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Relations Between Parent Psychopathology, Family Functioning, and Adolescent Problems In Substance-Abusing Families: Disaggregating the Effects of Parent Gender

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Abstract

The present study: (1) examined relations between parent psychopathology and adolescent internalizing problems, externalizing problems, and substance use in substanceabusing families; and (2) tested family functioning problems as mediators of these relations. Structural equation modeling was used to estimate the independent effects of parent psychopathology and family functioning problems by parent gender. Participants included 242 parents in treatment for substance abuse and/or dependence and 59 of their coparents (16.9% in treatment for substance-abuse/dependence) from middle income households (SES: $M = 4.7$; $SD = 2.1$). Ratings were obtained for 325 adolescents (48% female; 27.8% non-Caucasian) between the ages of 10 and 18 years ($M = 13.5$ years; $SD = 2.5$ years). Parent psychopathology, family functioning problems, and adolescent problems were assessed with parent and coparent ratings on the Symptom Checklist (SCL-90)/Brief Symptom Inventory (BSI), the Family Relationship Measure, and the Child Behavior Checklist, respectively. Results indicated that maternal psychopathology was directly related to adolescent internalizing problems and substance use, but maternal perceptions of family functioning problems failed to mediate relations between maternal psychopathology and adolescent problems. By contrast, paternal perceptions of family functioning problems uniquely mediated relations between paternal psychopathology and adolescent externalizing problems. Findings underscore the importance of examining how mothers and fathers may differentially impact adolescent problems in substance-abusing families.

Keywords

Parent substance use disorder; Parent comorbid psychopathology; Parent gender; Family functioning; Adolescence

Introduction

A large body of previous work has indicated that children of substance-abusing parents are at increased risk for both emotional and behavioral difficulties relative to their same-age peers [1–4]. In addition, these children are more likely to develop similar problems of substance use and abuse as they enter adolescence [5, 6]. Although it is well-known that children of substance-abusing parents are at greater risk for a multitude of problems, studies also demonstrate considerable variability in their psychological functioning. Because psychopathology and substance use problems do not affect all such children, it is of theoretical and clinical importance to identify the putative factors that predict negative outcomes among these youth. A better understanding of such factors may enable the identification of modifiable targets for future prevention and treatment.

Parent Psychopathology

Comorbid psychopathology among parents with substance abuse and/or dependence has consistently been shown to be a robust predictor of both youth internalizing and externalizing problems [7–10], as well as substance use [11–13]. Although authors have argued that the predictive strength of relations between parent and child psychopathology depend largely on the gender of the parent [14], remarkably few studies have examined the unique impact of maternal and paternal psychopathology on youth in this high-risk subgroup. Rather, the majority of prior research on this topic has either considered the presence of psychopathology in only one parent [15, 16], or combined the effects of maternal and paternal psychopathology together at the level of assessment [11, 12, 17–20] or analysis [13]. Moreover, given that these risk factors are often either examined in isolation or aggregated together, the estimation of their unique contribution to youth problems remains unclear.

The few studies of substance-abusing families that have examined the independent contribution of maternal and paternal psychopathology to youth internalizing and externalizing problems have generated inconsistent findings. For example, in a sample of children (ages 6–14 years) and their fathers with substance use disorders, Clark et al. [7] found both maternal and paternal psychopathology to demonstrate similar associations with child internalizing and externalizing disorders. Likewise, in an investigation of adolescents (ages 13–17 years) of either mothers or fathers with alcohol dependence, Ohannessian et al. [21] found both maternal and paternal psychopathology to show significant associations with adolescent major depression and conduct disorder. In contrast, in a study involving children (ages 7–18 years) of mothers or fathers with substance use disorders, Merikangas et al. [22] found that psychopathology among mothers showed stronger relations with youth internalizing disorders, whereas psychopathology among fathers demonstrated more robust associations with youth externalizing disorders. In sum, whereas some studies have found

both maternal and paternal psychopathology to have similar effects on youth internalizing and externalizing problems [7, 21], other studies have found effects to vary depending on the gender of the parent, with stronger relations observed between maternal versus paternal psychopathology and youth internalizing problems and between paternal versus maternal psychopathology and youth externalizing problems [22].

