of children's psychosocial functioning, couples' dyadic adjustment, and fathers' substance-use frequency, were found with both types of couples, suggesting the findings were robust. Furthermore, in contrast to most previous research that has relied exclusively on retrospective reports, children's psychosocial adjustment was assessed prior to treatment and at regular intervals during the year after treatment.

Certain limitations of this investigation should also be noted. Most important, information about children was collected only from parents. Therefore, we do not know whether parents' perceptions of child behavior reflect actual changes in children's psychosocial functioning or cognitive distortion on the part of the parents. Corroborating lines of evidence, however, suggest cognitive distortion is not the most likely explanation for our findings. First, mothers' and fathers' ratings of child functioning were significantly correlated and, although mothers' PSC scores are used in the analyses reported here, the same pattern of findings emerged when fathers' scores were used. Second, the pattern of results found supported previous research on the effects of paternal substance abuse treatment on child functioning (e.g., Moos et al., 1990). Also, the pattern of findings was similar for alcohol- and drug-abusing families. Finally, mean PSC scores were significantly higher (indicative of more psychosocial difficulty) for children with a drug-abusing parent than for children with an alcohol-abusing parent. This finding is what might be expected given that drug-abusing individuals have more severe problems across multiple areas of functioning (e.g., Miller, 1993) than their alcohol-dependent counterparts. Nevertheless, future research should obtain corroborating information on child functioning from teachers, other nonparent caregivers, and children themselves.

With respect to the study limitations, we also do not know whether children in the study had experienced abuse or neglect, both of which may be related to child functioning. Also, parents may have had other disorders (e.g., antisocial disorder) that affected child adjustment or parental perceptions. Although none of the mothers reported alcohol misuse or any drug use during their pregnancies, we cannot be assured that prenatal substance abuse did not take place.

Only one type of substance-abusing couple (i.e., those in which only the male partner abused alcohol or drugs) participated in the

present study. Fals-Stewart and colleagues (2000) found the substance use patterns and dyadic adjustment of couples are different depending on dyad composition (i.e., couples in which only the male, only the female, or both partners abuse drugs). Moreover, mothers' substance abuse may have a more deleterious effect on the family system than fathers' substance abuse (e.g., Chassin, Rogosch, & Barrera, 1991). Thus, our findings may not generalize to other types of alcohol- and drug-abusing couples.

Nevertheless, there is little research on the impact of fathers' substance abuse treatment on children in their families. Our findings demonstrate that when fathers recover from substance abuse, children exhibit significant improvements in psychosocial functioning and that these improvements may be enhanced if BCT is used as the primary treatment component. However, additional research is needed that examines how parental treatment for substance abuse may reduce risk, as well as increase resiliency, for children in these families.

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