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Treating paternal drug abuse using Learning Sobriety Together: Effects on adolescents versus children

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Abstract

The focus of this study was whether couples-based treatment for substance abuse had comparable secondary benefits on the internalizing and externalizing behaviors of adolescent versus child siblings living in their homes. Couples took part in a couples-based treatment for substance abuse that combines Behavioral Couples Therapy and individual counseling (i.e., Learning Sobriety Together). During a 17-month assessment period, the relationship between parents' functioning (i.e., fathers' drug use as determined by percent days abstinent and parents' dyadic adjustment) as rated by mothers, fathers, and children's teachers and internalizing behavior (as rated by mothers' only) was stronger for children than their adolescent siblings, particularly in terms of children's externalizing behaviors. Interventions that reduce paternal drug use and improve couple functioning may reduce internalizing and externalizing symptoms for children in their homes; however, adolescents may need more intensive interventions to address internalizing and externalizing symptoms.

Keywords

Children of drug abusers; Couples therapy

1. Introduction

The U.S. Department of Health and Human Services (2005) estimates that 8.3 million children (11%) live with a parent who abuses or is dependent on alcohol or other substances. Recent studies have shown that 20% to 47% of parents entering treatment for substance abuse live with a child (e.g., Collins et al., 2003; Fals-Stewart et al., 2004a; Stanger et al., 1999).

Children of substance-abusers (i.e., COSAs) are at risk for a myriad of adjustment problems. Specifically, these children appear at elevated risk for depression and anxiety (Fals-Stewart et al., 2004a; Stanger et al., 1999), poor self-concept (Drucker and Greco-Vigorito, 2002), externalizing problems (Kelley and Fals-Stewart, 2004), academic difficulties (e.g., Blanchard

Contributors

Dr. Fals-Stewart designed the original study and supervised data collection and undertook the data analysis. Dr. Kelley managed the literature searches and drafted the initial manuscript. Both authors participated equally in manuscript revisions and have approved of the final manuscript.

Conflict of Interest

The authors have no conflict of interest.

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et al., 2005; Kolar et al., 1994), and experimentation with or abuse of alcohol and drugs (Biederman et al, 2000; King et al., 2003).

1.1. Barriers to Mental Health Treatment for Children of Substance Abusers

Although children who live with a substance-abusing parent may benefit from mental health treatment, the results of a recent study showed the majority of substance-abusing fathers entering treatment did not want their children to receive services, whether in the context of family-involved interventions offered by the treatment program or in another setting (Fals-Stewart et al., 2004b). In addition, adolescents may be aware of the stigma associated with illegal drug use and may not want to be identified as the child of a drug-abusing parent. For example, 15- to 19-year-olds viewed children of alcoholics as more deviant than typical teenagers and similar to “mentally ill” teenagers (Burk and Sher, 1990).

1.2 Secondary Benefits of Parent Treatment for Substance Abuse on Children in their Homes

Due to the barriers to treating many COSAs directly, addressing whether children in these homes experience secondary benefits from their parents’ participation in treatment is necessary. In a seminal evaluation of this type, Moos et al. (1990) found that as compared to boys in remitted alcoholic families and to a control group of nonalcoholic families, 11-to 14-year-old boys in homes in which an alcoholic father relapsed exhibited higher rates of emotional and behavioral problems. More recently, Andreas et al. (2006) demonstrated that children whose fathers entered treatment for alcohol abuse exhibited fewer emotional and behavioral symptoms and were less likely to demonstrate clinically significant levels of emotional and behavioral symptoms at post-treatment, 6-month follow-up, and 12-month follow-up. Kelley and Fals-Stewart (2002) examined whether Learning Sobriety Together (LST)¹, a family-involved intervention for alcoholism and drug abuse that includes Behavioral Couples Therapy (BCT) for parents plus individual counseling but does not address child or parenting concerns, had secondary benefits for children in their homes. Children (aged 6 to 16) whose substance-abusing parents (i.e., those who primarily abused alcohol and those who primarily abused other drugs) showed greater improvement in psychosocial functioning at post-treatment and 6- and 12-month follow-up as compared to children whose parents participated in individual substance abuse treatment or in a control group.

1.3 Children’s Developmental Stage and Symptom Severity as Related to Secondary Benefits from Parent Treatment for Substance Abuse

An issue that has received limited attention is whether parents’ treatment for substance abuse may have equal secondary benefits for children at markedly different developmental stages. In comparison to younger children, adolescents have spent more years in homes often characterized by environmental factors and family processes that exacerbate child risk. For instance, during periods of acute drug use, parents may be erratic and emotionally unavailable for their children (e.g., Miller et al., 1997) and violent towards their partners (e.g., Fals-Stewart et al., 2002).

