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Children of Treated Substance-abusing Mothers: A 10-year Prospective Study

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Abstract

The study examined children of substance-abusing mothers approximately 10 years after mothers' admission to drug abuse treatment, and identified maternal characteristics that may be risk factors for child behavior problems on the Child Behavior Checklist (CBCL). Data were obtained from 396 mothers who were included in a sample consecutively admitted to 44 treatment programs in 13 California counties during 2000–2002. Addiction Severity Index was administered at both intake and follow-up. Each mother reported on one child 6–17 years of age. All of the children had been exposed to drugs either in utero or postnatally. At follow-up about 22% of the children demonstrated borderline or clinical range problem behaviors. Child behavior problems were related significantly to the mothers' ethnicity (lower among Hispanics relative to white), and problem severity in family/social relationship and mental health, marginally related to her prior medical/health problem, and not related to severity in alcohol, drug, legal and employment. Assisting mothers to address their family/social relationship and psychological problems may have an added value to prevent or reduce behavioral problems of their children.

Keywords

Child behavior; maternal drug use; risk-factors

Introduction

Abuse of alcohol and illicit drugs can cause serious psychological and physical health problems for mothers and their children. Several studies have assessed the detrimental effects of prenatal exposure to drugs and alcohol; however, a mothers' ongoing substance abuse, and the chaotic home environment it creates, can also have detrimental effects on children's psychological growth and development (Chatterji & Markowitz, 2001; Clark, Cornelius, Wood, & Vanyukov, 2004; Conners et al., 2004; Hanson et al., 2006; Linares et al., 2006). Based on a cohort of substance-using mothers prospectively followed for 10 years, this article focuses on their children and identifies mothers' characteristics that may heighten risk for children's emotional and behavioral problems.

Maternal Determinants of Child Behavior Problems

Several maternal factors have been associated with poor behavioral outcomes among children, some of whom may have also been prenatally exposed to alcohol and illicit substances. Factors that have been identified with child development and behaviors problems include parental substance abuse, domestic violence (Delaney-Black et al., 2000; Whitaker, Orzol, & Kahn, 2006), and the resulting neglect and abuse (Dunn et al., 2002;

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Hildyard & Wolfe, 2002). Findings from the National Institute of Mental Health Epidemiologic Catchment Area survey found that parental substance abuse was associated with approximately a threefold increase in risk for child maltreatment (Chaffin, Kelleher, & Hollenberg, 1996). A more recent study reported that parental substance abuse was associated with a more than twofold increase in the risk of physical and sexual abuse of children (Walsh, MacMillan, & Jamieson, 2003). Moreover, the correlations between substance abuse, domestic violence, and child abuse is well documented (Center for Substance Abuse Prevention, 2000).

Children who endure such chaotic home environments are at risk for a multitude of emotional and behavioral problems. These children are often angry, antisocial, hyperactive, physically aggressive, and even violent (Dunn et al., 2002). In addition, they often perform poorly in school and engage in delinquent behavior (Hildyard & Wolfe, 2002; Simon, Sim, Richardson, Rawson, & Ling, 2000). For some, the consequences include low self-esteem, depression, hopelessness, self-mutilation, and suicide attempts (Dube et al., 2001; Pynoos, Steinberg, & Piacentini, 1999; Shepard, 1999; Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003; Stein, Leslie, & Nyamathi, 2002). Studies have also linked harmful childhood environments to compulsiveness, panic attacks, personality disorders, dissociation, and dangerous play (Brohl, 1996; Hildyard & Wolfe, 2002; Kang, Deren, & Goldstein, 2002; Tyler, Cauce, & Whitbeck, 2004).

Additional research has focused on maternal mental health and cognitive abilities, indicating that a mother's psychiatric well-being is strongly related to child behavior outcomes (Accornero, Morrow, Bandstra, Johnson, & Anthony, 2002; Luthar, Cushing, Merikangas, & Rounsaville, 1998; Steinhausen, Mas, Ledermann, & Metzke, 2006; VandeMark et al., 2005). Studies have reported that the psychological state of substance-using mothers is significantly associated with child internalizing behaviors, more so than prenatal drug exposure (Steinhausen et al., 2006) or recent maternal drug use (Accornero et al., 2002). Studies have also consistently found that the prevalence of child behavior problems increases as cumulative risk factors increase (Conners et al., 2004; Luthar et al., 1998; VandeMark et al., 2005; Whitaker et al., 2006). These findings are particularly concerning given that in 2002 the National Survey on Drug Use and Health found that nearly two million women of child rearing age suffered from co-occurring mental health and substance abuse disorders (Substance Abuse Mental Health Services Administration, 2002).