Studies of substance-abusing families have also differed with regard to the effects of maternal versus paternal psychopathology on youth substance use. For instance, in a sample of adolescents (ages 12–17 years) and their mothers or fathers with substance use disorders, Dierker et al. [23] found maternal psychopathology to uniquely predict adolescent substance use problems, whereas Ohannessian et al. [21] found relations between paternal but not maternal psychopathology and adolescent substance use. In light of such findings, additional research examining the independent effects of maternal and paternal psychopathology on youth substance use problems is warranted.

Further, among the small number of studies that have considered the effects of both maternal and paternal psychopathology on youth problems, none have tested the impact of maternal and paternal psychopathology on youth symptoms and substance use simultaneously in order to identify unique correlates of youth outcomes. Instead, nearly all have examined these relations using a multivariate regression approach in which only a single outcome can be considered at one time [7, 21–24]. Unlike multivariate regression, structural equation modeling enables the examination of associations among multiple predictors and outcomes simultaneously, while also accounting for the covariation among these variables [25]. Given that psychological problems in youth, both of the internalizing and externalizing variety, commonly occasion substance use [26] it may be important to adjust for the high degree of overlap among these problems in order to identify factors that are specific to particular symptom domains. Toward this end, considering multiple forms of youth psychopathology in tandem, while accounting for their covariation, may more effectively elucidate risks that are unique to each outcome.

Family Functioning

Although family functioning is an extremely broad construct consisting of a host of dimensions, specific domains of family functioning including cohesion, communication, support, and organization have been shown to be problematic in substance-abusing families [16, 27, 28] and have repeatedly served as significant predictors of adolescent problems in community samples [29–31], clinical samples [32, 33], and among substance-abusing samples [16]. Further, research involving general population [34] and at-risk samples of youth [35, 36] has shown that family functioning problems mediate relations between parent and youth psychopathology. Specifically, Davies and Windle [34] found that family functioning (including family cohesion and support problems) mediated relations between maternal depressive symptoms and child internalizing and externalizing problems. Consistent with these findings, studies involving youth at risk due to maternal depression have found that family functioning (including communication and cohesion problems) mediated relations between parental psychopathology and youth internalizing [35] and externalizing disorders [36].

Although such findings suggest that family functioning may account for relations between parent and youth psychopathology in substance-abusing families, past research indicates that substance-abusing families are a unique population, for whom some relations may function differently than for non-substance abusing families [37]. Therefore, examination of these factors in substance-abusing families may reveal pathways of risk that are specific to this subgroup.

In addition, no research to date has considered the relative importance of maternal versus paternal perceptions of family functioning in the prediction of adolescent psychopathology and substance use. Often studies have combined data from multiple sources by averaging across informants [34] or have employed a single informant [36] in their estimation of family functioning. Yet, previous work indicates that these approaches may conceal substantive differences in the observations of individual family members [38] and that such differences among informants may be greater for low-functioning populations [39]. Therefore, it is worthwhile to distinguish between maternal and paternal reports of family functioning, particularly in substance-abusing populations, in order to detect distinct perceptions of relations and interactions among family members.

Accordingly, the present study focuses on adolescent children of substance-abusing parents and extends previous findings by: (1) estimating a structural model of relations between parent psychopathology and adolescent internalizing problems, externalizing problems, and substance use; and (2) testing family functioning problems as potential mediators of these relations. Importantly, relations among constructs were considered separately for mothers and fathers in order to examine the independent contribution of maternal versus paternal psychopathology and perceptions of family functioning to adolescent problems.

Given that previous research examining associations between both maternal and paternal psychopathology and youth problems has yielded inconsistent findings [7, 22], no predictions were made concerning the differential impact of these factors on youth outcomes. However, in consideration of other community [34] and high-risk studies [35, 36] that have found family functioning to mediate relations between parent and youth psychopathology, we hypothesized that both maternal and paternal ratings of family functioning would mediate relations between parent psychopathology and youth problems.

Method

Participants

From October 1992 through June 2003 substance-abusing/dependent adults living with and parenting at least one child between the ages of 2 and 18 years were recruited from substance abuse treatment facilities in Vermont, Texas, and California. Details of participant screening and selection are described in detail elsewhere [40]. Of the 669 parents recruited, 507 (75.8%) participated. The present study focuses on the 224 families with 325 adolescent youth between the ages of 10 and 18 years.

