

## Predictors of internalizing and externalizing problems among children of cocaine and opiate dependent parents

Catherine Stanger <sup>a,\*</sup>, Jody Kamon <sup>a</sup>, Levent Dumenci <sup>a</sup>, Stephen T. Higgins <sup>a</sup>,  
Warren K. Bickel <sup>a</sup>, John Grabowski <sup>b</sup>, Leslie Amass <sup>c</sup>

<sup>a</sup> Department of Psychiatry, University of Vermont, 1 South Prospect Street, Burlington, VT 05401-3456, USA

<sup>b</sup> Department of Psychiatry, Houston Health Science Center, University of Texas, 1300 Moursund Ave, Suite 115, Houston, TX 77030, USA

<sup>c</sup> Friends Research Institute, Inc., 11075 Santa Monica Blvd, Suite 225, Los Angeles, CA 90025, USA

Received 14 March 2001; received in revised form 13 November 2001; accepted 15 November 2001

### Abstract

We tested associations in structural models among parent individual problems (severity of drug problems, medical problems, psychiatric symptoms), family problems, and children's internalizing and externalizing problems. Results were compared for cocaine versus opiate dependent parents, mothers versus fathers, boys versus girls, and older versus younger children. Cocaine and opiate dependent parents in treatment ( $N=211$ ) were interviewed about their substance use, psychiatric symptoms, and interpersonal problems and completed a measure of family problems. Parents also rated children's internalizing and externalizing problems. In structural models controlling for the significant correlations between parent and family problems and between children's internalizing and externalizing problems, family problems but not individual parent problems predicted children's internalizing and externalizing symptoms. Models were similar across all groups compared with the exception of parent gender, with significant relations between parent and family problems for mothers but not for fathers. In addition, older girls were more deviant relative to their same-age and gender peers than the younger girls and boys. These results suggest that the personal problems of drug dependent mothers may influence children's problems indirectly by increasing family problems. For drug dependent fathers, family problems were an independent predictor of children's problems. © 2002 Elsevier Science Ireland Ltd. All rights reserved.

*Keywords:* Children of drug abusers; Family problems; Gender differences

### 1. Introduction

Approximately 20% of adults in treatment for drug dependence live with and parent children ages 2–18 years (Stanger et al., 1999). Several studies conducted in the US have shown that children living with parents in treatment for drug dependence have higher rates of internalizing and externalizing problems than demographically matched children in the general population (Nunes et al., 1998; Stanger et al., 1999; Wilens et al., 1995). In addition, children living with drug dependent parents are more likely to experience socioeconomic disadvantages and to report higher stress levels and

more social isolation than neighborhood non-abusing comparison groups (Kumpfer and DeMarsh, 1986).

However, because, not all children living with drug dependent parents experience behavioral/emotional problems, it is important to understand factors within families with a drug dependent parent that increase or decrease the risk to children. Research with general population and at risk samples suggests that family environment is a strong predictor of conduct problems (Gorman-Smith et al., 1996) and adolescent substance use (Johnson and Pandina, 1991; Wills et al., 1992). Family environment includes family communication and problem solving, affective responsiveness and involvement, and attitudes toward discipline, and it is distinct from, but correlated with parenting practices (Gorman-Smith et al., 1996). Family environment has been found to mediate relations between parental sub-

\* Corresponding author. Tel.: +1-802-656-2637; fax: +1-802-656-2602.

E-mail address: [cstanger@zoo.uvm.edu](mailto:cstanger@zoo.uvm.edu) (C. Stanger).

stance use and children's outcomes in high-risk samples of youth. Aspects of family environment that mediate the effects of parental substance use have included the lack of a positive family context (Tec, 1974), low parental involvement (Capaldi and Patterson, 1991), and permissive parental attitudes toward drug use (McDermott, 1984).

Drug dependent parents may be at particular risk of experiencing family problems. For example, Colten (1982) reported that heroin dependent mothers expressed more doubts about their adequacy as mothers and their ability to control their children than SES matched control mothers. Similarly, Kumpfer and DeMarsh (1986) found that drug-abusing families reported poorer family management techniques than control families. Such family problems are important predictors of outcomes for children in substance dependent families (Dobkin et al., 1997). However, much of this research concerns parents and/or children of a single gender (e.g. sons of substance abusing fathers, children of substance dependent mothers) or fails to test both parent and child gender differences.

Parental psychopathology may also be an important predictor of children's problems in families with a drug dependent parent. For example, Luthar et al. (1998) reported that severity of maternal psychiatric disturbance predicted poor outcomes among adolescent children of treated cocaine and opiate dependent parents. Similarly, Dierker et al. (1999) suggested that children of substance dependent parents are at risk for conduct disorder only when at least one parent is substance dependent and the other is either substance dependent or has an anxiety or mood disorder.

The present study tested relations among parent individual problems (e.g. severity of drug problems, medical problems, psychiatric symptoms), family and interpersonal conflict, and children's internalizing and externalizing problems. Cocaine and opiate dependence were selected to represent the most serious forms of drug abuse, with high likelihood of having a negative impact on children living in the home (Hogan, 1998). This study is among the first to assess relations among severity of individual problems of drug dependent parents, severity of family and interpersonal conflict, and children's internalizing and externalizing problems. It is also among the first to include young school-aged through adolescent children, and to test differences in relations among these constructs associated with parent gender, parent primary drug of dependence, child gender and child age group. We hypothesized that, both parent and family characteristics would be related to child problems among children of treated drug abusers. We further hypothesized that family problems would mediate relations between parent individual problems and child problems.

## 2. Method

### 2.1. Participants

From November 1992 to March 2000, patients receiving treatment for cocaine or opiate dependence were screened to determine their eligibility for the study. Inclusion criteria for parents included: (a) adult 18 years or older; (b) in treatment for drug dependence; (c) meets DSM criteria for cocaine or opiate dependence; and (d) living with and parenting at least one child between the ages of 2 and 18 years. DSM-III-R diagnoses of cocaine or opiate dependence were made by trained intake workers under the supervision of doctoral-level psychologists. Although, there may have been cohort changes in overall drug use for the population over the course of this study, all parents met the same entrance criteria regardless of their year of entry. Thus, cohort differences in rates of drug use would not affect the results. All participating clinics were in North America and included the Substance Abuse Treatment Center at the University of Vermont in Burlington, the Substance Abuse Research Center at the University of Texas in Houston, the Addiction Research Foundation, Queen Dufferin Methadone Program and Parkdale Satellite Program, Breaking the Cycle, and the Family Reconnection Center in Toronto, Canada, the Addiction Research and Treatment and Caring Together programs at Allegheny University of the Health Sciences in Philadelphia (clinics located in Camden, NJ and Philadelphia, PA), and the Substance Treatment and Research Service at the New York State Psychiatric Institute in New York City.

To identify cocaine and opiate dependent patients who were living with and parenting children between the ages of 2 and 18 years, we screened 2237 patients receiving treatment for drug abuse. Of those screened, 1745 patients (78%) were not living with and parenting children and were not recruited to participate in the study. Of the ineligible patients, about half had no children ( $N = 834$ ; 37% of adults screened); and the rest either were not living with their biological children ( $N = 766$ ; 34% of adults screened); had children who were  $< 2$  years or  $> 18$  years ( $N = 129$ ; 6% of adults screened); or the patient did not parent the children in the home ( $N = 16$ ;  $< 1\%$  of adults screened).

Of the 492 (22%) eligible patients living with and parenting children between the ages of 2 and 18 years, 114 (23%) dropped out of treatment before they could be asked to participate. Of the 378 patients approached about the study, 311 (82.3%) participated. Since children ages 2 and 3 years were assessed using different age-appropriate measures, they were not included in the analyses described here.