Racial Disparities

Disparities associated with ethnicity and race are evident in many maternal and child health conditions and behaviors. For example, significant differences have been found in the prevalence of smoking and alcohol use during pregnancy (Phares et al., 2004), the length of the gestational period, birth weight, rates of infant mortality (Alexander, Wingate, Bader, & Kogan, 2008; Anachebe, 2006), maternal mortality(Anachebe, 2006), breastfeeding behaviors (Phares et al., 2004), rates of child depressive symptoms/diagnoses (Brown, Meadows, & Elder, 2007; Kennard, Stewart, Hughes, Patel, & Emslie, 2006), and the prevalence of anxiety disorders amongst youth (Pina & Silverman, 2004; Silverman, La Greca, & Wasserstein, 1995). These differences are most apparent between African-Americans and whites, although other groups have been under-examined (Alexander et al. , 2008; Anachebe, 2006; Collins & David, 2009; Phares et al., 2004) and few studies have applied a longitudinal perspective (Lu & Halfon, 2003). Racial/ethnic disparities in child health have been attributed to genetic factors in addition to maternal health behaviors, social environments, and access to health care (Bryant, Worjoloh, Caughey, & Washington, 2010). Similarly, key determinants of racial/ethnic differences in drug use behaviors are thought to include socioeconomic differences, cultural factors, and experiences of prejudice and discrimination (Buka, 2002).

Current Study

The present study takes advantage of a large and ethnically diverse sample of women who were admitted to drug abuse treatment and participated in the California Treatment Outcome Project (CalTOP) in 2000–2002. CalTOP was a multisite and multicounty prospective treatment outcome study (see Hser et al. [2002] and Evans and Hser [2004] for a detailed description of the CalTOP study design and methods) designed to track patient movement through drug treatment programs, measure standardized assessment of patient service needs, record service utilization, assess treatment outcomes, and determine the extent to which substance abuse treatment produces cost-offsets in other health and social service systems. A follow-up interview was conducted with a subset of CalTOP women 10 years later to assess their status and their children. This article presents findings of these children, and maternal characteristics that predict children's problem behaviors. This study contributes to the literature by providing information on the long-term outcomes among substance-abusing mothers and their children, information that can help to improve existing services and interventions to prevent or ameliorate the adverse consequences associated with substance abuse among pregnant and parenting women. This study improves on prior work by examining data collected prospectively on the multi-dimensional and long-term outcomes of a large and heterogeneous sample of mothers and their children.

Based on available literature, we hypothesized that levels of severity in mothers' alcohol and drug use and other problems at intake will be related to poorer child behavior reported at follow-up.

Methods

Participants

CalTOP recruited consecutive admissions to 44 drug abuse treatment programs in 13 California counties during 2000–2002. Among the original CalTOP sample, approximately 4,500 women were parenting mothers (i.e., pregnant or having children under 18) at admission to drug treatment. Thus, all of the women had children who were exposed to drugs either in utero or post-natally. In 2010–11, a random sample of approximately 700 CalTOP mothers was followed-up and of these, 396 were parenting dependent children and provided an assessment of their child. Women were not asked to assess their child if they only had children over age 18 at the time of follow-up interview or if the children who were under age 18 at the time of follow-up interview had not been living with the mother in the prior 6 months or had not spent enough time in the mother's custody for her to be able to rate the child.

Assessment Procedures

Mothers were assessed at intake and follow-up using the Addiction Severity Index. All mothers were asked to rate a child under 18 years if the child had been living with the mothers in the past 6 months or had spent enough time in the mother's custody for her to be able to rate the child. When there were multiple children, priority was given to the child that was born closest to the time when the mothers were participating in drug abuse treatment studied by CalTOP. Children (n=396) were assessed by their mothers using the Child Behavior Checklist (CBCL), as administered by trained interviewers. No other information was obtained from mothers about their relationship to the children. All assessment procedures were reviewed and approved by the appropriate Institutional Review Board and a federal Certificate of Confidentiality was obtained.

Measures

Addiction Severity Index-Lite (ASI: McLellan et al., 1992)—The ASI is a structured interview that assesses problem severity in seven areas: alcohol use, drug use, employment, family and social relationships, legal, medical, and psychological. A composite score can be calculated for each scale with a range of 0 to 1 with higher scores indicating greater problem severity. The ASI is the most commonly used instrument in the substance abuse field with demonstrated psychometric validity and reliability for assessing clients' problem severity in diverse populations (McLellan et al., 1992; McLellan et al., 1985). ASI was administered at both intake and follow-up.

Child Behavior Checklist (CBCL; Achenbach, 1978, 1991)—The CBCL for ages 6–18 is a 120-item standardized parent-report measure of behavior problems in children, with norms available separately for boys and girls and for ages 6 to 18 in each of the nine domains of behavior syndromes. Standardized scores are determined for nine subscales (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, aggressive behavior, sex problems) and three summary scales (Internalizing Problems scale, Externalizing Problem scale, Total Problems scale). The instrument has good reliability and validity (Achenbach et al., 1987). Interviewers used this instrument to have mothers report information about target children. We used the recommended T-score transformations of the raw behavior scores, which adjusted for age and sex differences in behavior found in normative samples. A T-score greater than 60 on the total score indicates borderline or clinically meaningful symptoms.

Analytic Strategies

Descriptive statistics were conducted to describe the sample characteristics. Bivariate relationships between the CBCL total problem T-score, and the maternal risk factors were examined using Pearson correlations for continuous variables and chi-square tests for categorical variables. The maternal risk factors were then tested for their relationships to child problem behavior using multiple linear regression with the CBCL total T-score as the dependent variable. Several items measured similar constructs and were also highly correlated and thus to minimize potential problems due to multicollinarity, only the ASI composite scores at intake and follow-up were included. Sets of predictor variables were entered hierarchically in three steps: (1) child age and gender, mother's race/ethnicity and education, (2) maternal problem severity in the seven areas measured by the ASI at intake, and (3) maternal problem severity in the seven areas measured by the ASI at follow-up. Two-tailed significance tests were set at an alpha of .05. All analyses were conducted using SAS 9.2.