The 224 parent participants with substance abuse/dependence disorders were 61.2% female (38.8% male) and ranged in age from 20 to 65 years ($M = 38.6$ years; $SD = 6.6$ years). One-

hundred forty (62.5%) of these substance-abusing parents reported living with a coparent. Of the parents living with a coparent, 117 (83.6%) gave us permission to contact their coparent, and 59 (50.4%) of these coparents participated. Therefore, the study included 165 families in which only one substance-abusing parent participated and 59 families in which both the substance-abusing parent and their coparent participated. Among the 165 families in which the parent in treatment participated alone, there were 104 (63.0%) substance-abusing mothers and 61 (37.0%) substance-abusing fathers. Of the 59 families in which both the parent in treatment and the coparent participated, there were 25 (42.4%) families in which only the mother was in treatment, 24 (40.6%) families in which only the father was in treatment, and 10 (16.9%) families in which both the mother and father were receiving treatment for substance abuse and/or dependence. Moreover, considering both parents and coparents together, 85.9% of mothers and 81.7% of fathers were currently in substance abuse/dependence treatment, with all families having at least one parent in substance abuse treatment.

Differences in demographic (parent SES, parent age, parent primary substance of dependence) and symptom characteristics (parent psychopathology, family functioning problems, adolescent psychopathology, adolescent substance use) between families in which both parents participated and those in which data from a second parent were missing (i.e., due to either coparent absence or non-participation) were tested. Likewise, differences in demographic and symptom characteristics between coparents who were versus were not in substance abuse/dependence treatment were also tested. There were no significant differences between parents or adolescents with versus without measures from a second parent in the home (all $ps > 0.05$), nor were there significant differences in demographic and symptom characteristics between treated versus non-treated coparents (all $ps > 0.05$). Therefore, all parents were included in analyses. Parent mean SES was 4.7 ($SD = 2.1$, range 1–9) on the Hollingshead 9-step occupational scale [41], where a score of 4 includes occupations such as postal worker, licensed practical nurse, and day care teacher. Primary drugs of abuse among parents in treatment included cocaine (45.9%), opiates (32.9%), alcohol (17.6%), and marijuana (3.6%). Of the parent participants, 67.4% lived in Vermont, 26.8% lived in Texas, and 5.8% lived in California.

Families included 325 adolescents who were 52% male ($n = 169$) with a mean age of 13.5 years ($SD = 2.5$ years). The racial/ethnic composition of the sample was 72.2% Caucasian, 17.1% African American, 8.2% Latino/Latina, 0.6% Native American, and 1.9% of mixed or other ethnicity. Of the adolescents, 77.5% were the biological or adoptive child of the parent in treatment, 9.1% were the step-child, and 13.4% had some other relationship with their caregiver (e.g., child of boyfriend or girlfriend, grandchild, etc.). In the 12 months prior to their assessment, 23.3% of the adolescents had been referred for mental health services.

Procedures

Clinic staff described the study to eligible patients and requested their participation within the first 30 days of substance abuse/dependence treatment. Parents were informed that all information they provided about their family was confidential and would not be released to anyone without their express written consent. Clinic staff then distributed report forms to all

consenting parents. Parents with difficulty reading were administered the forms orally. Parents were compensated \$20.00–\$50.00, depending upon their promptness in returning complete forms. We requested participant permission to contact another adult in the home who shared parenting responsibilities, such as a spouse, partner, or other family member (i.e., coparent). If coparents agreed to participate when we contacted them, they were mailed parallel forms to those completed by participants. Coparents were compensated \$20.00–\$50.00 for completing the forms. All study procedures were approved by the University of Vermont Institutional Review Board.

Measures

Parent Symptom Scales—Parents completed the Symptom Checklist (SCL-90) [42] or the Brief Symptom Inventory (BSI) [43]. The 53 items shared by the SCL-90 and BSI were used in the present study. Items of the BSI/SCL-90 are measured on a 5-point Likert scale, with responses ranging from 0 (*not at all*) to 4 (*extremely*). Scores are calculated by taking the mean item rating. In the current study, the BSI Global Severity Index (GSI) was used as a broad measure of parent psychopathology, with higher scores reflecting greater levels of psychopathology.

Family Functioning Problems—Parents completed the Family Relationship Measure (FRM) [44], a 35-item assessment of family relationship characteristics, including cohesion, communication, support, organization, and family beliefs. Prior confirmatory factor analyses (CFA) of this measure supported a factor structure consisting of 6 primary factors (Cohesion, Communication, Support, Organization, Deviant Beliefs, and Beliefs about Family) and 2 higher-order factors (Emotional Cohesion and Family Beliefs) [44]. In consideration of prior work showing strong predictive relations between the subdomains of family emotional cohesion and adolescent problems [16, 29–33] only those scales that comprise the Emotional Cohesion Factor were used in the current study: Cohesion, Communication, Support, and Organization. Response choices for these scales range from 1 (*not true*) to 4 (*always or almost always true*). High scores on the Cohesion and Communication scales represent better family functioning, whereas high scores on the Support and Organization scales represent worse family functioning. In structural models, all scales were scored such that higher values represent worse family functioning.