Of the 311 parent participants, 274 had one or more children ages 4–18. Of these 274, 63 were not administered the parent interview, and were excluded from these analyses, leaving a final sample size of 211 families. We found no significant differences between the 63 parents who did not complete the interview and the 211 parents who did complete the interview on parent age, SES, number of biological children, and number of children living in the home. We also found no differences on any of the other variables included in the analyses described below.

The 211 parent participants were 57% female and 43% male and ranged in age from 20 to 50 years ( $M = 34.8$  years). Data on whether or not there was a co-parent in the home were available for 188 families. Fathers were significantly more likely to live with a partner than were mothers (86.6% of fathers vs. 55.7% of mothers,  $\chi^2(1) = 20.73$ ,  $P < 0.01$ ). Parent mean SES was 4.1 (standard deviation (S.D.) = 2.0, range = 1–9) on the Hollingshead (1975) nine-step occupation scale, where a score of 4 includes occupations involving skilled manual labor (e.g. carpenter, machinist), and occupations such as postal worker, licensed practical nurse, and day care teacher. Primary drugs of abuse were 67% cocaine and 33% opiates. The largest percentage of parents (46%) came from Vermont, with 27% from Texas, 11% from Toronto, 9% from New Jersey/Philadelphia, and 7% from New York.

For families having more than one child ( $N = 90/211$ ; 43%), we randomly selected one child per family to be included in the following analyses. To randomly select children, we assigned each family a random number between 1 and 100 using the random number generator in SPSS. For families having two children, if their random number was below 50, we selected the youngest child. If the random number was 50 or greater, we selected the oldest child. For families having three children, if their random number was below 33, we selected the youngest child. If their random number was 33 or higher and less than 67, we selected the middle child. If their random number was 67 or higher, we selected the oldest child. A similar strategy was employed to randomly select one child from families having four and five children.

The 211 selected children were 59% male and 41% female. They ranged in age from 4 through 18 years ( $M = 9.4$  years). The children were 67% Caucasian, 21% African–American, 6% Hispanic, 3% mixed or other, and 2% Native American. Of the children, 82% were the biological or adoptive children of the patient, 6% were stepchildren, and 12% had some other relationship (e.g. child of patient's boyfriend or girlfriend, grandchild, etc.). In the 12 months prior to their assessment, 16% of the children had been referred for mental health services.

## 2.2. Assessment procedure

In all drug treatment clinics, all patients filling a parental role were asked to rate all children 4–18 years living in their home. A parental role was defined as knowing the child well enough to rate them and being: (a) a biological parent living with children; (b) a step-parent living with children; and/or (c) other caregiver, such as a live-in boyfriend or girlfriend of a parent living with children. Clinic staff described the study to eligible patients and requested their participation within the first 30 days of treatment. Clinic staff then distributed the forms to all consenting patients. Patients with difficulty reading were administered the forms orally. Patients were compensated \$20.00 for completing the forms. Clinic staff explained to patients that all information provided about their children was confidential and would not be released to anyone without their express written consent.

## 2.3. Measures

### 2.3.1. Parent and family problems

Parent problems related to drug dependence were assessed during interviews as part of the drug treatment intake process. Interviewers used the Addiction Severity Index (ASI; McLellan et al., 1985), a measure that generates composite scores in the following areas: medical, employment, alcohol use, drug use, legal, family/social, and psychiatric. To assess family problems, we used the General Functioning subscale of the Family Assessment Device (FAD/GF; Epstein et al., 1983), a 12-item scale that measures the overall health/pathology of the family, with six items worded to describe healthy functioning and six items worded to describe unhealthy functioning. The items assess the areas of problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control. For the purposes of the structural equation models described below and based on the results of the bivariate correlations described below, we tested a parent problems construct that included raw scores on ASI Drug Use, ASI Medical, and ASI Psychiatric and a Family Problems construct that included raw scores on ASI Family/Social and the FAD/GF.

### 2.3.2. Child internalizing and externalizing problems

Parents completed the Child Behavior Checklist for ages 4–18 (CBCL/4–18; Achenbach, 1991) to obtain ratings of 20 competence items, 118 specific behavioral/emotional problem items, and two open-ended problem items. The CBCL/4–18 is scored for three competence scales (Activities, Social, and School), total competence, internalizing, externalizing, and total problems, plus eight syndromes. These syndromes are designated as *Aggressive Behavior*, *Anxious/Depressed*, *Attention*

*Problems, Delinquent Behavior, Social Problems, Somatic Complaints, Thought Problems, and Withdrawn.* The withdrawn, anxious/depressed, and somatic complaints syndromes can be combined into a higher order internalizing scale, while the aggressive behavior and delinquent behavior syndromes can be combined into a higher order externalizing scale.

For the purposes of the structural equation models described below, we tested an internalizing construct that included raw scores on the withdrawn, anxious/depressed and somatic complaints syndromes and an externalizing construct that included raw scores on the delinquent and aggressive behavior syndromes, plus scores on the attention problems syndrome. As detailed in Achenbach (1991), the attention problems syndrome had a mean loading of 0.62 on externalizing, which although, lower than the mean loading of delinquent behavior (0.78) and aggressive behavior (0.79) on externalizing, was comparable to the mean loading of somatic complaints (0.69) and anxious/depressed (0.65) on internalizing. Each syndrome and scale score is also assigned a normalized *T* score by the CBCL computer-scoring program. *T* scores reflect deviance relative to members of the same age group (4–11 vs. 12–18 years) and gender. The test–retest reliability of the CBCL has been clearly demonstrated, as has validity with respect to discrimination between referred and non-referred samples and numerous other validity criteria (Achenbach, 1991; Vignoe and Achenbach, 2000).

#### 2.4. Missing data

There were no missing data for child internalizing and externalizing problems. A total of 149 parents (71%) had no missing parent or family problems scores. Of the 62 parents with some missing data, 25 were missing only the FAD/GF, 30 were missing one or more of the seven ASI scales (range = 1–5, with 87% missing from 1 to 3 ASI scores), and seven were missing the FAD/GF and one or two of the seven ASI scales<sup>1</sup>. We used the EM algorithm in the SPSS missing values analysis program (Hill, 1997) to impute missing values. We used the set of eight parents and family variables plus parent age to estimate the missing values. We excluded the CBCL outcome variables from the estimation of missing predictor variables to prevent artificial inflation of relations between the predictors and out-

<sup>1</sup> Of the seven parents missing the FAD/GF and 1–2 ASI scores, only two were missing two ASI scores, and both these subjects were missing ASI Legal and ASI Employment, which were not used in analyses after the initial correlations. Of the remaining five subjects in this group, three were missing either ASI Employment or ASI Legal, and two were missing ASI Drug. Since, ASI Drug and the FAD/GF loaded on different constructs in the SEM we retained these two subjects, plus the five missing the FAD and one or two ASI scales not used in the SEM analyses.

comes. The following analyses used the complete data set for the 211 parents and children, including the imputed values for missing data.

#### 2.5. Data analysis

We began by testing group differences in parent and family problems, and *T* scores on the child psychopathology variables for the following groups: mothers versus fathers; cocaine versus opiate dependent parents; boys versus girls; and children ages 4–11 versus children ages 12–18. In these analyses, we divided the dependent measures into three theoretically related sets (parent and family variables; internalizing syndromes; externalizing syndromes) and conducted the analysis separately for each set. We chose this strategy, because group differences might vary across the sets in important ways that might be missed if all dependent measures were included in a single set. For example, parent or family variables might vary depending on parent gender or parent drug of dependence but not child gender, while child problems might vary with child gender but not across parent groups. We used *T* scores in these analyses of CBCL syndrome scores to reflect deviance relative to youth of the same gender in the same age group (4–11 vs. 12–18). We report only univariate effects that were significant at  $P < 0.05/n$ , where  $n$  is the number of dependent variables in the analysis. To control experimentwise Type I error, we used Tukey's method to test differences among means for significant univariate effects.