Results

Mother and Child Characteristics

A description of the study sample is provided in Table 1. At follow-up, mothers' mean age was 38 (SD=6.7), women were predominately white (52%) or Hispanic (25%), 35% did not complete high school, most were never married (31.9%) or divorced (38.2%), only 37% were employed, and 58% received public assistance. Most of these women were single mothers (only 30% were married). They reported having a mean of 3.8 children, with 2.8 under age 18. About 16% reported having children living with others by court order. Among the assessed children, the mean age was 10 (SD=3.2), and 53% of them were male and 47% female.

Mothers' Drug Use and Other Problems

Table 2 provides maternal drug use and other problems assessed at the follow-up. About 44% of the mothers reported methamphetamine being their primary drug problem, followed by alcohol (16%), heroin (13%), marijuana (9%), cocaine (8%), and with 10% reporting other drugs. The mean age of first use of the primary drug was at 17.6 years. About 37% still used illicit drugs during the 30 days before the follow-up interview, and 23% reported being heavy drinkers. Most women (84%) reported a history of arrest and some (2.0%) admitted criminal activities during the past 30 days.

Mental health problems were evident among these mothers, including serious depression (21%), anxiety (35%), and cognitive dysfunction (for example trouble understanding, concentrating, or remembering) (40%). Many of these mothers reported previous psychiatric treatment (22% inpatient, 50% outpatient). About one fifth reported having serious conflicts or problems with family or non-family individuals in the past 30 days.

Children Problem Behaviors

Approximately 22% of children's CBCL total T-scores were above the borderline or clinical cut-off of 60. Boys had a higher T-score than girls; 24% boys' vs. 21% girls' problem behaviors were above the borderline or clinical range ($p<0.001$).

Predicting Children Problem Behaviors

In the bivariate analyses, children's problem behavior was significantly related to maternal problem severity in family/social relationship, medical health, and mental health at intake (shown in Table 4). Additionally, children's T-scores were significantly related to mothers' race/ethnicity with white demonstrating the highest problems, followed by Black, Hispanic, and Asian or others. Children's T-scores were also significantly related to mother's characteristics at follow up including maternal problem severity in drug and alcohol use, family/social relationship, medical health, and mental health at the follow-up.

A hierarchical multiple regression was performed in three steps (see Table 5). Demographics of children and mothers were entered first as control variables (Step 1). The regression coefficient for ethnicity/race was significant indicating that children of Hispanic and Asian mothers had fewer problems than children of white mothers. When the problem severity scores in ASI domains at intake were considered (Step 2), the ethnicity relationship remained and only mothers' medical health problems significantly predicted the CBCL score. However, when mothers' ASI scores at follow-up were included (Step 3), only Hispanic race/ethnicity (relative to white), and mothers with greater problems in family/social relationships and mental health were significantly related to the CBCL score.

Discussion

The study results suggest that children of substance-abusing mothers have elevated CBCL scores compared with norms, and both boys and girls are equally affected. Maternal mental health and family relationship were strong predictors of children's reported problem behaviors. These findings are consistent with previous literature showing that substance-abusing mothers, particularly those with poor mental health and support, increase the risks of psychological and behavioral problems for their children (Accornero et al., 2002; Bennett, Bendersky, & Lewis, 2008; Conners et al., 2004). However, while several bivariate correlations were significant, none of the mothers' problem severity measured at intake predicted the CBCL score at follow-up in the multivariate model. Particularly, levels of severity in mothers' alcohol and drug problems were not related to the CBCL score at follow-up. In contrast, the study revealed some unexpected findings or findings previously

not reported in the literature. For example, behavioral problems were lower among children of Hispanic mothers relative to those whose mother was white. Findings might be used by clinicians to tailor treatments in a way that is sensitive to cultural differences.

Our finding that neither alcohol nor drug use among mothers was predictive of child problem behavior was surprising, but consistent with findings from another study which reported maternal mental health as the only significant predictor of child cognitive outcomes, with family/social relationships as one of the strongest predictors (Steinhausen et al., 2006). This research, however, was limited to an ethnically homogenous population that consisted primarily of methadone users.

It should be noted that 22% of the children in our study demonstrated borderline or clinical range total problem scores, which was significantly higher than the expected 16% in the normative sample of similar age and gender. Thus, the study suggests that poor maternal mental health and unsupportive family/social relationships (e.g. dissatisfaction with marital status, signs of conflict with family, friends, or others, or being troubled by family/social problems) are risk factors for child behavior problems, although alcohol and drug use may contribute in part through its effects on maternal mental health and family/social relationships. Social agencies and policy makers should consider providing services targeted to address these two particular problem areas among substance-using mothers, which may have an added benefit for their children.