Adolescent Symptom Scales—Parents completed either the Child Behavior Checklist for ages 4–18 (CBCL/4–18) [45] or the more recent version, the Child Behavior Checklist for ages 6–18 (CBCL/6–18) [46], both of which obtain ratings of 20 competence items, 118 specific behavioral/emotional items, and 2 open-ended items. For the behavioral/emotional items, the response scale ranges from 0 (*Not True*) to 2 (*Very or Often True*). Raw scores of the broadband Internalizing and Externalizing syndrome scales were used as measures of adolescent internalizing and externalizing problems in the present study. In order to harmonize scores across instrument versions, only the 63 items shared by the 1991 and 2001 CBCL, consisting of the same content and response scale, were used to derive Internalizing and Externalizing syndrome scores. The CBCL scales demonstrate excellent internal consistency and test–retest reliability and discriminate well between referred and non-referred samples [46].

Adolescent Substance Use—Parents completed a Youth Substance Use Questionnaire (SUQ) adapted from the Denver Youth Survey (DYS) [47]. The SUQ consists of 60 substance use items that ask parents to rate how frequently their child had engaged in substance use (e.g., tobacco, alcohol, marijuana, other substances) and had experienced negative consequences due to substance use in the past year. The response scale ranges from 0 (*Never*) to 5 (*Every day*). Only those items concerning frequency of substance use ($n = 20$) were used in model estimation. Because scores on the substance use variables were significantly positively skewed, they were transformed using a logarithmic function to approximate normality (i.e., $y = \ln(X+1)$).

Results

Preliminary Analyses

Parent Psychopathology, Family Functioning, and Adolescent Problems by Parent Gender—A series of one-way ANOVAs were performed to examine differences in measures of parent psychopathology, family functioning, and adolescent problems by parent gender. For this purpose, coparents and multiple siblings were excluded from the analysis to maintain the statistical assumption of independence of observations. As is displayed in Table 1, mothers had significantly higher psychopathology scores on the GSI than did fathers. Likewise, mothers reported significantly higher internalizing, externalizing, and substance use scores among their adolescent children relative to fathers (all $ps < 0.05$). However, there were no significant differences in family functioning problem scores by parent gender.¹

Relations Among Parent Psychopathology, Family Functioning and Adolescent Problems—Bivariate analyses indicated that both mother and father psychopathology scores on the GSI were significantly correlated with mother and father family functioning variables. In addition, mother and father family functioning variables were, in turn, related to one or more of the adolescent internalizing, externalizing, and substance use variables. Finally, mother and father psychopathology scores were related to at least one of the adolescent problem outcomes. Moreover, the bivariate correlations observed among variables fulfilled the recommended criteria for testing mediation (the zero-order correlation matrix is available upon request) [48].

Primary Analyses

Developing Manifest Variables and Latent Constructs for Structural Models—Both *Mother Treatment* and *Father Treatment* (0 vs. 1) exogenous variables were included as covariates in model estimation to control for the potential effect of variations in substance/abuse dependence treatment status on parent psychopathology, family functioning, and adolescent problems. Similarly, in order to control for the potential effects of adolescent gender and adolescent age on these parameters, *Adolescent Gender* (1 = male vs. 2 = female), and *Adolescent Age* (10–18 years) were also included as covariates in structural models.

¹Examination of differences in family functioning scores for parents versus coparents also revealed no statistically significant differences.

Parent psychopathology manifest variables, *Mother Psychopathology* and *Father Psychopathology*, were derived from maternal and paternal scores on the SCL-90/BSI GSI. Likewise, the *Mother Family Functioning* and *Father Family Functioning* constructs included the 4 FRM scales rated by mothers and fathers as indicators, respectively. Given that differences in family structure (i.e., single vs. two-parent families) may influence the measurement of family functioning, measurement invariance was tested by constraining factor loadings and residuals of indicators to be equal across single and two-parent families. There were no significant differences in model fit across family structure type ($\chi^2_{\text{diff}}(7) = 9.79, p > 0.05$), suggesting the construct displayed similar measurement properties in both groups.