From a developmental perspective, prolonged exposure to negative family environments may result in aggressive or unmanageable behaviors that serve as antecedents for later, less malleable clinical behavioral disorders (Dishion and Patterson, 2006; Kazdin, 2002). In addition, as children transition to adolescence, dependency on parents decreases (Lieberman et al., 1999) and negative behavior may be maintained by peer group influences, often regardless of parental pressures (see Henggeler et al., 1986). Although we have focused on

¹Learning Sobriety Together was previously referred to as Behavioral Couples Therapy (BCT). Because Behavioral Couples Therapy does not denote the multiple treatment components (e.g., conjoint treatment, individual counseling), the name Learning Sobriety Together has been adopted.

how family processes contribute to externalizing behavior (e.g., aggression, non-compliance), left untreated, children's anxiety may worsen and precede depression or substance use disorder (see Kendall et al., 2004). Because adolescents have lived with drug-abusing parents for a longer period of time and may be expected to exhibit greater severity of symptoms, it is important to explore the moderating effect of developmental stage on the effects of parents' substance abuse treatment. However, any efforts of this type must examine change in children's symptoms from baseline to posttreatment.

In a recent study, Kelley and Fals-Stewart (in press) examined whether children's developmental stage was related to secondary benefits from their parents' participation in LST for alcohol abuse. Specifically, we examined change in children's internalizing and externalizing symptoms during a 17-month assessment period. The association between parents' functioning (i.e., fathers' drug use as determined by percent days abstinent and parents' relationship satisfaction) and children's internalizing and externalizing behavior was stronger for younger children (i.e., 8 to 12 years of age) than adolescents (i.e., 13 to 16 years of age) especially for externalizing behavior. However, Kelley and Fals-Stewart did not examine fathers who were in treatment for drug abuse.

1.4 Drug and Alcohol Abuse

It could be argued that children of parents who take part in LST treatment for drug abuse should also experience secondary improvements. However, as argued by Hogan (1997, 1998), compared to families in which a parent abuses alcohol, families in which one or both parents use illicit drugs, particularly opiates and cocaine, are more likely to be poor and at risk for involvement in the criminal justice system. In addition, opiates and cocaine are illegal drugs, which results in greater secrecy, greater isolation for drug-abusing parents and their families, and less social support, public advocacy, and treatment. Therefore, direct comparisons between alcohol-abusing families and drug-using families may not be appropriate.

1.5 Study Aims

The present study investigated children's stage of development and children's internalizing and externalizing behavior at pretreatment as related to changes in children's internalizing and externalizing behavior associated with Learning Sobriety Together (LST). LST is an intervention for parent substance abuse that includes Behavioral Couples Therapy (BCT) for parents plus individual counseling for parent drug abuse.

Comparing children and adolescents from homes with substance-abusing parents presents unique challenges. In particular, parents and families with younger children are likely to be different from families of older children in ways that may be difficult to quantify. Although assessing families of children and adolescents along theoretically and empirically important dimensions and analytically adjusting for the resulting differences in comparisons of children or families on variables of interest is a common approach, in any quasi-experimental study that relies on statistical control, it is not possible to know if all key variables have been assessed and controlled for in the models. Because the effects of the family on the adjustment of adolescents versus children are theoretically central to understanding how substance abuse treatment may influence children's functioning, controlling for differences in family environment is a particularly critical issue in this line of inquiry.

Therefore, the present investigation examined whether or not internalizing and externalizing behavior of children living in these homes changed during and after their parents participated in LST and if the degree of change was significantly different for children versus adolescents. By including measures of children's adjustment at pretreatment we were able to include measures of children's initial emotional and behavioral symptoms in the models. We also

examined the relationships between parents' functioning during and after participation in LST, in terms of fathers' substance use and parents' dyadic adjustment, and children's internalizing and externalizing behavior. We tested the hypothesis that these relationships would be stronger for children versus adolescents. To control for family-level effects, we used a unique subject pool, consisting of biological parents who had both custodial children and adolescents.

2. Method

2.1. Participants

Participants were heterosexual couples (N = 169) in which married or cohabiting men were entering an abstinence-oriented outpatient treatment for drug misuse. To meet inclusion criteria for the study, men had: (a) to be between 20 and 60 years old; (b) to meet abuse or dependence criteria according to the Diagnostic and Statistical Manual of Mental Disorders (4th ed., DSM-IV; American Psychiatric Association, 1994) for at least one psychoactive substance use disorder with the primary drug of abuse not being alcohol²; (c) to be living with their spouse consecutively for at least 2 years; (d) to be medically approved to engage in abstinence-oriented outpatient treatment; (e) to agree not to use alcohol or illicit drugs for the duration of the LST; and (f) to refrain from seeking additional substance abuse treatment except for self-help meetings for the duration of treatment unless recommended by his primary counselor. Couples were excluded if women met DSM-IV criteria for a substance use disorder in the last 6 months or if either partner met DSM-IV criteria for an organic mental disorder, schizophrenia, delusional (paranoid) disorder, or other psychotic disorders.

In addition, the couples had to have at least one child between the ages of 8 and 12 years (i.e., 'children') and at least one child between 13 and 16 years (i.e., 'adolescent') living in their households (referred to as the 'developmental stage' variable hereafter; children were coded as '0' and adolescents were coded as '1'). All children had to be the biological offspring of both parents. For couples who had more than one child in either age range, a target child in either/both age groups was selected randomly for inclusion. Background characteristics of the sample are presented in Table 1.