Few studies have examined the racial/ethnic variation in the long-term relationships between maternal substance use and children behaviors. We have found that children of Hispanic mothers demonstrated lower CBCL scores than children of white mothers. A cross-sectional study of behavioral outcomes in children of alcoholics found that Hispanic children were less affected by stress and parental alcoholism than non-Hispanic whites (Barrera, Li, & Chassin, 1993), however, a prospective follow-up found that these differences were not replicated across time (Barrera, Castro & Bigla, 1999; Barrera, Li, & Chassin, 1995). For our study, children of Asian and other racial/ethnic groups also appeared to be at lower risk for problem behaviors, but this relationship became non-significant when measures of mothers' follow-up status were considered. Also, no differences in the CBCL scores were found between children of black and white mothers.

These findings beg the question: are there racial and ethnic factors that contribute to negative or positive behavioral outcomes in children of substance users? It has been well documented that familial support, family cohesion and warmth are negatively associated with psychological stress and problematic behavioral outcomes for Hispanics (Broman, Reckase, & Freedman-Doan, 2006; Rivera et al., 2009). Studies of Hispanic and white substance users have shown that Hispanics demonstrate better family and social outcomes than whites, likely a result of Hispanic families being more supportive of the patient through the recovery process (Niv & Hser, 2006; Jenkins et al., 1986). However, social support was not found to account for the differential vulnerability in Barrera's comparative study of white and Hispanic children of alcoholics (Barrera et al., 1993). Comparative studies of white and black adolescents have found that whites are more concerned with fitting in and are therefore more susceptible to negative role-modeling than blacks (Griesler & Kandel, 1998; Miller-Day & Barnett, 2009). While this helps to explain why white children who are regularly exposed to drug use and associated behaviors are at risk for increased problematic behaviors, it does not explain our findings that black children are equally vulnerable. To our knowledge there are no studies examining the behavioral outcomes of children of Asian substance abusing mothers; however, the emphasis on ethnic identity, conformity and collectivism within Asian cultures (Anderson & Mayes, 2010) might act as a deterrent of deviant behavior. Future studies should examine if race and ethnicity continue to be

significant predictors of child outcomes across time periods and investigate in-depth racial/ethnic specific factors that increase or decrease risks for children problem behaviors so that interventions can be tailored to specific racial/ethnic families.

Strengths of this study include the long-term (10 years) prospective study design, a relatively large and ethnically diverse sample size, and the use of community-based treatment seekers. The ASI is a standardized measure most widely used in the addiction field and the CBCL is a widely used broad-band measure of child problem behaviors and allows comparisons with normative general populations. However, several limitations should be noted. Most importantly, we relied solely on maternal report in measuring child behavior problems. Maternal reports can be unreliable or biased, particularly if the mother is currently experiencing symptoms of substance abuse and/or psychiatric disorders (Hennigan, O'Keefe, Noether, Rinehart, & Russell, 2006). Future studies should seek corroborative or more objective behavioral measures to confirm or strengthen the study findings. Another limitation is that we only included dependent children (under age 18) that were living or maintaining contact with the mothers (so that mothers could provide meaningful assessment of their children). Approximately 200 children were not included in the study as they were living with someone else because of a child protection court order or termination of mother's parental rights. Thus, the study results cannot be generalized to those children who no longer lived with or had contact with their mothers. Instead, we speculate that the findings may best describe children with better family functioning, as some research indicates that adopted youth and/or children living under nonparental care are more likely to exhibit behavioral and developmental problems (Miller, Fan, Christensen, Grotevant, & van Dulmen, 2000; Simmel, Brooks, Barth, & Hinshaw, 2001), particularly children exposed to illicit substances (Brown, Bakeman, Coles, Platzman, & Lynch, 2004; Linares et al., 2006). Additionally, it is important to note that data were collected only for the target child and that behavioral outcomes might have differed between siblings. However, to the extent that siblings are exposed to similar environmental factors (e.g., neighborhood, school systems, parenting styles) and that sibling interactions are known to impact child behavioral outcomes (Bank, Burraston, & Snyder, 2004; Brook, Brook, & Whitman, 1999; Rowland, Chapman & Henggeler, 2008), the presence of behavioral issues in one child is likely to be indicative of risk for his or her siblings. Furthermore, the study did not directly measure the child's exposure to maternal drug use. Instead, because all of the women were pregnant or had dependent children when admitted to drug treatment and the study was designed to have mothers assess that child, we inferred that all of the children that were assessed had been exposed to drugs either in utero or postnatally. Also, we did not collect other measures such as services received by these children or contextual information (e.g., support network) which could help to explain variations in the observed outcomes. Finally, findings may vary if children were compared to normative data after having been matched on socioeconomic status or other demographic characteristics.

Many previous studies have shown that children of addicted parents are at greater risk for later dysfunctional behaviors. About a quarter of the children in our sample showed behavioral problems in the borderline or clinical range. Studies have shown that childhood behavior problems persist into adulthood (Reef, Diamantopoulou, van Meurs, Verhulst, & van der Ende, 2010). Therefore, intervention and prevention should focus on the children that showed severe problems in childhood or adolescence. We do not have information on whether these children had received mental health or related services; however, based on previous literature it is not likely that that these children often or consistently received the needed care (Bauman et al., 2002). Attention to these vulnerable children should be raised so that their mental health needs are not overlooked. Existing successful models of service that deliver quality mental health care to children and families should be identified and made available.