With regard to adolescent problems, the *Adolescent Internalizing*, *Adolescent Externalizing*, and *Adolescent Substance Use* constructs each included mother and father ratings of these behaviors on the CBCL and the SUQ. To determine whether maternal and paternal indicators of adolescent problems operated in a similar fashion, measurement invariance was tested by constraining the factor loadings and residuals of indicators for these constructs to be equal across each informant (i.e., mother and father ratings). This informant constrained model fit significantly better than did an unconstrained model in which these parameters were allowed to vary ($\chi^2_{\text{diff}}(6) = 30.03, p < 0.05$). Further, this constrained model prevented the potential model under-identification and/or over-fitting issues that may result from two-indicator factors [25]. For these reasons, the informant constrained model was retained.²

Modeling Relations Among Parent Psychopathology, Family Functioning Problems, and Adolescent Problems—

A series of structural models were estimated using the complex sample modeling method in *Mplus*, [49] enabling us to obtain correct standard errors and test statistics when observations are not independent (i.e., multiple children are in the same family). All observations were included in the analysis, taking missing data into account by means of the Full Information Maximum Likelihood estimator implemented by *Mplus*. This method, which treats data as missing at random [50, 51], is both well-accepted and has been shown to provide more accurate estimates than other methods such as casewise deletion, pairwise deletion, and data imputation [52–54]. Covariance coverage for all structural models exceeded the minimum covariance coverage of 0.1 recommended for reliable model convergence [49].

Mediation was tested using nested model comparison, with all comparisons performed separately by parent gender. Toward this end, two nested models were compared to a Full Model for each parent gender: (1) a Mother (or Father) Direct Model; and (2) a Mother (or Father) Mediated Model. The Full Model (see Fig. 1) included all six direct and indirect paths among parent predictors and adolescent outcomes, and as such, proposes that parent psychopathology is both directly and indirectly related to adolescent problems and substance use through family functioning problems. By contrast, relative to the Full Model, the Mother (or Father) Direct Model did not contain the indirect path between *Mother* (or *Father*)

²Preliminary measurement models of Mother Family Functioning, Father Family Functioning, Adolescent Internalizing, Adolescent Externalizing, and *Adolescent Substance Use* constructs indicated that all indicators loaded significantly onto their respective constructs.

Psychopathology and Mother (or Father) Family Functioning Problems, indicating that only direct relations exist between parent psychopathology and adolescent problems and substance use, and likewise, between family functioning problems and adolescent problems and substance use. Finally, relative to the Full Model, the Mother (or Father) Mediated Model did not contain the three direct paths between *Mother (or Father) Psychopathology* and the three adolescent problem outcomes, indicating that relations between parent psychopathology and adolescent problems are fully mediated by family functioning problems.

To compare the fit of the Full Model to the fit of all nested models, the difference between the Chi-square values of the two models was examined using the formula recommended by Muthén & Muthén under cluster sampling [25, 49]. A significant Chi-square difference value indicates that the Full Model provides a superior fit to the data relative to any given nested model. Nested models that were not significantly different from the Full Model were retained in the interest of parsimony. When nested model comparisons supported the presence of mediation among relations, the significance of indirect effects were examined by calculating the product of indirect paths (i.e., $\beta_1 * \beta_2$) [55]. Indirect effects were calculated via the delta method of standard errors implemented by *Mplus* [49].

In addition to nested model comparisons, several fit indices were also used to assess model fit, including the Chi-square to degree-of-freedom ratio (χ^2/df ; with values < 3 , demonstrating good fit), the Tucker Lewis Index (TLI; with values > 0.95 indicating good fit), and the Root Mean Square Error of Approximation (RMSEA; with values < 0.05 , indicating good fit). Because of the large number of covariate pathways and their potential low magnitude, the TLI criterion was not rigidly applied [25].

The Full Model provided a satisfactory fit to the data ($\chi^2(137) = 252.17, p = 0.00; \chi^2/df = 1.84$; TLI = 0.764; RMSEA = 0.051). Covariate effects indicated that mothers currently in treatment had higher mean psychopathology scores than did mothers who were not currently in treatment ($\beta = 0.19, p < 0.05$), older adolescents had fathers with lower mean psychopathology scores ($\beta = -0.22, p < 0.05$), and older adolescents had higher mean substance use scores than did younger adolescents ($\beta = 0.38, p < 0.05$).