2.2. Measures

2.2.1. Child Behavior Checklist—The Internalizing (e.g., cries a lot, worries) and Externalizing (e.g., argues a lot, disobedience at home) broadband scores from the Child Behavior Checklist (CBCL; Achenbach, 1991a) were used to determine parents' perceptions of their children's problem behavior. The CBCL has high internal consistency, test-retest reliability, and concurrent validity with other measures of child problem behaviors (Dutra et al., 2004). *T* scores, which correct for child age and gender, were used in the analyses reported herein.

2.2.2. Teacher Report Form—The Teacher Report Form (TRF; Achenbach, 1991b) is a widely used instrument that assesses the child's internalizing (fears school, anxious) and externalizing (e.g., fights, disruptive) behavior in the school setting. The children's primary teacher (or homeroom teacher for older children) completed the TRF at the same intervals as the parents; however, because school was not in session in the summer months, teacher data for the summer months were missing. Missing teacher data may have occurred at any data collection point, and were not replaced. Because children changed teachers during the course of the study, teacher ratings represent more than one teacher's ratings³.

²A decision tree algorithm was used to determine men's primary drug of abuse, with decisions based on unweighted combinations of patient self-report data, diagnostic information, prior treatment information, and frequency of use for each drug over the interval periods and 12 months prior to the evaluation. This algorithm has been described previously (Fals-Stewart, 1996).

2.2.3. The Timeline Followback Interview—The Timeline Followback Interview (TLFB; Sobell and Sobell, 1996) is an interview procedure that uses a calendar and other memory aids to assess daily drug and alcohol use over a specified period of time. The substance use index derived from the TLFB was Percent Days Abstinent (PDA), which was operationally defined as the percentage of days in the measurement interval in which fathers reported no substance use. For the year prior to treatment, after treatment completion, and at 90-day intervals thereafter for 12 months, men provided information about their drug use reporting. Women were also asked about their partner's substance use at these same intervals. Correlations between men and women's percentage days abstinent prior to treatment was .80; posttreatment correlations ranged from .76 to .89 (all $ps < .001$). Although men reported a few more days of abstinence than did their partners, this difference was not statistically significant ($p > .05$).

2.2.4. Dyadic Adjustment Scale—To assess relationship satisfaction, mothers and fathers independently completed the Dyadic Adjustment Scale (DAS; Spanier, 1976), a 32-item widely used research and clinical measure that assesses relationship satisfaction (e.g., handling finances, demonstrations of affection). Scores range from 0 to 151; higher scores indicate better levels of adjustment. Couples' DAS scores were highly correlated, $r = .70$, $p < .001$; couples' scores were averaged at each assessment and were used in the analyses that follow.

2.3. Procedure

Men and their partners who entered treatment in a clinic in western New York were asked to participate in an interview to determine eligibility for LST. During a 9-year period, 1,041 male patients met inclusion criteria for participation in LST; of these, 801 patients and their partners participated. Of these, 213 couples had at least one adolescent and child living in the home; 169 agreed to complete CBCLs regarding these children and allowed the children's teachers to complete TRFs. Compared to other couples entering the treatment program, the partners of couples with adolescents and children were significantly older ($Ms = 41.7$ and 35.1 for men, respectively; $Ms = 40.6$ and 34.1 for women, respectively) and the couples had longer relationships (13.6 and 8.9 years, respectively, $ps < .05$). All other comparisons on sociodemographic characteristics listed in Table 1 were not significant.

Each partner was interviewed separately with substance use modules of the Structured Clinical Interview for *DSM-IV* (SCID; First, Spitzer, Gibbon, & Williams, 1995). The SCID was administered by one of two master's-level interviewers (both of whom were trained by the second author, who has extensive experience administering the SCID). Interrater reliability was assessed using a paired-rater design. Videotaped interviews of 20 patients entering a substance abuse treatment center were independently observed by both primary interviewers and by the second author. Agreement among the evaluators was excellent, with kappas ranging from .75 to 1.0. Additionally, audiotapes of 35 SCID interviews were randomly selected and re-coded by the second author; perfect agreement on substance use diagnoses was obtained.

2.3.1. LST treatment overview—Within the first 4 weeks after admission (i.e., the *orientation phase*), men provided background and medical information, and began weekly counseling sessions with their individual counselor. During the following 12-week LST *primary treatment phase*, men continued attending one weekly individual counseling session and couples attended one weekly BCT session. For the final 4 weeks, or the *discharge phase*,

³Because the teachers' evaluations were obtained over a 15-month period, children's homeroom teachers changed over time, most often because children changed. To address this problem, the analyses were also run as cross-classified multilevel models (Goldstein, 2003) because children were not fully nested within a single teacher. The pattern of findings was the same as those reported here; these results are available from the authors upon request.

men attended one weekly 60-minute session with their individual counselor. Treatment took approximately 5 months.

The 12 weekly BCT sessions were designed (a) to help men remain abstinent from psychoactive drugs and alcohol by reviewing and reinforcing compliance with a verbal contract developed by the partners during the first two conjoint sessions; (b) to teach successful communication abilities, such as active listening and expressing feelings directly; and (c) to increase positive interactions between partners by encouraging them to acknowledge and respond to enjoyable behaviors and engage in shared leisure activities. All sessions were conformed to a detailed therapy manual (Fals-Stewart et al., 2004c); however, counselors remained flexible enough to address clinical issues even if they were not part of the manualized material.