Many of these children demonstrated normal development and health despite a challenging family life and it will be informative to further understand factors contributing to resilience among children. Some previous research has focused attention on resilience among at risk children as a factor that interacts with environmental factors to impact health outcomes. Among children of substance-using women, a strong familial support system and the existence of a caring and positive relationship with a parent or other adult appear to promote resiliency (Steinhausen et al., 2006; VandeMark et al., 2005). Child resiliency has been negatively associated with maternal mental health problems but, surprisingly, positively associated with violence in the household and drug use among mothers. These findings suggest that exposure to some seemingly harmful postnatal factors might increase child resiliency and moderate child behavioral outcomes (VandeMark et al., 2005). Clearly, processes are complex and dynamic and it is important to understand contextual and relational factors. Future studies should apply both qualitative and quantitative methods to investigate how these factors operate independently or interactively to impact child health and behavior.

The mothers in this study were identified from admissions to drug abuse treatment almost 10 years ago. While none of the problems in key life domains of these mothers at intake were predictive of their children' behavior problems, maternal mental health and family/social relationships were significant risk factors. It is possible that a multitude of factors present in homes with substance abusing parents contribute to children's problem behaviors. Yet, substance-using mothers in particular may not seek help for themselves or their children for fear of losing custody. Efforts should be focused in continued monitoring and care, while addressing maternal mental health and providing social support to reduce potential problem behaviors among these at-risk children. Longitudinal, prospective, and multidisciplinary studies are further needed to investigate the independent and combined contributions of biologic/genetic, psychosocial, and contextual factors that influence the development of children.

Acknowledgments

Declaration of Interest

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References

Accornero VH, Morrow CE, Bandstra ES, Johnson AL, Anthony JC. Behavioral outcome of preschoolers exposed prenatally to cocaine: Role of maternal behavioral health. Journal of Pediatric Psychology. 2002; 27(3):259–269. [PubMed: 11909933]

Achenbach TM. The child behavior profile: I. Boys aged 6–11. Journal of Consulting and Clinical Psychology. 1978; 46:478–488. [PubMed: 670491]

Achenbach TM, Edelbrock C, Howell CT. Empirically based assessment of the behavioral/emotional problems of 2- and 3- year-old children. Journal of Abnormal Child Psychology. 1987; 15:629–650. [PubMed: 3437096]

Achenbach, TM. Manual for the child behavior checklist/4–18 and 1991 profile. Burlington, VT: University of Vermont Department of Psychiatry; 1991.

Alexander GR, Wingate MS, Bader D, Kogan MD. The increasing racial disparity in infant mortality rates: Composition and contributors to recent US trends. American Journal of Obstetrics & Gynecology. 2008; 198(1):51. e1–9. [PubMed: 17870043]

Anachebe NF. Racial and ethnic disparities in infant and maternal mortality. Ethnicity & Disease Journal. 2006; 16(2 Suppl. 3) S3–71–6.

Anderson ER, Mayes LC. Race/ethnicity and internalizing disorders in youth: A Review. Clinical Psychology Review. 2010; 30(3):338–348. [PubMed: 20071063]

Bank L, Burraston B, Snyder J. Sibling conflict and ineffective parenting as predictors of adolescent boys' antisocial behavior and peer difficulties: Additive and interactional effects. Journal of Research on Adolescence. 2004; 14:99–125.

Barrera M Jr, Castro FG, Bigla A. Ethnicity, substance use, and development: Exemplars for exploring group differences and similarities. Development & Psychopathology. 1999; 11(4):805–822. [PubMed: 10624727]

Barrera M Jr, Li SA, Chassin L. Ethnic group differences in vulnerability to parental alcoholism and life stress: A study of Hispanic and non-Hispanic Caucasian adolescents. American Journal of Community Psychology. 1993; 21(1):15–35. [PubMed: 8213646]

Barrera M Jr, Li SA, Chassin L. Effects of parental alcoholism and life stress on Hispanic and Non-Hispanic Caucasian adolescents: A prospective study. American Journal of Community Psychology. 1995; 23(4):479–507. [PubMed: 8546108]

Bauman LJ, Camacho S, Silver EJ, Hudis J, Draimin B. Behavioral problems in school-aged children of mothers with HIV/AIDS. Clinical Child Psychology and Psychiatry. 2002; 7:39–54.

Bennett DS, Bendersky M, Lewis M. Children's cognitive ability from 4 to 9 years old as a function of prenatal cocaine exposure, environmental risk, and maternal verbal intelligence. Developmental Psychology. 2008; 44(4):919–928. [PubMed: 18605824]

Brohl, K. Working with traumatized children: A handbook for healing. Washington, D.C.: Child Welfare League of America Press; 1996.

Broman CL, Reckase MD, Freedman-Doan CR. The role of parenting in drug use among black, Latino, and white adolescents. Journal of Ethnicity in Substance Abuse. 2006; 5(1):39–50. [PubMed: 16537336]

Brook JS, Brook DW, Whiteman M. Older sibling correlates of younger sibling drug use in the context of parent-child relations. Genetic, Social, and General Psychology Monographs. 1999; 125:451–468.