Next, we computed correlations between the parent and family problems variables and raw scores on the child psychopathology variables. We retained for further analysis all parent variables that correlated significantly with any child psychopathology variable. We then used structural equation modeling (SEM) to test relations among the parent, family problems, and raw scores on child psychopathology variables, for the sample as a whole, and for the subgroups listed above. Based on the results of the bivariate correlations described below, a model was estimated for the sample as a whole. This model included four latent constructs: Parent Problems (ASI Drug Use, Medical, and Psychiatric); Family Problems (ASI Family/Social, FAD General Functioning); Child Internalizing (Withdrawn, Anxious/Depressed, Somatic Complaints); and Child Externalizing (Aggressive Behavior, Delinquent Behavior, Attention Problems). Models were estimated using AMOS 4.0 (Arbuckle and Wothke, 1999) with the maximum likelihood method.

We also used SEM analyses to compare the structural models across several subgroups (Joreskog, 1971). We estimated two-group models for each of four subgroups: mothers and fathers, opiate and cocaine dependent parents, boys and girls, and older and younger

children. Each separate two-group analysis included estimation of three sequential models. Model 1 contained no between-group constraints on the parameter estimates across the two groups being compared. Model 2 constrained all the unstandardized factor loadings to be equal across the two groups, but allowed the regression paths and covariances to vary across the two groups. Model 3 constrained the unstandardized factor loadings, covariances, and regression paths to be equal across the two groups.

A  $\chi^2$  difference test between models 1 and 2 tested the assumption of measurement invariance (i.e. whether the factor loadings differed across the two groups). A  $\chi^2$  difference test between models 2 and 3 tested whether the covariances and regression coefficients differed across the two groups. The degrees of freedom for the comparison between two models are the difference between the degrees of freedom for each model compared. That is, when comparing model 1 (80 df) to model 2 (87 df), the difference is 7 df ( $87 - 80 = 7$ ). When comparing model 2 (87 df) with model 3 (91 df), the difference is 4 df ( $91 - 87 = 4$ ). In Model 1, each of the four factors already has one factor loading fixed to one (a requirement of SEM). So, when the remaining factor loadings are constrained to be equal in Model 2, this results in a difference of 7 degrees of freedom (11 factor loadings for the manifest variables minus four factor loadings already fixed to one). Similarly, when comparing model 2 and model 3 there are four additional constrained parameters (the covariance between the parent problems and family problems factors, the paths from family problems to internalizing and externalizing, and the covariance between the internalizing and externalizing disturbances).

Since, the  $\chi^2$  statistic is greatly affected by sample size and is highly sensitive to minor departures from multivariate normality (Bollen and Long, 1993; Hu and Bentler, 1999), we supplemented the  $\chi^2$  tests with the Tucker–Lewis Index (TLI) and the root mean squared error of approximation (RMSEA; Browne and Cudeck, 1993) to determine the goodness of fit and the presence of group influences on the factor loadings. The TLI is a preferred incremental fit index for nested model comparisons (Hu and Bentler, 1995), and the TLI difference between the models is reported as well. A positive TLI difference indicates that the constrained model fits the covariance matrix as well as the unconstrained model, but with fewer parameters estimated, thus supporting the conclusion of similar parameter estimates across groups. A non-significant  $\chi^2$  difference test indicates that the hypotheses related to similar parameter estimates across groups cannot be rejected, again supporting the conclusion of similar parameter estimates across groups.

### 3. Results

#### 3.1. Demographic group differences in parent problems, family problems, and child psychopathology

We conducted analysis of variance (ANOVA) for the following variable groupings: Parent and Family Problems (ASI Drug Use, Medical, Psychiatric, and Family and FAD General Functioning), Child Internalizing *T* scores (CBCL Withdrawn, Anxious/Depressed, Somatic Complaints), and Child Externalizing *T* scores (CBCL Aggressive Behavior, Delinquent Behavior, and Attention Problems)<sup>2</sup>. Each ANOVA tested main effects of parent gender, parent primary drug of abuse (cocaine vs. opiate), child gender, and child age group (4–11 vs. 12–18), plus the following interactions: parent gender  $\times$  child gender, parent gender  $\times$  parent primary drug of abuse, and child gender  $\times$  child age group. We chose these interactions, because much of the previous literature of children of drug dependent parents has reported findings for single groups represented by these interactions (e.g. sons of drug dependent fathers, children of opiate dependent mothers, etc.). Power was not sufficient to test three-way interactions. Descriptive statistics appear in Table 1.

In the ANOVAs for parent and family variables, females had significantly higher scores than males on the ASI Psychiatric ( $F(1199) = 7.24$ ,  $P < 0.009$ ; effect size = 3% of variance) and Family/Social scales ( $F(1199) = 11.92$ ,  $P < 0.002$ ; effect size = 6% of variance). Opiate dependent parents had significantly higher scores than cocaine dependent parents on the ASI Drug Use scale ( $F(1199) = 26.91$ ,  $P < 0.001$ ; effect size = 12% of variance). Although significant, these effects were small in terms of variance accounted for. None of the interactions were significant<sup>3</sup>.

None of the effects in the ANOVAs for child internalizing were significant. In the ANOVAs for child externalizing, older children had significantly higher scores than younger children on Delinquent Behavior

<sup>2</sup> We used *T* scores in the child internalizing and externalizing ANOVAs to test whether, within the sample of children of drug abusers, there were age or gender differences in the degree of clinical deviance. *T* scores make the mean scores more interpretable to readers. We recognize that for many types of analyses, the raw scores are preferable. Raw scores generally have greater variance for most (especially non-clinical) samples. We repeated the ANOVAs using raw scores, and the results were identical to those obtained using *T* scores.

<sup>3</sup> Since, fathers were significantly more likely to live with a coparent than were mothers, we conducted separate ANOVAs to compare parent and family variables and child internalizing and externalizing *T* scores for families with and without a coparent, and the interaction between parent gender and the presence or absence of a second parent in the home. None of those main effects or interactions were significant.

Table 1  
Means and S.D. for main effects tested in MANCOVAs

Factor/scale	Primary drug of dependence		Parent gender		Child gender		Child age group	
	Opiates	Cocaine	Mother	Father	Boys	Girls	Ages 4–11	Ages 12–18
<i>N</i>	69	142	120	91	124	87	143	68
Parent	<i>M</i> (S.D.)	<i>M</i> (S.D.)	<i>M</i> (S.D.)	<i>M</i> (S.D.)	<i>M</i> (S.D.)	<i>M</i> (S.D.)	<i>M</i> (S.D.)	<i>M</i> (S.D.)
ASI Drug Use	0.27 (0.09)*	0.21 (0.08)	0.23 (0.09)	0.23 (0.10)	0.22 (0.10)	0.24 (0.08)	0.23 (0.09)	0.23 (0.09)
ASI Medical	0.29 (0.36)	0.20 (0.32)	0.26 (0.35)	0.19 (0.30)	0.25 (0.34)	0.19 (0.32)	0.22 (0.33)	0.24 (0.35)
ASI Psych	0.28 (0.23)	0.27 (0.24)	0.31 (0.24)*	0.23 (0.22)	0.29 (0.23)	0.26 (0.24)	0.27 (0.23)	0.29 (0.24)
<i>Family</i>								
ASI	0.32 (0.26)	0.32 (0.25)	0.38* (0.26)	0.25 (0.24)	0.29 (0.27)	0.37 (0.24)	0.32 (0.26)	0.33 (0.26)
Family/Social								
FAD Global	23.9 (5.4)	24.1 (5.7)	23.9 (6.0)	24.2 (6.0)	23.5 (5.6)	24.7 (5.6)	23.8 (5.9)	24.5 (4.8)
Funct								
<i>CBCL</i>								
<i>Internalizing</i>								
Withdrawn	54.8 (7.0)	54.5 (7.0)	55.5 (7.2)	54.0 (6.8)	54.8 (7.2)	54.8 (6.8)	54.7 (6.5)	55.0 (8.0)
Anxious/	55.3 (8.4)	54.4 (6.8)	55.7 (8.1)	53.4 (5.9)	54.2 (7.2)	55.5 (7.5)	55.1 (7.5)	54.1 (7.0)
Depressed								
Somatic	55.0 (7.7)	55.0 (6.8)	55.7 (7.1)	54.1 (6.9)	54.9 (7.3)	55.1 (6.8)	55.1 (7.1)	54.9 (7.0)
complaints								
<i>Externalizing</i>								
Attention	56.2 (8.3)	55.1 (6.7)	55.8 (7.4)	55.1 (7.1)	54.8 (6.9)	56.4 (7.6)	55.1 (6.6)	56.3 (8.4)
problems								
Delinquent	58.2 (8.9)	58.4 (8.2)	59.2 (8.9)	57.2 (8.1)	57.7 (7.9)	59.2 (9.0)	57.3 (7.6)	60.4 (9.5)*
behavior								
Aggressive	55.8 (8.4)	56.1(7.7)	57.2 (8.1)	54.4 (7.2)	55.3 (7.7)	57.0 (8.1)	55.6 (7.5)	56.7 (8.7)
behavior								