Nested model comparisons testing *Mother Family Functioning* as a mediator indicated that the Mother Direct Model provided a satisfactory fit to the data ($\chi^2(138) = 263.10, p = 0.00; \chi^2/df = 1.91$; TLI = 0.746; RMSEA = 0.053), but fit significantly worse than did the Full Model ($\chi^2_{diff}(1) = 3.88, p < 0.05$), demonstrating that the indirect path between *Mother Psychopathology* and *Mother Family Functioning* made a significant contribution to the fit of the model. Likewise, the Mother Mediated Model provided a fine fit to the data ($\chi^2(140) = 262.73, p = 0.00; \chi^2/df = 1.88$; TLI = 0.754; RMSEA = 0.052), but also fit significantly worse than did the Full Model ($\chi^2_{diff}(3) = 12.18, p < 0.05$). Taken together, these findings indicate that relations between mother psychopathology and adolescent problems are not mediated by mother family functioning problems, but rather exert their impact directly.

Nested model comparisons testing *Father Family Functioning* as a mediator indicated that the Father Direct Model provided a satisfactory fit to the data ($\chi^2(138) = 257.71, p = 0.00$;

$\chi^2/df = 1.87$; TLI = 0.757; RMSEA = 0.052), but fit significantly worse than did the Full Model ($\chi^2_{diff}(1) = 5.53, p < 0.05$), demonstrating that the indirect path between *Father Psychopathology* and *Father Family Functioning* made a significant contribution to the fit of the model. The Father Mediated Model provided a good fit to the data ($\chi^2(140) = 258.95, p = 0.00$; $\chi^2/df = 1.85$; TLI = 0.762; RMSEA = 0.051) and provided a similar fit to the Full Model ($\chi^2_{diff}(3) = 7.64, p > 0.05$), indicating that the direct paths between *Father Psychopathology* and adolescent problems could be omitted. Therefore, the Father Mediated Model was retained as the final model in the interest of parsimony.

In the Father Mediated Model (see Fig. 1b), both *Mother Psychopathology* and *Father Psychopathology* predicted *Mother Family Functioning* and *Father Family Functioning*, respectively ($\beta = 0.45, p < 0.05$; $\beta = 0.31, p < 0.05$). However, only *Mother Psychopathology* directly predicted adolescent problems: *Adolescent Internalizing* ($\beta = 0.28, p < 0.05$) and *Adolescent Substance Use* ($\beta = 0.29, p < 0.05$). By contrast, *Father Family Functioning*, but not *Mother Family Functioning*, predicted adolescent problems: *Adolescent Internalizing* ($\beta = 0.53, p < 0.05$), *Adolescent Externalizing* ($\beta = 0.54, p < 0.05$), and *Adolescent Substance Use* ($\beta = 0.29, p < 0.05$). Examination of the product of indirect paths demonstrated that only the indirect effect of *Father Psychopathology* via *Father Family Functioning* to *Adolescent Externalizing* was significant ($z = 2.04, p < 0.05$), but the indirect effects to *Adolescent Internalizing* and *Adolescent Substance Use* were not: $z = 1.86$ and $z = 1.49$, respectively, all $ps > 0.05$. These findings indicate that father family functioning uniquely mediates relations between father psychopathology and adolescent externalizing problems. In total, the Father Mediated Model accounted for 42% of the variance in adolescent internalizing problems, 38% of the variance in adolescent externalizing problems, and 34% of the variance in adolescent substance use.³

Discussion

The present study sought to advance current knowledge of several risk factors for the development of adolescent internalizing, externalizing, and substance use problems in substance-abusing families. In order to examine the specific effects of mothers versus fathers on adolescent adverse outcomes, the independent contributions of both maternal and paternal psychopathology were estimated in structural models. Further, reports of family functioning problems were tested independently for both mothers and fathers as mediators of relations between parent psychopathology and adolescent problems.