The individual counseling sessions for drug abuse were conducted with the underlying philosophy that substance abuse is a complex biopsychosocial disease that is often chronic and debilitating. It is important to note that neither the couples-based nor individual sessions addressed parenting skills, parent-child interactions, or child behavior.

2.3.2 Treatment Providers—Therapists who provided the LST and IDC interventions were typical of counselors in community-based substance abuse treatment programs (e.g., Christner, 1993), all of the providers (N = 12) were bachelor's or master's-level clinicians and were state-certified substance abuse counselors. All had participated in pre-study didactic and experiential training, conducted by the second author. During the clinical training period, all training sessions were videotaped for supervisory purposes and to ascertain treatment fidelity (e.g., engaging prescribed tasks, not engaging in proscribed tasks, such as topics from another intervention in the study). During the course of the treatment phase of the study, counselors received weekly supervision from a master's-level therapist who had extensive supervisory and counseling experience.

2.3.3. Baseline and posttreatment follow-up data collection—Couples and children's teachers were contacted and interviewed by a research assistant upon entering the study, at discharge from treatment, and every 3 months thereafter for 1 year. Both partners' were questioned about men's drug use and both partners completed the DAS at each assessment interview. In addition, both mothers and fathers completed the CBCL for the child and adolescent independently at each assessment. Teachers were contacted and completed the measures of children's behavior at school on the same interview schedule as the parents.

2.4. Statistical analyses

2.4.1. General analytic framework—A particular concern in this investigation was the nature of the multiple levels of nested data. In these data, children's internalizing and externalizing scores were reported by parents repeatedly over time. Thus, children's measurements over time were nested within children. Additionally, child pairs were nested with rater (i.e., mother, father, teacher). Therefore, we applied multilevel regression (MLR; Hox, 2002) which appropriately accounts for data sets with hierarchical dependencies. In addition, MLR allows for estimation of an average growth trajectory for individuals, assessment of the extent to which individuals may vary in terms of various aspects of change, and identification of major correlates of change, which may be fixed (e.g., child versus adolescent child) or time-varying (e.g., fathers' frequency of drug use over time, changes in couple dyadic adjustment).

The multilevel regression models were also conducted with CBCL raw scores. CBCL raw scores were used in the second set of analyses, because they do not correct for child gender. However, because COSA research has not shown child adjustment to differ as a function of child gender (e.g., Luthar et al., 1998; Stanger et al., 1999), nor has child gender moderated

the effects of parenting and interparental conflict, we did not have any explicit hypotheses about child gender main effects or moderation. Consistent with previous research (e.g., Kelley and Fals-Stewart, 2002; Puttler et al., 1998), the models predicting CBCL raw scores revealed no significant main effect or interactions for child gender. Therefore, analogous to previous research, we have reported the results of the analyses that use internalizing and externalizing *T* scores.⁴

2.4.2. Procedure for handling missing information provided by couples—Of the 169 couples, 44 (26%) had at least one missing observation during one or more of the assessments. In addition, 27 couples (16%) dropped out of the study and stopped providing information after this point. Missing data occurred for several reasons, including (a) one or both partners in a couple missed one or more scheduled assessment ($n = 34$, 20%), (b) partners refused to complete the measures due to poor outcomes (e.g., relapse, couple separated) ($n = 16$, 9%), or (c) couples provided only partial data at a specific assessment ($n = 18$, 11%). To address missing information from couples, we followed the data imputation procedure for multilevel models described in Goldstein (2003). The two-step procedure is akin to multiple imputation methods (Schafer, 1997), but creates a single complete data set and accounts for the uncertainty in the true values of the missing data by including a correction factor when the fixed and random parameters are estimated.

3. Results

3.1. Fathers' Drug Use and Parents' Relationship Adjustment

Paternal PDA and couple DAS scores are located in Table 2. Pairwise comparisons were conducted between pretreatment PDA and DAS scores and subsequent scores (i.e., posttreatment, 3-, 6-, 9-, and 12-month follow-up) to determine whether or not there were improvements (i.e., for both PDA and DAS, higher scores indicate improvement) in adjustment compared to baseline functioning. In comparison to pretreatment levels, fathers' PDA and couples' DAS scores were significantly higher at all subsequent assessment periods. Despite the gradual erosion of the positive effects of treatment during the posttreatment period, fathers and parents manifested higher levels of functioning compared to baseline.

We also examined changes in functioning over time. Using a standard Wald test, the coefficient for the linear effect of time in the multilevel model examining fathers' PDA, $B = 4.94$ ($SE = 1.94$), was significant, $z = 2.54$, $p < .01$. For couple DAS scores, the coefficient for time, $B = 2.49$ ($SE = 1.11$) was also significant in the multilevel regression model, $z = 2.24$, $p < .01$. As shown in Table 2, both PDA and couple DAS scores showed significant increases (i.e., improvement) over time.