\*, Difference between groups significant at  $P < 0.05$ .

( $F(1201) = 9.553$ ,  $P < 0.003$ ; effect size = 5% of variance). The interaction between age group and child gender was also significant only for Delinquent Behavior ( $F(1201) = 11.804$ ,  $P < 0.002$ ; effect size = 6% of variance). As can be seen in Fig. 1, older girls scored significantly higher than younger girls, and than older and younger boys (all comparisons  $P < 0.01$  using Tukey's method). The mean  $T$  scores for younger girls and older and younger boys are between 0.5 and 0.75 S.D. above the mean of 50 of the standardization sample of non-referred children of the same gender in the same age group (4–11 vs. 12–18). The mean  $T$  score for older girls is 65, > 1.5 S.D. above the mean of the standardization sample (Achenbach, 1991), but below the cutoff of  $T = 67$  for clinical deviance.

### 3.2. Correlations between parent and family problems and child psychopathology

The following parent and family problems variables were significantly correlated with one or more CBCL Internalizing or Externalizing syndrome: ASI Drug Use, ASI Medical, ASI Psychiatric, ASI Family, and the FAD Global Functioning scale. Table 2 shows the correlations between each of these scales and raw scores on the six CBCL syndromes. The ASI Employment,

Legal, and Alcohol scales were not significantly correlated with any of the six CBCL syndromes and were not included in subsequent analyses<sup>4</sup>. Although, all the

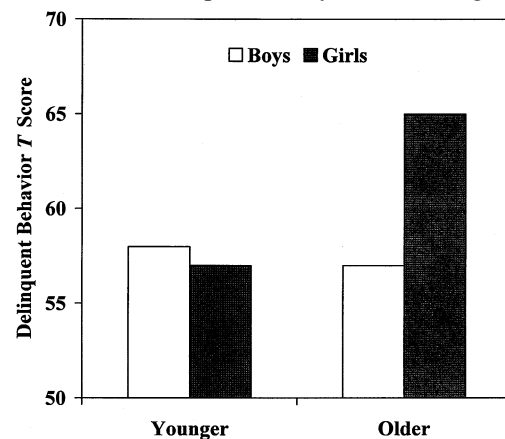


Fig. 1. Significant gender  $\times$  age group interaction for Delinquent Behavior, with higher  $T$  scores for older girls than younger girls and older and younger boys.  $N_s = 28$  older girls, 59 younger girls, 40 older boys, 84 younger boys.

<sup>4</sup> Correlations between the CBCL scales and the ASI Employment composite ranged from  $r = -0.04$  to 0.06. Correlations between the CBCL and the ASI Legal scale ranged from  $r = 0.06$  to 0.12. Correlations between the CBCL and the ASI Alcohol scale ranged from  $r = -0.08$  to 0.08.

Table 2  
Correlations between parent and family problems and child internalizing and externalizing

Factor/scale	Parent			Family			Child internalizing			Child externalizing		
	ASI drug	ASI medical	ASI psychiatric	ASI family/social	FAD/GF	Withdrawn	Anx/dep	Somatic	Att	Delinq	Agg	
<i>Parent</i>												
ASI Drug Use		0.25**	0.16*	0.06	0.02	0.05	0.08	0.11	0.02	0.18*	0.08	
ASI Medical			0.40**	0.19**	0.13	0.12	0.15*	0.04	0.11	0.13	0.08	
ASI Psych				0.36**	0.17*	0.22**	0.23**	0.16*	0.15*	0.14*	0.18**	
<i>Family</i>												
ASI Family/Social						0.27**	0.27**	0.13	0.13	0.13	0.18**	
FAD Global Functioning						0.26**	0.25**	0.18**	0.22**	0.16*	0.25**	
<i>Child internalizing</i>												
Withdrawn							0.64**	0.37**	0.58**	0.36**	0.50**	
Anxious/Depressed								0.38**	0.63**	0.39**	0.67**	
Somatic complaints									0.58**	0.36**	0.50**	
<i>Child externalizing</i>												
Attention problems										0.48**	0.64**	
Delinquent behavior											0.61**	

\*,  $P < 0.05$ ; \*\*,  $P < 0.01$ ;  $N = 211$ ; ASI, Addiction Severity Index; FAD, Family Assessment Device.

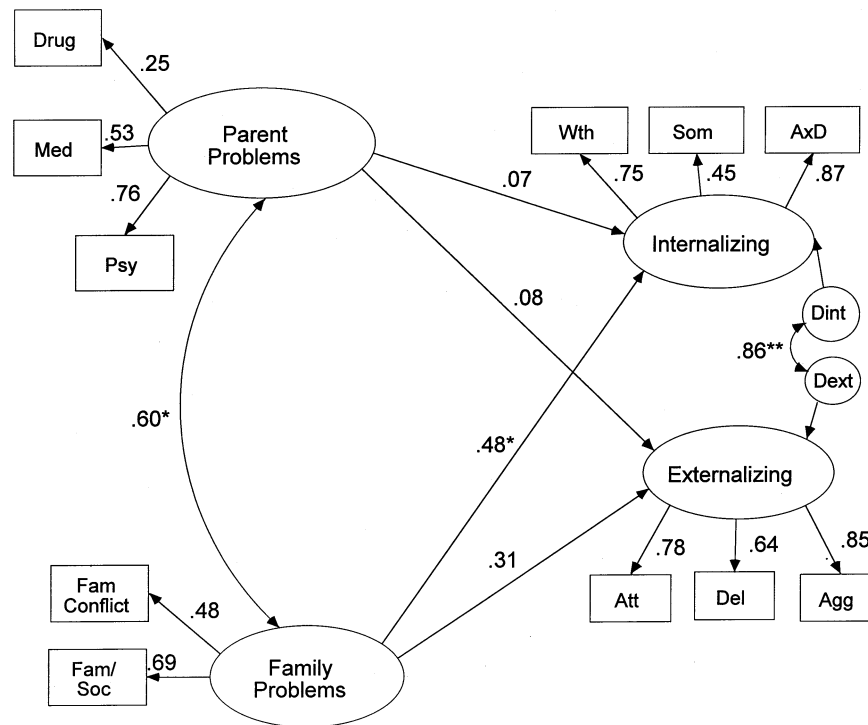


Fig. 2. Relations between parent problems and family problems and children's internalizing and externalizing problems for the entire sample.  $N = 211$ ;  $\chi^2(38) = 56.18$ ,  $P = 0.03$ ; TLI = 0.96; standardized parameter estimates are displayed; RMSEA = 0.05; Drug = ASI Drug; Med = ASI Medical; Psy = ASI Psychiatric; Fam Conflict = FAD/GF; Fam/Soc = ASI Family Social; Wth = CBCL withdrawn; Som = CBCL Somatic Complaints; AxD = CBCL Anxious Depressed; Att = CBCL Attention Problems; Del = CBCL Delinquent Behavior; Agg = CBCL Aggressive Behavior; Dint = Disturbance term for the Internalizing construct; Dext = Disturbance term for Externalizing construct; \*,  $P < 0.05$ ; \*\*,  $P < 0.01$ .

significant correlations reflected small effect sizes ( $r < 0.30$ ), parent and family variables showing the strongest relations with children's internalizing and externalizing problems included parent psychiatric symptoms and family problems (ASI Psychiatric and the FAD Global Functioning scale).