Brown JV, Bakeman R, Coles CD, Platzman KA, Lynch ME. Prenatal cocaine exposure: A comparison of 2-year-old children in parental and nonparental care. Child Development. 2004; 75(4):1282–1295. [PubMed: 15260878]

Brown JS, Meadows SO, Elder GH Jr. Race-ethnic inequality and psychological distress: Depressive symptoms from adolescence to young adulthood. Developmental Psychology. 2007; 43(6):1295–1311. [PubMed: 18020812]

Bryant AS, Worjoloh A, Caughey AB, Washington AE. Racial/ethnic disparities in obstetric outcomes and care: Prevalence and determinants. American Journal of Obstetrics & Gynecology. 2010; 202(4):335–343. [PubMed: 20060513]

Buka SL. Disparities in health status and substance use: Ethnicity and socioeconomic factors. Public Health Report. 2002; 117(Suppl. 1):S118–S125.

Chaffin M, Kelleher K, Hollenberg J. Onset of physical abuse and neglect: Psychiatric, substance abuse, and social risk factors from prospective community data. Child Abuse & Neglect. 1996; 20:191–203. [PubMed: 8734549]

Chatterji P, Markowitz S. The impact of maternal alcohol and illicit drug use on children's behavior problems: Evidence from the Children of the National Longitudinal Survey of Youth. Journal of Health Economics. 2001; 20(5):703–731. [PubMed: 11558645]

Clark DB, Cornelius J, Wood DS, Vanyukov M. Psychopathology risk transmission in children of parents with substance use disorders. American Journal of Psychiatry. 2004; 161(4):685–691. [PubMed: 15056515]

Collins JW Jr, David RJ. Racial disparity in low birth weight and infant mortality. Clinics in Perinatology. 2009; 36(1):63–73. [PubMed: 19161865]

Conners NA, Bradley RH, Mansell LW, Liu JY, Roberts TJ, Burgdorf K, Herrell JM. Children of mothers with serious abuse problems: An accumulation of risks. American Journal of Drug and Alcohol Abuse. 2004; 30(1):85–100. [PubMed: 15083555]

Center for Substance Abuse Prevention (CSAP). Children witnessing violence and substance abuse. Rockville, MD: Substance Abuse and Mental Health Services Administration's National Clearinghouse for Alcohol and Drug Information; 2000.

Delaney-Black V, Covington C, Templin T, Ager J, Nordstrom-Klee B, Martier S, Sokol RJ. Teacher-assessed behavior of children prenatally exposed to cocaine. Pediatrics. 2000; 106(4):782–791. [PubMed: 11015523]

Dube SR, Anda RF, Felitti VJ, Croft JB, Edwards VJ, Giles WH. Growing up with parental alcohol abuse: exposure to childhood abuse, neglect and household Dysfunction. Child Abuse and Neglect. 2001; 25(12):1627–1640. [PubMed: 11814159]

Dunn M, Tarter R, Mezzich A, Vanyukov M, Kirisci L, Kirillova G. Origins and consequences of child neglect in substance abuse families. Clinical Psychology Review. 2002; 22:1063–1090. [PubMed: 12238246]

Evans E, Hser YI. Pilot-testing a statewide outcome monitoring system: overview of the California Treatment Outcome Project (CALTOP). Journal of Psychoactive Drugs. 2004; 2:109–114. [PubMed: 15279122]

Griesler PC, Kandel DB. Ethnic differences in correlates of adolescent cigarette smoking. Journal of Adolescent Health. 1998; 23(3):167–180. [PubMed: 9730360]

Hanson RF, Self-Brown S, Fricker-Elhai AE, Kilpatrick DG, Saunders BE, Resnick HS. The relations between family environment and violence exposure among youth: Findings from the National Survey of Adolescents. Child Maltreatment. 2006; 11(1):3–15. [PubMed: 16382087]

Hennigan KM, O'Keefe M, Noether CD, Rinehart DJ, Russell LA. Through a mother's eyes: Sources of bias when mothers with co-occurring disorders assess their children. Journal of Behavioral Health Services & Research. 2006; 33(1):87–104. [PubMed: 16636910]

Hildyard K, Wolfe D. Child neglect: Developmental issues and outcomes. Child Abuse & Neglect. 2002; 26:679–695. [PubMed: 12201162]

Hser, YI.; Evans, E.; Teruya, C.; Hardy, M.; Urada, D.; Huang, Y.; Picazo, R.; Shen, H.; Hsieh, J.; Anglin, D. The California Treatment Outcome Project (CalTOP) Final Report Submitted to the California Department of Alcohol and Drug Programs. Los Angeles, CA: UCLA Integrated Substance Abuse Programs; 2002.

Jenkins, J.; Karno, M.; De La Selva, A.; Santana, F. Treatment of Schizophrenia: Family Assessment and Intervention. New York, NY: Springer-Verlag; 1986. Expressed emotion in cross-cultural context: Familial responses to schizophrenic illness among Mexican-Americans; p. 35-49.