3.2. Relationship Between Parental Adjustment and Children's Internalizing and Externalizing Behavior

Parents' and teachers' ratings of children's Internalizing and Externalizing *T* scores from the CBCL and the TRF, respectively, are shown in Table 3⁵. The multilevel regression parameter estimates from the multilevel regression models predicting Internalizing and Externalizing scores from the CBCL (for mothers and fathers) and the TRF (from teachers) are reported in Table 4.

3.2.1. Mothers' ratings—Mothers' ratings of children's internalizing and externalizing behaviors (i.e., CBCL internalizing and externalizing *T* scores) decreased over time (i.e., the

⁴Results of the models predicting CBCL raw scores are available upon request.

⁵The CBCL correlations were small to modest across rater and time. Results of the correlational analyses are available upon request.

Time parameter was significant). However, it should be noted that some gradual erosion of the positive benefits occurred after posttreatment (see Table 3). Mothers' reported that adolescents exhibited significantly more internalizing and externalizing behaviors than children (i.e., the Developmental Stage parameter was significant). In addition, the Developmental Stage X PDA and Developmental Stage X DAS parameter estimates from the multilevel regressions predicting mothers' reports of children's internalizing and externalizing behavior were significant. In both instances, the significant interaction revealed that reductions in the CBCL Internalizing and Externalizing *T* scores were greater for children than for adolescents as PDA and DAS increased. This differential effect of PDA and DAS on CBCL Internalizing and Externalizing *T* scores for children versus adolescents did not vary over time (i.e., the parameters for the Developmental Stage X PDA X Time and the Developmental Stage X DAS X Time were not significant).

Figure 1 depicts the Developmental Stage X PDA and Developmental Stage X DAS interactions predicting the Internalizing and Externalizing *T* scores. As shown in the figure, these interactions indicate a stronger relationship between PDA and CBCL scores and DAS and CBCL for children than for adolescents. In addition to graphing the Developmental Stage X PDA and Developmental Stage X DAS interactions, in order to understand the nature of these interactions clearly, we conducted simple effects analyses for PDA and DAS separately for children versus adolescents. For Internalizing *T* scores, using data from adolescents only, the effects for PDA ($B = -0.06$, $SE = .04$, ns) and DAS ($B = -0.03$, $SE = .03$, ns) were not significant; however, using data from the children, effects for PDA ($B = -0.12$, $SE = .06$, $p < .05$) and DAS ($B = -0.09$, $SE = .04$, $p < .05$) were both significant. Similarly, for Externalizing *T* scores, using data from adolescents only, the effects for PDA ($B = -0.07$, $SE = .05$, ns) and DAS ($B = -0.06$, $SE = .04$, ns) were not significant. For children, effects for PDA ($B = -0.13$, $SE = .05$, $p < .01$) and DAS ($B = -0.11$, $SE = .04$, $p < .01$) were both significant.

3.2.2. Fathers' ratings—A somewhat different pattern of results emerged for fathers' ratings. Using fathers' ratings of youth externalizing behavior (i.e., CBCL Externalizing *T* scores) as response variables in the models, with the exception of Time (which was not significant in the model), a similar pattern of results emerged as when we used mothers' CBCL Externalizing *T* scores as the response variable. More specifically, Developmental Stage, DAS, PDA, Developmental Stage X PDA, and Developmental Stage X DAS were all significant in these models, and in the same direction, as we found when we modeled mothers' reports of youth externalizing behavior (i.e., CBCL Externalizing *T* scores). Using data from adolescents only, the simple effects for PDA ($B = -0.08$, $SE = .06$, ns) and DAS ($B = -0.07$, $SE = .05$, ns) were not significant. However, for children, simple effects for PDA ($B = -0.12$, $SE = .05$, $p < .01$) and DAS ($B = -0.12$, $SE = .04$, $p < .01$) were both significant.

For CBCL Internalizing *T* scores, fathers' rated adolescents as experiencing more internalizing behaviors compared to the children (i.e., the Developmental Stage parameter was significant). However, for fathers' ratings, main effects for Time, PDA, DAS, and the interactions of these variables with Developmental Stage were not significant. These results are markedly different than those of the analytic models using mothers' CBCL Internalizing *T* scores where Time, PDA, DAS, Developmental Stage, Developmental Stage X PDA and Developmental Stage X DAS were all significant.

3.2.3. Teachers' ratings—Using teachers' ratings of youth externalizing behavior (i.e., CBCL Externalizing *T* scores) as response variables in the models, with the exception of Time (which was not significant in the model), a similar pattern of results emerged as when we used mothers' CBCL Externalizing *T* scores as the response variable. That is, Developmental Stage, DAS, PDA, Developmental Stage X PDA, and Developmental Stage X DAS were all significant in these models, and in the same direction, as when we modeled mothers' and

fathers' reports of children's externalizing behavior (i.e., CBCL Externalizing *T* scores). Simple effects analyses revealed that, using data from adolescents only, the effects for PDA ($B = -0.07$, $SE = .07$, ns) and DAS ($B = -.07$, $SE = .04$, ns) were not significant. For preadolescents, effects for PDA ($B = -0.11$, $SE = .04$, $p < .01$) and DAS ($B = -0.10$, $SE = .05$, $p < .01$) were both significant.