### 3.3. Modeling relations between parent and family problems and child internalizing and externalizing constructs

We first tested a correlated two-factor measurement model of hypothesized relations between the parent and family problems constructs. Indicators of the parent problems construct included scores on the ASI Drug, Medical, and Psychiatric composites. Indicators of the family problems construct included scores on the ASI Family/Social composite and the FAD Global Functioning scale. The model included the covariance between the parent and family problems latent constructs. This model fit the data well ( $\chi^2(4) = 7.04$ ,  $P = 0.13$ ; TLI = 0.92; RMSEA = 0.06).

We then tested relations between the parent and family constructs and the child internalizing and externalizing outcome constructs. This model also fit the data moderately well ( $\chi^2(38) = 56.18$ ,  $P = 0.03$ ; TLI = 0.96; RMSEA = 0.05). As Fig. 2 shows, results for this

model indicated that when controlling for the significant correlation between the parent and family constructs ( $r = 0.60$ ,  $P < 0.05$ ), only the family construct was significantly related to child internalizing ( $\beta = 0.48$ ,  $P < 0.05$ ). Overall, the model accounted for 27% of variance in internalizing problems, and 13% of variance in externalizing problems. The results suggest that parent problems may influence children's internalizing symptoms indirectly by increasing conflict in the home. Since neither of the direct paths from the parent problems construct to internalizing or externalizing were significant, they were dropped from subsequent models<sup>5</sup>.

Next, we tested four different two-group models comparing results for mothers versus fathers, cocaine versus opiate dependent parents, boys versus girls, and younger versus older children<sup>6</sup>. Since the model for younger versus older children did not converge, no results are shown for this model. This model included 143 children aged 4–11 years and 68 children aged

<sup>5</sup> We also computed all the multiple group models including the paths from parent problems to child internalizing and externalizing. None of the paths were significant for any group.

<sup>6</sup> Correlations among all manifest variables in the models for each group are available upon request from the first author.

12–18 years. A model including only the younger subjects converged, but a model including only the older subjects failed to converge. The failure of the model for older children to converge was likely due to the small sample size relative to the number of parameters estimated.

As shown in Table 3, the  $\chi^2$  difference tests comparing unconstrained models (model 1) with the factor loading constrained models (model 2) were not significant for cocaine versus opiate dependent parents and for boys versus girls, and the TLI difference was positive for boys versus girls, and close to zero ( $-0.001$ ) for cocaine versus opiate dependent parents. These results suggest that the factor loadings were highly similar for these subgroups. The  $\chi^2$  difference test for Model 1 versus 2 was significant for mothers versus fathers. However, RMSEAs for model 1 and 2 for mothers versus fathers differed only by 0.006, and the TLIs differed by  $-0.017$ , indicating that the differences in factor structures for the latent variables for mothers and fathers did not greatly affect the overall fit of the model, despite the significant  $\chi^2$  difference test.

For cocaine versus opiate dependent parents and boys versus girls, the  $\chi^2$  difference tests between models 2 and 3 were non-significant, indicating no group differences in relations between parent and family problems and children's internalizing and externalizing problems across these subgroups. In Model 3, the percentage of variance explained in internalizing was 30% for cocaine dependent parents and 28% for opiate dependent parents. The percentage of variance explained in externalizing was 13% for cocaine dependent parents and 17% for opiate dependent parents. Similar percentages of variance were explained for boys (27% in internalizing and 14% in externalizing) and girls (30% in internalizing and 21% in externalizing). These final models fit

moderately well ( $RMSEA \leq 0.05$ ;  $TLI \geq 0.93$ ) (Hu and Bentler, 1999).

There was a significant difference between model 2 and 3 for mothers versus fathers. The fit was significantly worse for model 3 (factor loadings, covariances, and paths constrained to be equal for mothers and fathers) than for model 2 (factor loadings constrained to be the same for mothers and fathers; path coefficients and covariances allowed to vary across parent gender). Again, despite the significant  $\chi^2$  difference test, the TLI difference was  $-0.007$ , and the RMSEA difference was 0.002, indicating similar overall model fit across groups with and without the paths and covariances constrained.

Results for model 2 for mothers and fathers are shown in Figs. 3 and 4. Model 2 is the model in which the unstandardized factor loadings were constrained to be the same for both groups, but the paths and covariances were allowed to vary across groups. For example, in the parent gender two-group model shown in Figs. 3 and 4, the unstandardized factor loading for ASI drug on the parent problems construct was constrained to be identical for mothers and fathers. The factor loadings and coefficients shown in Figs. 3 and 4 are standardized, and they vary across groups even when constrained, due to differences in the means and S.D. of the manifest variables across the two groups. The overall fit for this model was adequate ( $RMSEA = 0.053$ ,  $TLI = 0.905$ ).

As Fig. 3 shows, for fathers, the paths between family problems and child internalizing and externalizing problems were significant (internalizing  $\beta = 0.60$ ,  $P < 0.01$ , externalizing  $\beta = 0.41$ ,  $P < 0.05$ ), with 36% of variance explained in internalizing and 17% in externalizing. Similarly, as Fig. 4 shows, for mothers, the paths between family problems and internalizing and exter-

Table 3  
Fit statistics and  $\chi^2$  difference tests for the four two-group SEM models

	Mothers vs. fathers			Cocaine vs. opiate			Boys vs. girls		
	$\chi^2$	RMSEA	TLI	$\chi^2$	RMSEA	TLI	$\chi^2$	RMSEA	TLI
Model 1 unconstrained (df = 80)	116.44	0.047	0.926	107.93	0.041	0.942	125.49	0.052	0.907
Model 2 factor loadings constrained (df = 87)	137.67	0.053	0.905	117.78	0.041	0.941	128.67	0.048	0.922
Model 3 factor loadings, paths, and covariances constrained (df = 91)	148.03	0.055	0.898	120.92	0.040	0.945	132.04	0.050	0.930
	$\Delta\chi^2$	$\Delta RMSEA$	$\Delta TLI$	$\Delta\chi^2$	$\Delta RMSEA$	$\Delta TLI$	$\Delta\chi^2$	$\Delta RMSEA$	$\Delta TLI$
Model 2 vs. model 1 (df <sub>diff</sub> = 87 – 80 = 7)	21.22 <sup>b</sup>	0.006	$-0.021$	9.85	0.000	$-0.001$	3.18	$-0.004$	0.015
Model 3 vs. model 2 (df <sub>diff</sub> = 91 – 87 = 4)	10.36 <sup>a</sup>	0.002	$-0.007$	3.13	$-0.001$	0.004	3.18	$-0.002$	0.004

$N = 211$ .

<sup>a</sup>  $P < 0.05$ .

<sup>b</sup>  $P < 0.01$ .