Results of structural models indicated that maternal psychopathology alone predicted adolescent internalizing problems and substance use in this high-risk subgroup. These findings are consistent with a large meta-analytic study of clinically-referred and community-ascertained families [14] and approximate the results of some work involving substance-abusing families [22–24], that have found stronger relations between maternal versus paternal psychopathology and youth internalizing problems. However, our results

³We examined the potential impact of substance use severity on both model selection and significant coefficient paths by including a covariate of substance use severity derived from the Michigan Alcohol Screening Test [70] and/or the Drug Abuse Alcohol Screening Test [71]. Results were stable when substance use severity was included as a covariate of all manifest variables and constructs in estimated models.

differ somewhat from studies of substance- and alcohol-dependent families that have found both maternal and paternal psychopathology to predict adolescent internalizing and externalizing problems [7, 15] and paternal (but not maternal) psychopathology to independently predict adolescent substance use [21]. Such inconsistent results across studies may be due in large part to differences in participants' clinical characteristics across studies. Specifically, studies in which stronger relations were observed between paternal and youth psychopathology have included only fathers with substance use disorders as the identified patient [7] and/or rates of psychopathology were greater for fathers relative to mothers [21]. In the current study, however, mothers with substance use disorders were more frequently the identified patient (i.e., 61.2% of patients were mothers) and mothers exhibited higher levels of psychopathology than did fathers. In a similar fashion, higher rates of psychopathology have been detected among mothers relative to fathers in earlier studies that have found stronger relations between maternal psychopathology and youth problems [22, 23]. Therefore, it is possible that we failed to observe significant direct relations between paternal psychopathology and adolescent problems in the current sample because fathers exhibited less symptom severity than did mothers. Alternatively, because mothers more frequently serve as the primary caretaker in the family [56] and spend greater time with children relative to fathers [57], our observation of significant direct effects between maternal versus paternal psychopathology and adolescent problems may simply reflect differences in mothers' and fathers' degree of involvement in the parental role. It will be important for additional research to examine several possible moderators (e.g., parent symptom severity, parental involvement, and adolescent gender) that jointly contribute to poor outcomes in adolescent children of substance-abusing parents.

In contrast to our expectation that both maternal and paternal family functioning problems would mediate relations between parent psychopathology and adolescent problems, only paternal family functioning problems mediated relations between paternal psychopathology and adolescent externalizing problems. Findings that father, but not mother, family functioning problems mediate relations between parental psychopathology and adolescent problems counter previous general population studies that have found family functioning to mediate relations between maternal and child psychopathology [34]. Such discrepant findings may be due to differences in the nature of these study samples. In particular, whereas prior studies that have tested family functioning as a mediator of relations between parent and youth psychopathology have involved parents obtained from the community [34] or selected parents from the community based on elevated depressive symptoms [35, 36], the present study consisted of parents receiving treatment for substance abuse and/or dependence. Given the high propensity of males to display anger and physical aggression when affected by substances [58], some work has suggested that maternal substance use may cause less overt family distress than paternal substance use [21, 59]. Likewise, previous work has found that fathers who abuse illicit substances are more likely than unaffected fathers to exhibit physical violence and dysfunctional parenting, which in turn, predict greater problems among children [3]. Such differences in the behavioral topography of fathers versus mothers across samples may account for the differences observed between the current study and others. Future studies that examine parent substance abuse or dependence as a moderator of relations between parent psychopathology, family functioning, and

adolescent problems will enhance current understanding of possible differences in the magnitude or action of these relations across subgroups.

Alternatively, it is possible that divergent results across studies are a function of differing approaches to measurement. Because no previous work has considered the distinct effects of both maternal and paternal perceptions of family functioning in the same analysis, it is possible that family functioning problems rated by mothers predict adolescent problems when they are considered alone, but this effect is comparatively reduced when they are considered together with father ratings. In support of this notion, although mother ratings of family functioning problems failed to predict adolescent problems when considered with father ratings in structural models, bivariate correlations between these variables were significant when mother family functioning ratings were considered in isolation.

It is important to consider the limitations of this research. First, because cross-sectional data were used in the current study, the direction of effects and/or causation cannot be reliably determined. It is equally plausible that these problems impact one another in a bidirectional fashion or that the observed relations among parent psychopathology, family functioning problems, and adolescent problems are due in part to their association with another risk factor. The model tested in the current study is one possible representation of how these factors may operate in substance-abusing families. In future work, prospective designs involving additional risk factors will provide further support for the direction and action of these factors over time.

Second, given that parents served as the only informants of their own psychopathology and family functioning, it is possible that parent psychopathology may have negatively impacted perceptions of family functioning. However, previous work has demonstrated acceptable levels of agreement between parent and observer ratings of family functioning when there is an elevated rate of parent psychopathology [39], suggesting that parent reports of family functioning are reliable, even in the presence of this potential methodologic artifact.