Teachers' rated adolescents as experiencing more internalizing behaviors compared to children (i.e., the Developmental Stage parameter was significant). For teachers' ratings of internalizing ratings, main effects for Time, PDA, DAS, and the interactions of these variables with Developmental Stage were not significant.

4. Discussion

The present study examined whether children and adolescent siblings experienced comparable secondary benefits on their internalizing and externalizing behaviors from their parents' participation in Learning Sobriety Together (LST) for fathers' drug use. LST is a family-involved intervention for substance abuse that includes Behavioral Couples Therapy (BCT) for parents plus individual counseling.

It is important to note that throughout the course of the study, the average child did not exhibit clinical levels of symptoms. Despite exhibiting non-clinical levels of externalizing symptoms at pretreatment, children showed improvement in their externalizing behavior from pretreatment to follow-up. Importantly, the behavior of children appeared tied to the benefits of LST treatment that reduced paternal drug use and improved the quality of couples' dyadic relationship.

In contrast to their younger siblings, the externalizing behavior of the typical adolescent was at the clinical level at pretreatment. Throughout the course of the study parents and teachers continued to report more externalizing symptoms among adolescent siblings. However, adolescent behavior did not appear related to the patterns of improvement in fathers' drug use and increased dyadic satisfaction between baseline and follow-up.

Twitchell et al. (2000) maintained that adolescents are at a stage developmentally that coincides with greater independence, more time in out-of-home contexts, less behavioral inhibition, and greater negative affect. In the case of adolescents residing with drug-using fathers, it is possible that they have experienced more years of erratic or unresponsive parenting behavior on the part of their drug-abusing fathers, and perhaps, more disappointment from parents in general. The developmental tasks during adolescence, combined with more years of living in homes often characterized by many family problems, may contribute to less involvement and less relationship to the family environment. In contrast, children may be more sensitive to and more motivated to respond to shifts in parent behavior and couples' relationship satisfaction.

In addition, across contexts (home and school) and raters (mothers, fathers, teachers) adults' reported a pattern that indicated that the externalizing behavior of children was more closely related to fathers' drug use and couples' dyadic functioning. The finding that teachers' reported a similar pattern as parents is especially notable and suggests that changes in the family context may have important implications for out-of-home externalizing behavior.

In contrast to the results for youth externalizing behavior, only mothers reported relationships between children's internalizing symptoms and fathers' drug use or dyadic functioning. In addition, only mothers' reported improvements in youth internalizing behavior over time. There may be a number of possible reasons for this discrepancy. It is possible that boys and girls tend to be more emotionally dependent on their mothers than their fathers (see Geuzaine et al., 2000). This difference may provide more opportunities for mothers to be aware of their

children's changing emotions. In addition, previous research has shown that adolescents report their relationships to their alcohol-dependent fathers as less secure than peers of non-alcohol-dependent fathers (Cavell et al., 1993). It is possible that unresponsive parenting by the substance-abusing parent may render children less trusting of and less willing to share their feelings with the substance-abusing parent. In addition, the substance-abusing parent may be less cognizant of their children's emotional states.

It is also important to emphasize that, in contrast to mothers, teachers did not report improvements in children's internalizing or externalizing behavior over time. The difference between mothers' and teachers' observations of children's internalizing behavior may reflect the nature of behaviors that are acted out (i.e., externalizing) as opposed to behaviors that are directed toward one's self (i.e., internalizing).

These results have important implications for mental health providers. Globally, these results suggest that greater exposure to home environments in which a parent abuses illegal drugs appears associated with less malleable, or more crystallized, externalizing behaviors. These results support previous research that suggests long-term exposure to risk factors such as paternal alcoholism (Moss et al., 1997), maternal drug use (Luther et al., 1998), and poverty (e.g., Hanson et al., 1997; Pagani et al., 1999) have more detrimental effects on children's behavior than short-term exposure.

As argued by Pianta (2001), for many at-risk children, the difficulty these children experience may be bound up in the struggle that their parents and families have in meeting their children's needs. Our results support this suggestion. That is, the behavior of child siblings appeared to be related to parental drug use and dyadic satisfaction. In addition, both for parents, children, and adolescents, there was some erosion of the positive effects of treatment (i.e., reduction in PDA and DAS) during the posttreatment period. Thus, patterns of paternal drug use and couple functioning seemed to be in combination with the gradual increase in youth symptoms. The decline in benefits for parents and children during the posttreatment period is common for LST and other psychosocial treatments (e.g., Kelley & Fals-Stewart, 2002).

It does appear, however, that a treatment approach that involves both couples-based treatment and individual counseling appears to be a viable preventative intervention for children living with a drug-abusing father and, in fact, may be a way to benefit children without identifying or treating COSAs directly. In contrast to younger children, even in families in which fathers ceased drug use, adolescents who exhibit behavioral difficulties may need some form of direct intervention to address behavioral problems.