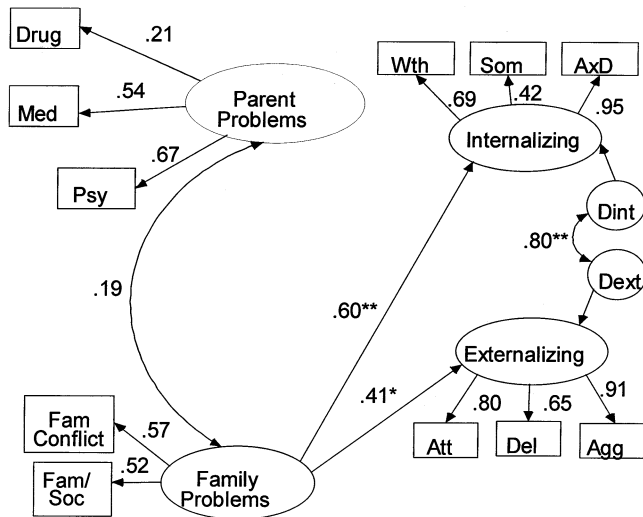


Fig. 3. Relations between parent problems and family problems and children's internalizing and externalizing problems for drug dependent fathers. Standardized parameter estimates are displayed. Results shown are for the two-group model for mothers vs. fathers with unstandardized factor loadings constrained to be the same for mothers and fathers, and path coefficients and covariances allowed to differ for mothers vs. fathers.  $N = 91$ ; \*,  $P < 0.05$ ; \*\*,  $P < 0.01$ .

nalizing were also both significant (internalizing  $\beta = 0.51$ ,  $P < 0.01$ , externalizing  $\beta = 0.39$ ,  $P < 0.01$ ), with 26% of variance explained in internalizing and 15% in externalizing. The path from family problems to externalizing is significant for both mothers and fathers in this two-group model, but was not significant in the single group model. This is likely due to the omission of the paths from parent problems to internalizing and

externalizing in the two-group models. These paths were omitted, because, they were not significant in the single group model. Removing them allowed family problems to account for a greater proportion of variance in both internalizing and externalizing.

The major difference between the models for mothers versus fathers is the covariance between parent and family problems ( $r = 0.76$ ,  $P < 0.05$  for mothers,  $r = 0.19$ ,  $P = 0.34$  for fathers). The covariance for mothers is significantly greater than the covariance for fathers ( $t = 2.08$ ,  $P < 0.05$ ). These results indicate a strong relation between parent drug, health, and psychiatric problems and family problems for mothers but not fathers. However, parent reports of family problems predict children's problems for both mothers and fathers.

#### 4. Discussion

There were parent gender differences in mean scores on some parent and family variables, and child age group and gender differences in mean child problem scores among families with a parent in treatment for cocaine and opiate dependence. Mothers received higher scores than fathers on ASI Psychiatric and Family/Social problems, but received almost identical ASI Drug Use and FAD family-problems scores. Others have found higher rates of DSM Axis I non-substance use diagnoses among female versus male treatment seeking opioid abusers (Brooner et al., 1997), more psychiatric symptoms for female versus male treatment seeking drug dependent adults (Marsden et al., 2000), higher ASI Family/Social scores for female versus male inpatients receiving treatment for cocaine dependence (Weiss et al., 1997), and more mental health problems for women entering substance abuse treatment (Wechsberg et al., 1998).

Mothers were more likely to be single parents; fathers were more likely to live with a partner. This finding is important in light of research suggesting that substance dependent women are more likely than men to have a spouse concordant for psychopathology and that rates of severe externalizing problems are elevated only among children from families with two affected parents (either substance abuse or anxiety/affective disorder) (Dierker et al., 1999). However, our results indicated that family status and the interaction between family status and parent gender were not related to mean differences in parent or family problems or child internalizing or externalizing problems. Further, even if we had found such differences, they would not necessarily lead us to predict different relations between parent or family problems and child problems for single versus two parent families. For example, Florsheim et al. (1996) found that although, single mother versus two parent families differed on family environment vari-

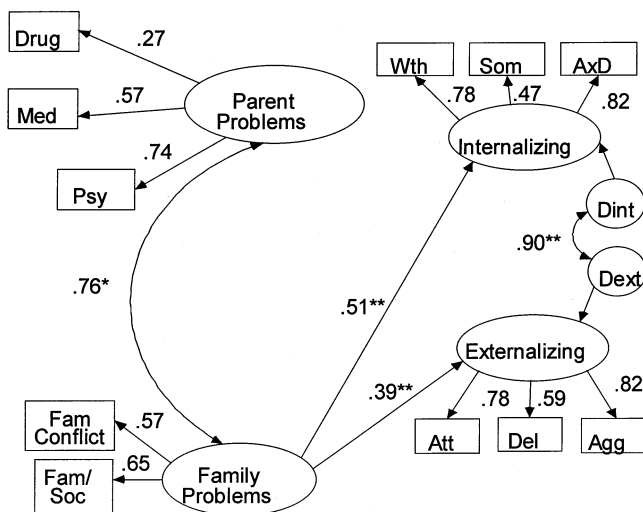


Fig. 4. Relations between parent problems and family problems and children's internalizing and externalizing problems for drug dependent mothers. Standardized parameter estimates are displayed. Results shown are for the two-group model for mothers vs. fathers with unstandardized factor loadings constrained to be the same for mothers and fathers, and path coefficients and covariances allowed to differ for mothers vs. fathers.  $N = 120$ ; \*,  $P < 0.05$ ; \*\*,  $P < 0.01$ .

ables, family status did not moderate most relations between family problems and children's problems.

Severity of internalizing and externalizing problems was generally similar for younger versus older children of drug dependent parents, with older children showing more deviance relative to normative samples of same gender and age group children on only one syndrome, Delinquent Behavior. This age difference was observed only for girls, suggesting that adolescent daughters of drug dependent parents may be at particular risk of deviance on externalizing problems, scoring on average more than 1.5 S.D. above the mean of the girls in the same age group in the standardization sample. High scores on Delinquent Behavior have predicted many signs of disturbance in a US general population longitudinal study, including police contacts and substance abuse among older adolescents and young adults. For example, over a 3-year period, 93.5% of those deviant on CBCL Delinquent Behavior had police contacts (OR = 20.1) (Stanger et al., 1993), and, over a 6-year period, 100% of those rated deviant on CBCL Delinquent Behavior had police contacts, substance abuse, or suicidal behavior (Achenbach et al., 1995).

These results concerning particular risk of rule breaking behavior among adolescent daughters of drug dependent parents are also consistent with some research on risk for substance use in community samples. For example, Duncan et al. (1995) reported that parents' marijuana use was more strongly related to girls' marijuana use 1 year later for girls aged 11–13 than for girls aged 14–15 or for boys ages 11–13. Similarly, Baumrind (1985) reported that poor parental structure and control were stronger predictors of marijuana onset for girls than for boys in middle childhood. When parental drug use leads to poor monitoring, this may have a greater negative effect on adolescent girls than boys. However, we should note that many other studies have found similar rates of substance use, externalizing problems, and disruptive behavior disorder and substance abuse diagnoses for male and female children of drug and alcohol dependent parents (e.g. Chassin et al., 1999, 1991; Weissman et al., 1999).

Simple correlations indicated that family problems were related to children's problems, especially internalizing problems, for all groups. Results for the structural models indicated similar relations between parent and family problems and children's internalizing and externalizing problems for cocaine versus opiate dependent parents and for boys and girls living with a parent in treatment for drug dependence. Especially, with respect to developmental differences, it is important to note that our model was not designed to test the types of specific variables that might differentially predict across these groups (e.g. daily play time for younger children vs. help with homework for elementary and middle school children vs. monitoring for older children).