Kang S, Deren S, Goldstein M. Relationships between childhood abuse and neglect experience and HIV risk behaviours among methadone treatment drop-outs. Child Abuse & Neglect. 2002; 26(12):1275–1289. [PubMed: 12464301]

Kennard BD, Stewart SM, Hughes JL, Patel PG, Emslie GJ. Cognitions and depressive symptoms among ethnic minority adolescents. Cultural Diversity and Ethnic Minority Psychology. 2006; 12(3):578–591. [PubMed: 16881757]

Linares TJ, Singer LT, Kirchner HL, Short EJ, Min MO, Hussey P, Minnes S. Mental health outcomes of cocaine-exposed children at 6 years of age. Journal of Pediatric Psychology. 2006; 31(1):85–97. [PubMed: 15802608]

Lu MC, Halfon N. Racial and ethnic disparities in birth outcomes: A life-course perspective. Maternal and Child Health Journal. 2003; 7(1):13–30. [PubMed: 12710797]

Luthar SS, Cushing G, Merikangas KR, Rounsaville BJ. Multiple jeopardy: Risk and protective factors among addicted mothers' offspring. Development & Psychopathology. 1998; 10(1):117–136. [PubMed: 9524811]

McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, Argeriou M. The fifth edition of the addiction severity index. Journal of Substance Abuse Treatment. 1992; 9(3):199–213. [PubMed: 1334156]

McLellan AT, Luborsky L, Cacciola JI, Griffith J, Evans F, Barr H, O'Brien CP. New data from the addiction severity index: Reliability and Validity in three centers. Journal of Nervous and Mental Disease. 1985; 173:412–423. [PubMed: 4009158]

Miller BC, Fan X, Christensen M, Grotevant HD, van Dulmen M. Comparisons of adopted and nonadopted adolescents in a large, nationally representative sample. Child Development. 2000; 71(5):1458–1473. [PubMed: 11108107]

Miller-Day M, Barnett JM. "I'm not a druggie": Adolescents' ethnicity and (erroneous) beliefs about drug use norms. Health Communication. 2004; 16(2):209–228. [PubMed: 15090286]

Niv N, Hser YI. Drug treatment service utilization and outcomes for Hispanic and white methamphetamine abusers. Health Service Research. 2006; 41(4 Pt 1):1242–1257.

Phares TM, Morrow B, Lansky A, Barfield WD, Prince CB, Marchi KS, Kinniburgh B. Surveillance for disparities in maternal health-related behaviors--Selected states, Pregnancy Risk Assessment Monitoring System (PRAMS), 2000–2001. Morbidity and Mortality Weekly Report. 2004; 53(4): 1–13.

Pina AA, Silverman WK. Clinical phenomenology, somatic symptoms, and distress in Hispanic/Latino and European American youths with anxiety disorders. Journal of Clinical Child and Adolescent Psychology. 2004; 33(2):227–236. [PubMed: 15136186]

Pynoos R, Steinberg A, Piacentini JC. A developmental psychopathology model of childhood traumatic stress and intersection with anxiety disorders. Society of Biological Psychiatry. 1999; 46(11):1542–1554.

Reef J, Diamantopoulou S, van Meurs I, Verhulst F, van der Ende J. Predicting adult emotional and behavioral problems from externalizing problem trajectories in a 24-year longitudinal study. European Child & Adolescent Psychiatry. 2010; 19(7):577–585. [PubMed: 20140633]

Rivera FI, Guarnaccia PJ, Mulvaney-Day N, Lin JY, Torres M, Alegria M. Family cohesian and its relationship to psychological distress among Latino groups. Hispanic Journal of Behavioral Sciences. 2008; 30(3):357–378. [PubMed: 19444326]

Rowland MD, Chapman JE, Henggeler SW. Sibling Outcomes from a Randomized Trial of Evidence-Based Treatments with Substance Abusing Juvenile Offenders. Journal of Child & Adolescent Substance Abuse. 2008; 17(3):11–26.

Shepard M. How child welfare workers assess and intervene around issues of domestic violence. Child Maltreatment. 1999; 4(2):148–157.

Silverman W, La Greca AM, Wasserstein S. What do children worry about? Worries and their relation to anxiety. Child Development. 1995; 66(3):671–686. [PubMed: 7789194]

Simmel C, Brooks D, Barth RP, Hinshaw SP. Externalizing symtomatology among adoptive youth: Prevalence and preadoption risk factors. Journal of Abnormal Child Psychology. 2001; 29(1):57–69. [PubMed: 11316335]

Simon S, Sim T, Richardson K, Rawson R, Ling W. Methamphetamine abuse: Associations with early academic performance. Journal of Addictive Diseases. 2000; 19(2):21.

Spertus IL, Yehuda R, Wong CM, Halligan S, Seremetis SV. Childhood emotional abuse and neglect as predictors of psychological and physical symptoms in women presenting to a primary care practice. Child Abuse & Neglect. 2003; 27:1247–1258. [PubMed: 14637300]

Stein J, Leslie MB, Nyamathi A. Relative contributions of parent substance use and childhood maltreatment to chronic homelessness, depression, and substance abuse problems among homeless women: Mediating roles of self-esteem and abuse in adulthood. Child Abuse & Neglect. 2002; 26(10):1011–1027. [PubMed: 12398858]

Steinhausen HC, Mas SD, Ledermann C, Metzke CW. Risk factors for the development of emotional and behavioral problems in children born to drug-dependent mothers. European Child & Adolescent Psychiatry. 2006; 15(8):460–466. [PubMed: 16964454]

Substance Abuse and Mental Health Services Administration (SAMHSA). The NSDUH Report. Women with co-occurring serious mental illness and a substance use disorder. Aug 20. 2004 Retrieved October 20, 2011 from http://oas.samhsa.gov/2k4/femDual/femDual.htm

Tyler KA, Cauce AM, Whitbeck L. Family risk factors and prevalence of dissociative symptoms among homeless and runaway youth. Child Abuse & Neglect. 2004; 28:355–366. [PubMed: 15066351]

VanDeMark N, Russel L, O'Keefe M, Finkelstein N, Noether C, Gampel J. Children of mothers with histories of substance abuse, mental illness, and trauma. Journal of Community Psychology. 2005; 33(4):445–459.