This study has several important limitations. Most notably, fathers met criteria for drug abuse, but mothers did not. Although the family type examined in the present study appears to be the most common way for a child to experience parental drug abuse (U.S. Department of Health and Human Services, 2001), these findings may not generalize to families in which the mothers or both parents are substance-abusing. Also, substance-abusing parents who retain custody of their minor children appear to experience more problems than those whose children live outside the home (e.g., Meier et al., 2004; Pilowsky et al., 2001). In addition, fathers participated in an outpatient treatment; therefore, these findings may not reflect those who choose other forms of treatment.

As might be expected some couples did not complete all of the assessments. Although we have indicated the reason couples mentioned for missing an assessment, couples may have indicated a scheduling conflict, for instance, when, in fact, they were doing poorly. Also, counselors followed a detailed treatment manual; however, treatment fidelity measures were not collected during the course of treatment. In addition, we did not examine whether simultaneous or continued participation of fathers in self-help groups such as Narcotics Anonymous was

associated with child, father, and family outcomes. Clearly, future explorations should concentrate on the posttreatment period and attempt to isolate the benefits of family-involvement treatment from participation in self-help groups or other types of aftercare.

Although sampling families with children and adolescent children provided some level of control over family-level variables, children are often treated differently even within the same home. However, we did not examine parent-child relationships. The quality of parenting, and in particular, support from the non-substance-abusing parent may be paramount for children in these homes. Also, we focused on how parents' influence children; however, children who are harder to manage may elicit more negative responses from parents (e.g., Arnold and O'Leary, 1995). There are also many other domains of parent and family functioning, such as biological indices, that may impact the development of children in these homes, and other aspects of children's development (e.g., school functioning, peer relationships) and functioning (e.g., how children cope with their parents' substance abuse) that require examination. In addition, future research should obtain corroborating information on child functioning from children themselves. Information on internalizing symptoms, that may be especially difficult to observe, may be particularly important to gather from children.

Despite the limitations of the study, few longitudinal studies have followed older children whose parents enter treatment for substance abuse, included data from multiple informants, or examined children from both preadolescence and adolescence. In addition, by comparing children and adolescent siblings within these homes, we controlled for effects of LST on parent and family functioning (e.g., the degree to which drug use declined, changes in dyadic functioning), as well as between family characteristics (e.g., parent age and education, family income, and so forth) that may affect children outcomes. We believe that this methodology provided a fairly robust test of the secondary effects of LST for children in these homes.

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Figure 1. Associations between CBCL internalizing T scores and percent days abstinent and couple DAS scores for preadolescents and adolescents.

Table 1
Sociodemographic Characteristics for Parents and Children

Characteristic		M	SD	%
Parents	Fathers' age	41.7	5.6	
	Mothers' age	40.6	5.2	
	Fathers' education (in years)	12.9	1.5	
	Mothers' education (in years)	13.3	3.9	
	Years married or cohabiting	13.6	5.2	
	Weekly family income (in U.S. dollars)	489.5	221.8	
	Male/female partners' racial/ethnic			
	Composition			
	Caucasian			56%/60%
	African-American			35%/32%
	Hispanic			7%/6%
	Native American			1%/1%
	'Other'			1%/1%
	Fathers' years problematic substance use	15.2	7.9	
Number (%) of fathers who met dependence on:	Cocaine			85(50%)
	Opiates			35 (21%)
	Amphetamines			25 (15%)
	Cannabis			14 (8%)
	Sedative-Hypnotics			3 (2%)
	'Other'			7 (4%)
Adolescents	Age	14.3	0.7	
	Grade	9.5	1.1	
	Boys			52%
Children	Age	10.0	1.1	
	Grade	4.9	1.5	
	Boys			51%

Table 2

Observed Substance Use and Relationship Adjustment Outcomes

Measure	Pretreatment		End of Treatment		3-month		6-month		9-month		12-month	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
PDA	35.9	22.4	88.6	20.2	84.1	20.5	79.3	25.6	74.7	25.8	69.6	28.5
Couple DAS	76.3	19.6	102.9	17.0	98.5	14.0	94.6	15.2	88.1	21.7	84.2	26.9

Note. PDA = Percent Days Abstinent; Couple DAS = Mean Dyadic Adjustment Scale scores of male and female partners.

Table 3
Observed Mothers', Fathers', and Teachers' Internalizing and Externalizing T Scores of Children and Adolescent

Rater and dev.stage	Pretreatment		End of Treatment		3-month		6-month		9-month		12-month	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Internalizing												
Mother												
Children	62.13	8.01	52.13	8.69	54.41	10.92	55.47	8.79	58.27	9.69	55.21	8.68
Adolescent	65.83	8.18	60.44	11.43	59.62	9.51	61.74	10.65	62.92	9.81	62.35	10.77
Father												
Children	57.91	10.04	50.73	10.24	53.77	9.97	54.04	8.79	54.89	11.61	55.96	11.61
Adolescent	61.53	9.61	55.99	9.63	57.96	10.47	59.21	10.51	61.27	9.49	62.34	9.00
Teacher												
Children	54.41	9.40	51.27	10.21	52.84	9.79	54.93	9.86	54.16	10.72	55.69	8.93
Adolescent	59.49	10.21	54.86	9.18	56.77	9.31	57.61	11.38	57.83	9.64	58.57	11.26
Externalizing												
Mother												
Children	64.31	10.29	56.08	9.61	55.92	10.61	56.91	8.77	57.86	9.75	58.36	11.40
Adolescent	66.28	11.07	58.65	10.15	59.81	9.26	60.73	9.31	61.25	11.27	63.61	10.63
Father												
Children	59.43	11.61	55.26	10.37	53.05	11.21	55.39	9.49	55.81	11.61	55.86	11.83
Adolescent	63.64	10.80	56.83	10.66	58.19	8.66	60.74	10.78	60.91	9.90	60.32	12.74
Teacher												
Children	58.86	10.67	54.91	9.24	55.26	9.79	56.05	9.79	57.92	11.31	56.27	12.71
Adolescent	63.27	9.31	60.27	10.54	60.37	9.62	60.83	10.43	61.80	10.78	62.00	10.39