Models differed for drug dependent mothers versus fathers. For both mothers and fathers, family problems predicted children's internalizing and externalizing problems. However, for mothers but not fathers, the severity of individual drug, health, and psychiatric problems was related to increased family and interpersonal conflict. For fathers, these personal problems were independent of family problems. Similarly, in a US general population sample, Kandel (1990) found increased family problems with greater drug involvement for mothers, but not for fathers. Our results further suggest that family problems may mediate relations between maternal and child problems, but that family problems are an independent predictor of children's problems for children of drug dependent fathers.

Our parent problems construct includes symptoms of depression. There is a large literature on ways in which family factors mediate relations between maternal depression and children's outcomes (Goodman et al., 1999). There is also a large literature on direct relations between maternal affective psychopathology and children's outcomes (Goodman et al., 1999), and a smaller literature on paternal affective psychopathology and children's outcomes (Phares, 1996). However, prior studies are of little help in interpreting our finding that maternal psychological symptoms predicted family problems, but that paternal psychological symptoms did not predict family problems. We could find no other study that tested parent gender differences in relations between parent psychopathology and family problems for any type of sample. However, in a recent study, maternal depression, but not paternal depression mediated relations between both maternal and paternal problem drinking and children's externalizing problems in a community sample of children ages 6–12 years (El-Sheikh and Flanagan, 2001). In another recent study, a lack of positive family communication mediated relations between paternal depression and children's internalizing and externalizing problems, but did not mediate relations between maternal depression and children's problems (Jacob and Johnson, 2001). These findings suggest that maternal depression may contribute independent variance to the prediction of children's problems over and above the effects of maternal and paternal alcohol use, but that paternal depression may not. Further, maternal and paternal depression may lead to different types of family problems.

It is also possible that there is an undetected parent gender x child gender moderation effect, but the sample size was not sufficient to conduct a four-group SEM model (mothers/sons, mothers/daughters, fathers/sons, mothers/daughters). There is some evidence that relations between family factors and children's problems are strongest between same gender parents and children (Deater-Deckard and Dodge, 1997). It is also possible that the presence of a less symptomatic spouse moder-

ated relations between personal and family problems for fathers. For example, personal problems might predict family problems only in the presence of a dysfunctional partner. Mothers were less likely to have a partner, and other research has suggested that substance dependent mothers are more likely to have dysfunctional partners than fathers (Dierker et al., 1999). So, the moderating effect of a higher functioning partner may have been less evident for mothers than fathers.

Across all constrained and unconstrained models, relations between family problems and children's internalizing and externalizing problems were significant for mothers and fathers, and all models fit the data moderately well. These results indicate that the degree of family problems as rated by both mothers and fathers was significantly associated with children's problems. Further, the parent gender differences in the parent and family problems constructs had little practical significance and did not affect the strong relations between family problems and children's problems found for both drug dependent mothers and fathers.

This study has several limitations. First, these data are cross sectional. We are currently replicating these findings with a new sample and including a 1 year follow up. We are also assessing specific parenting behaviors (e.g. involvement, positive parenting, poor monitoring, inconsistent parenting, corporal punishment) to test as additional mediators of relations between parent problems and child outcomes. In addition, parents were the only informants about their children's problems. Drug abusers might underestimate or overestimate their children's problems, or their responses might be less accurate and contribute more error variance, making it important to compare our findings with findings from other informants (e.g. coparents, teachers, older children). However, all parents were participating in drug treatment research programs in which they had established relationships with research staff and had completed many personal questionnaires. They were also informed that we had a Confidentiality Certificate from NIH that would protect their records from subpoena. In addition, it is unknown whether the parent interviews were missing at random. We found no systematic difference between families with and without a parent interview, but these families may have differed in important ways not tested. The degree to which the interviews were not missing at random limits the generalizability of the results.

These cocaine and opiate dependent parents were all in drug treatment. Thus, results may not generalize to the entire population of drug abusing parents. The majority of persons with substance abuse or dependence do not seek treatment (Regier et al., 1984; Shapiro et al., 1984). Two studies (Carroll and Rounsaville, 1992; Rounsaville and Kleber, 1985) have di-

rectly compared persons seeking treatment for cocaine or opiate abuse or dependence with persons with untreated cocaine or opiate abuse or dependence. In both studies, the level of primary substance abused (cocaine or opiates) and rates of psychiatric diagnoses were similar in the community and treatment-seeking samples. However, treatment seekers had more mood disorders, greater negative consequences, poorer social functioning, and more family problems.

These findings suggest that although, the severity of substance abuse and dependence may be similar in treated versus untreated groups, persons seeking treatment may have more comorbid mood disorders and greater disruption in their families. Assessing children of treated drug abusers may overestimate the association between parental drug abuse and children's problems relative to drug abusers not seeking treatment, due to higher rates of parental comorbid mood disorders among treated than untreated drug abusers (Luthar et al., 1998). It will be important to replicate our results in samples of untreated parenting drug abusers. Relations we found between parental drug use and children's problems may also not be specific to parental drug use, and may be similar to problems found among children of alcohol abusing, psychiatrically ill or incarcerated parents, for example.

It is also important to emphasize that these results may generalize only to children living with drug dependent parents. More drug dependent parents have children, but do not live with them than live with children (their own biological children or others'). Results might differ for children not living with their drug dependent parents. This study was designed to test relations among factors within the family. Testing relations for children not living with their drug dependent parents would require more complex models that incorporate variables assessing information about the non-custodial biological parent and the custodial parent.

### Acknowledgements

This work was supported by NIDA grant DA-08606 and DA-10821. We would like to acknowledge the hard work of the research staff at each site.

### References

- Achenbach, T.M., 1991. Manual for the Child Behavior Checklist/4-18 & 1991 Profile. University of Vermont Department of Psychiatry, Burlington, VT.
- Achenbach, T.M., Howell, C.T., McConaughy, S.H., Stanger, C., 1995. Six-year predictors of problems in a national sample of children and youth: II. Signs of disturbance. *J. Am. Acad. Child Adolesc. Psychiatry* 34, 488–498.