As well, although sample size in the present study made examination of the interaction between parent and adolescent gender prohibitive, research focusing on how these risk processes differ by both factors may enable identification of the dyads that are most and least vulnerable to poor outcomes in substance-abusing families. Finally, results of this study may be specific to substance-abusing families who obtain treatment and may not generalize to all substance-abusing families or to families in the general population. For example, fewer than 2/3 of substance-abusing parents in treatment lived with a coparent, and among these coparents, a large subset declined participation. Therefore, the current results may not extend to populations in which two-parent families and/or coparent involvement are more common.

Despite these limitations, the current study is among the few that have examined the separate contributions of maternal and paternal psychopathology to adolescent psychopathology and substance use among youth at heightened risk for these problems. It is also the first to distinguish maternal and paternal reports of family functioning problems as mediators of these relations. Our results join a growing body of past [60] and current [14,61]

research that has demonstrated fathers as central influences in child and adolescent development. Nevertheless, it is important to note that the current results do not discount the importance of mothers' impact on adolescent functioning and adjustment. To be precise, results indicated that both maternal and paternal psychopathology predicted adolescent outcomes, but varied in terms of the action of these relations.

Results of the present study have a number of implications for future empirical and clinical work. Of note, findings re-emphasize the value of including both mothers and fathers in investigations to examine how caretaker functioning may be distinctly related to youth problems. In addition, findings highlight the importance of considering both mothers and fathers in interventions aimed at reducing risk among children of substance-abusing parents. Perhaps because males are less apt than are females to participate in individual psychological services [62, 63] and substance-abusing fathers are less likely to permit their children to participate in interventions or treatment relative to substance-abusing mothers [64], there is little treatment research data available to determine the incremental superiority of involving fathers in these services [65], with few exceptions [66]. Investigators have also proposed that in certain cases (i.e., extreme interparental conflict) father involvement in child and family-centered treatment can be counter-therapeutic [66]. This may be of particular significance for substance-abusing families in which problems such as interparental conflict or domestic violence are common [67–69]. Thus, it will be critical for future investigations involving substance-abusing families to examine the extent to which father involvement in treatment and intervention yield superior outcomes to treatment in which only mothers are participants, and under what circumstances.

Summary

The present study aimed to contribute to current understanding of adolescent problems in substance-abusing families by: (1) estimating a structural model of relations between parent psychopathology and adolescent internalizing problems, externalizing problems, and substance use; and (2) testing family functioning problems as mediators of these relations. In order to examine potential variations in relations by parent gender, the unique effects of parent psychopathology and family functioning problems were modeled separately for mothers and fathers. Results indicated that, although maternal psychopathology was directly related to adolescent internalizing problems and substance use, paternal psychopathology was indirectly related to adolescent externalizing problems via paternal reports of family functioning problems. Findings of this study highlight that the operation of risk factors in substance-abusing families may differ considerably by parent gender, emphasizing the need for future consideration of both parents in intervention and treatment.

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Fig. 1.

a Full model; Mother Treatment, Father Treatment, Adolescent Gender, and Adolescent Age covariate paths to manifest variables and latent constructs are not displayed; indicators of latent constructs and residuals are not displayed. **b** Father Mediated Model; $N = 325$; $\chi^2(140) = 258.95$, $p < 0.005$; $\chi^2/df = 1.85$; TLI = 0.762; RMSEA = 0.051; * $p < 0.05$; Squared multiple correlations are displayed within constructs and manifest variables. Only significant covariate paths are displayed, indicators of latent constructs, and residuals are not displayed

Table 1

Parent psychopathology, family functioning, and adolescent problems by parent gender

Parent Variables	Mother Report <i>M (SD)</i>	Father Report <i>M (SD)</i>	<i>F</i>
Global Severity Index	1.22 (0.89)	0.90 (0.69)	5.85*
FRM Cohesion	18.49 (3.87)	18.17 (3.02)	0.26
FRM Communication	8.64 (2.03)	8.52 (1.93)	0.74
FRM Support	11.02 (3.21)	10.76 (2.92)	0.22
FRM Organization	9.94 (2.75)	10.32 (3.29)	0.55
Adolescent Variables			
CBCL Internalizing	8.17 (7.89)	5.71 (5.43)	6.47*
CBCL Externalizing	11.39 (10.88)	7.63 (8.20)	7.61*
SUQ Substance Use	1.25 (1.07)	0.74 (0.83)	7.85*

Note Analyses of variance excluded coparents and multiple siblings to maintain independence of observations; Ns ranged from 49 to 137 across measures;

*
 $p < 0.05$