Table 4
Multilevel Regression Parameter Estimates Predicting Internalizing and Externalizing Subscale Scores

Rater and Effect	Internalizing Subscale		Externalizing Subscale	
	Parameter	(SE)	Parameter	(SE)
Mother				
Constant	50.37**	(8.51)	52.08**	(9.27)
Time	0.89*	(0.41)	-1.01*	(0.49)
Developmental Stage	5.09*	(2.51)	3.06*	(1.51)
Pretreatment Score	0.28**	(0.09)	(0.18)*	(0.09)
DAS	-0.07*	(0.03)	-0.09*	(0.05)
PDA	-0.10*	(0.05)	-0.11*	(0.05)
Developmental Stage X Time	0.11	(0.32)	0.10	(0.35)
Pretreatment Score X Time	.01	(.05)	.05	.05
Developmental Stage X PDA	0.10*	(0.05)	0.10*	(0.05)
Pretreatment Score X PDA	.01	(0.07)	.03	(0.06)
Developmental Stage X DAS	0.06*	(0.03)	0.06*	(0.03)
Pretreatment Score X DAS	.01	(0.05)	-.01	(0.04)
Developmental Stage X PDA X Time	-0.02	(0.02)	-0.02	(0.02)
Pretreatment Score X PDA X Time	-0.02	(0.03)	-0.03	(0.05)
Developmental Stage X DAS X Time	0.01	(0.01)	-0.03	(0.02)
Pretreatment Score X DAS X Time	0.01	(0.03)	0.02	(0.03)
Father				
Constant	50.40**	(11.61)	52.91**	(10.21)
Time	-0.61	(0.33)	-0.74	(0.39)
Developmental Stage	2.25*	(1.10)	2.86*	(1.40)
Pretreatment Score	0.14*	0.07	0.15**	(0.07)
DAS	-0.06	(0.06)	-0.8*	(0.04)
PDA	-0.06	(0.07)	-0.13*	(0.07)
Developmental Stage X Time	0.08	(0.12)	0.11	(0.27)
Pretreatment Score X Time	0.01	(0.07)	0.04	0.03
Developmental Stage X PDA	0.08	(0.07)	0.09*	(0.04)
Pretreatment Score X PDA	.02	(0.06)	0.02	(0.03)
Developmental Stage X DAS	0.04	(0.05)	0.03**	(0.01)
Pretreatment Score X DAS	0.00	(0.03)	-0.04	(0.03)
Developmental Stage X PDA X Time	-0.02	(0.02)	-0.01	(0.03)
Pretreatment Score X PDA X Time	0.02	(0.02)	-0.01	(0.01)
Developmental Stage X DAS X Time	-0.02	(0.02)	-0.02	(0.03)
Pretreatment Score X DAS X Time	0.02	(0.02)	0.01	0.02
Teacher				
Constant	51.44**	(8.71)	52.38**	(7.04)
Time	-0.40	(0.59)	-1.01	(0.57)
Developmental Stage	1.72*	(0.85)	2.49*	(1.25)
Pretreatment Score	0.12*	(0.06)	0.18*	(0.09)
DAS	-0.04	(0.06)	-0.07*	(0.03)
PDA	-0.08	(0.06)	-0.11*	(0.05)
Developmental Stage X Time	0.12	(0.11)	0.14	(0.21)
Pretreatment Score X Time	0.05	(0.05)	0.03	(0.05)
Developmental Stage X PDA	0.01	(0.07)	0.10*	(0.04)
Pretreatment Score X PDA	0.02	(0.05)	.03	(0.04)
Developmental Stage X DAS	0.01	(0.02)	0.07*	(0.04)
Pretreatment Score X DAS	-0.01	(0.06)	-0.03	(0.04)
Developmental Stage X PDA X Time	-0.01	(0.02)	0.02	(0.02)
Pretreatment Score X PDA X Time	0.03	(0.04)	0.01	(0.05)
Developmental Stage X DAS X Time	0.01	(0.02)	0.02	(0.03)
Pretreatment Score X DAS X Time	0.01	(0.02)	0.01	(0.03)

* p<.05,

** p<.01 Note. Developmental Stage = children (scored '0') and adolescent (scored '1'); PDA = Percent Days Abstinent; Couple DAS = Mean Dyadic Adjustment Scale scores of male and female partners.