- Arbuckle, J.L., Wothke, W., 1999. *AMOS 4.0 User's Guide*. Small-Waters Corporation, Chicago.
- Baumrind, D., 1985. Familial antecedents of adolescent drug use: a developmental perspective. In: Jones, C.L., Battjes, R.J. (Eds.), *Etiology of Drug Abuse: Implications for Prevention*. National Institute on Drug Abuse, Rockville, MD, pp. 13–44.
- Brooner, R.K., King, V.L., Kidorf, M., Schmidt, C.W. Jr, Bigelow, G.E., 1997. Psychiatric and substance use comorbidity among treatment-seeking opioid abusers. *Arch. Gen. Psychiatry* 54, 71–80.
- Browne, M.W., Cudeck, R., 1993. Alternative ways of assessing model fit. In: Bollen, K.A., Long, J.S. (Eds.), *Testing Structural Equation Models*. Sage, Beverly Hills, CA, pp. 111–135.
- Capaldi, D.M., Patterson, G.R., 1991. Relation of parental transitions to boys' adjustment problems: I. A linear hypothesis. II. Mothers at risk for transitions and unskilled parenting. *Dev. Psychol.* 27, 489–504.
- Carroll, K.M., Rounsaville, B.J., 1992. Contrast of treatment-seeking and untreated cocaine abusers. *Arch. Gen. Psychiatry* 49, 464–471.
- Chassin, L., Rogosch, F., Barrera, M., 1991. Substance use and symptomatology among adolescent children of alcoholics. *J. Abnorm. Psychol.* 100, 449–463.
- Chassin, L., Pitts, S.C., DeLucia, C., Todd, M., 1999. A longitudinal study of children of alcoholics: predicting young adult substance use disorders, anxiety, and depression. *J. Abnorm. Psychol.* 108, 106–119.
- Colten, M.E., 1982. Attitudes, experiences, and self-perceptions of heroin addicted mothers. *J. Soc. Issues* 38, 77–92.
- Deater-Deckard, K., Dodge, K.A., 1997. Externalizing behavior problems and discipline revisited: nonlinear effects and variation by culture, context, and gender. *Psychol. Inquiry* 8, 161–175.
- Dierker, L.C., Merikangas, K.R., Szatmari, P., 1999. Influence of parental concordance for psychiatric disorders on psychopathology in offspring. *J. Am. Acad. Child Adolesc. Psychiatry* 38, 280–288.
- Dobkin, P.L., Tremblay, R.E., Sacchitelle, C., 1997. Predicting boys' early-onset substance abuse from father's alcoholism, son's disruptiveness, and mother's parenting behavior. *J. Consult. Clin. Psychol.* 65, 86–92.
- Duncan, T.E., Duncan, S.C., Hopps, H., Stoolmiller, M., 1995. An analysis of the relationship between parent and adolescent marijuana use via generalized estimating equation methodology. *Multivariate Behav. Res.* 30, 317–339.
- El-Sheikh, M., Flanagan, E., 2001. Parental problem drinking and children's adjustment: family conflict and parental depression as mediators and moderators of risk. *J. Abnorm. Child Psychol.* 29, 417–432.
- Epstein, N.B., Baldwin, L.M., Bishop, D.S., 1983. The McMaster Family Assessment Device. *J. Marital Fam. Therapy* 9, 171–180.
- Florsheim, P., Tolan, P.H., Gorman-Smith, D., 1996. Family processes and risk for externalizing behavior problems among African-American and Hispanic boys. *J. Consult. Clin. Psychol.* 64, 1222–1230.
- Goodman, Sherryll, H., Gotlib, Ian, H., 1999. Risk for psychopathology in the children of depressed mothers: a developmental model for understanding mechanisms of transmission. *Psychol. Rev.* 106 (3), 458–490.
- Gorman-Smith, D., Tolan, P.H., Zelli, A., Huesmann, L.R., 1996. The relation of family functioning to violence among inner-city minority youths. *J. Fam. Psychol.* 10, 115–129.
- Hill, M., 1997. *SPSS Missing Values Analysis 7.5*. SPSS, Chicago, IL.
- Hogan, D.M., 1998. Annotation: the psychological development and welfare of children of opiate and cocaine users: review and research needs. *J. Child. Psychol. Psychiatry* 39, 609–620.
- Hollingshead, A.B., 1975. *Four Factor Index of Social Status*. Department of Sociology, Yale University, New Haven, Conn.
- Hu, L., Bentler, P.M., 1995. Evaluating model fit. *Struct. Equation Modeling* 6, 76–99.
- Hu, L., Bentler, P.M., 1999. Cutoff criteria for fit indices in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equation Modeling* 6, 1–55.
- Jacob, T., Johnson, S., 2001. Sequential interaction in the parent-child communications of depressed fathers and depressed mothers. *J. Fam. Psychol.* 15, 38–52.
- Johnson, V., Pandina, R.J., 1991. Effects of the family environment on adolescent substance use, delinquency, and coping styles. *Am. J. Drug Alcohol Abuse* 17, 71–88.
- Joreskog, K., 1971. Simultaneous factor analysis in several populations. *Psychometrika* 36, 409–426.
- Kandel, D.B., 1990. Parenting styles, drug use, and children's adjustment in families of young adults. *J. Marriage Fam.* 52, 183–196.
- Kumpfer, K.L., DeMarsh, J., 1986. Family environmental and genetic influences on children's future chemical dependency. *J. Child. Contemp. Soc.* 49–91.
- Luthar, S.S., Cushing, G., Merikangas, K.R., Rounsaville, B.J., 1998. Multiple jeopardy: risk and protective factors among addicted mothers' offspring. *Dev. Psychopathol.* 10, 117–136.
- Marsden, J., Gossop, M., Stewart, D., Rolfe, A., Farrell, M., 2000. Psychiatric symptoms among clients seeking treatment for drug dependence. *Br. J. Psychiatry* 176, 285–289.
- McDermott, D., 1984. The relationship of parental drug use and parent's attitude concerning adolescent drug use to adolescent drug use. *Adolescence* 19, 89–97.
- McLellan, A.T., Luborsky, L., Cacciola, J., Griffith, J., Evans, F., Barr, H.L., O'Brien, C.P., 1985. New data from the Addiction Severity Index: reliability and validity in three centers. *J. Nerv. Ment. Dis.* 173, 412–423.
- Nunes, E.V., Weissman, M.M., Goldstein, R.B., McAvay, G., Seracini, A.M., Verdell, H., Wickramaratne, P.J., 1998. Psychopathology in children of parents with opiate dependence and/or major depression. *J. Am. Acad. Child Adolesc. Psychiatry* 37, 1142–1151.
- Phares, V., 1996. *Fathers and Developmental Psychopathology*. Wiley, New York.
- Regier, D.A., Shapiro, S., Kessler, L.G., Taube, C.A., 1984. Epidemiology and health service resource allocation policy for alcohol, drug abuse, and mental disorders. *Public Health Rep.* 99, 483–492.
- Rounsaville, B.J., Kleber, H.D., 1985. Untreated opiate addicts: how do they differ from those seeking treatment. *Arch. Gen. Psychiatry* 42, 1072–1077.
- Shapiro, S., Skinner, E.A., Kessler, L.G., Von Korff, M., German, P.S., Tischler, G.L., Leaf, P.J., Benham, L., Cottler, L., Regier, D.A., 1984. Utilization of health and mental health services. Three epidemiologic catchment area sites. *Arch. Gen. Psychiatry* 41, 971–978.
- Stanger, C., Achenbach, T.M., McConaughy, S.H., 1993. Three-year course of behavioral/emotional problems in a national sample of 4- to 16-year-olds: 3. Predictors of signs of disturbance. *J. Consult. Clin. Psychol.* 61, 839–848.
- Stanger, C., Higgins, S.T., Bickel, W.K., Elk, R., Grabowski, J., Schmitz, J., Amass, L., Kirby, K.C., Seracini, A.M., 1999. Behavioral and emotional problems among children of cocaine- and opiate-dependent parents. *J. Am. Acad. Child Adolesc. Psychiatry* 38, 421–428.
- Tec, N., 1974. Parent-child drug abuse: generational continuity or adolescent deviancy. *Adolescence* 9, 350–364.
- Vignoe, D., Achenbach, T.M., 2000. *Bibliography of Published Studies Using the Child Behavior Checklist and Related Materials*. Department of Psychiatry, University of Vermont, Burlington, VT.
- Wechsberg, W.M., Craddock, S.G., Hubbard, R.L., 1998. How are women who enter substance abuse treatment different than men?

- A gender comparison from the Drug Abuse Treatment Outcome Study. *Drugs Soc.* 13, 97–115.
- Weiss, R.D., Martinez-Raga, J., Griffin, M.L., Greenfield, S.F., Hufford, C., 1997. Gender differences in cocaine dependent patients: a 6 month follow-up study. *Drug Alcohol Depend.* 44, 35–40.
- Weissman, M.M., McAvay, G., Goldstein, R.B., Nunes, E.V., Verdeli, H., Wickramaratne, P.J., 1999. Risk/protective factors among addicted mothers' offspring: a replication study. *Am. J. Drug Alcohol Abuse* 25 (4), 661–679.
- Wilens, T.E., Biederman, J., Kiely, K., Bredin, E., Spencer, T.J., 1995. Pilot study of behavioral and emotional disturbances in the high-risk children of parents with opioid dependence. *J. Am. Acad. Child Adolesc. Psychiatry* 34, 779–785.
- Wills, T.A., Vaccaro, D., McNamara, G., 1992. The role of life events, family support, and competence in adolescent substance use: a test of vulnerability and protective factors. *Am. J. Commun. Psychol.* 20, 349–374.