Walsh C, MacMillan HL, Jamieson E. The relationship between parental substance abuse and child maltreatment: Findings from the Ontario Health Supplement. Child Abuse & Neglect. 2003; 27:1409–1425. [PubMed: 14644058]

Whitaker RC, Orzol SM, Kahn RS. Maternal mental health, substance use, and domestic violence in the year after delivery and subsequent behavior problems in children at age 3 years. Archives of General Psychiatry. 2006; 63(5):551–560. [PubMed: 16651512]

Table 1

Characteristics of mothers and children

Mother's characteristics at follow-up (n=396)	**% or Mean (SD)**
Age, Mean (SD)	38.4 (6.7)
Ethnicity %	
White	52.0
Hispanic	25.0
Black	16.4
Asian/others	6.6
Education (>=High school) %	65.4
Marital status %	
Married	29.9
Never married	31.9
Divorced, widowed, separated	38.2
Employed %	36.6
Receiving public assistance %	58.1
Number of all children, Mean (SD)	3.8 (2.1)
Number of children under 18, Mean (SD)	2.8 (1.7)
Having children living with others by court order, %	16.2
Children's characteristics (n=396)	
Child gender %	
Male	52.8
Female	47.2
Child age, Mean (SD)	10.3 (3.2)

Table 2

Mothers drug use and other problem areas (n=396)

	% or Mean (SD)
Drug use	
Primary drug, %	
Alcohol	16.4
Cocaine	8.3
Heroin	12.6
Marijuana	8.8
Methamphetamine	43.9
Others	9.8
Age first use primary drug, Mean (SD)	17.6 (6.5)
Alcohol use to intoxication in the past 30 days, %	23.0
Use illicit drugs in the past 30 days, %	37.4
Criminal involvement, %	
Ever arrested	84.3
Crime involved in the past 30 days	2.0
Psychiatric symptom, %	
Received pension for psychiatric problems	10.4
Psychiatric medications in past 30 days	17.9
Psychiatric symptoms in past 30 days	
Serious depression	21.0
Serious anxiety	35.3
Trouble understanding, concentrating, or remembering	40.0
Trouble controlling violent behavior	5.1
Serious thoughts of suicide	1.3
Prior inpatient psychiatric treatment, %	22.3
Prior outpatient psychiatric treatment, %	50.3
Family/Social Relationship	
Living arrangements, %	
Homeless	1.3
Dependent living	3.3
Independent living	95.4
Had serious conflicts with family in past 30 days, %	19.0
Had serious conflicts with non-family in past 30 days,%	12.0
Troubled by family problems in past 30 days,%	20.2
Troubled by social problems in the past 30 days,%	21.4

Table 3

Children problem behaviors at borderline or clinical range

CBCL	%
Internalizing	16
Externalizing **	24
Total Problems**	22

** p< .01 comparing to the normative sample

Table 4

Relationship of CBCL with selected variables

	Correlations	Clinical symptom-Total Problem
Child age	−.06	
Child gender		
Male		52.00 (11.1)
Female		50.04 (11.3)
Ethnicity of mother *		
White		52.76 (10.3)
Hispanic		49.11 (12.6)
Black		50.05 (11.1)
Asian/others		47.35 (11.6)
Education of mother		
Less than high school		50.46 (12.0)
High school or above		51.40 (10.8)
ASI Scores at intake		
Drug	−.02	
Alcohol	.02	
Employment	−.06	
Family	.10*	
Legal	−.03	
Medical	.12*	
Psychiatric	.13**	
ASI Scores at follow-up		
Drug	.18**	
Alcohol	.16**	
Employment	−.05	
Family	.30**	
Legal	.05	
Medical	.11*	
Psychiatric	.36**	

* p<.05

** p<.01

Table 5

Hierarchical multiple regression

	Standardized Beta	p-value	Adj R square
Step 1			.03
Child age	−.07	.16	
Child gender (male vs. female)	.09	.08	
Ethnicity of mother (Hispanic vs. white)	−.14	.01	
Ethnicity of mother (Black vs. white)	−.07	.17	
Ethnicity of mother (Asian/others vs. white)	−.12	.02	
Education of mother (high school or above vs. not)	.03	.53	
Step 2			.05
Child age	−.09	.10	
Child gender (male vs. female)	.08	.11	
Ethnicity of mother (Hispanic vs. white)	−.15	.01	
Ethnicity of mother (Black vs. white)	−.06	.30	
Ethnicity of mother (Asian/others vs. white)	−.12	.02	
Education of mother (high school or above vs. not)	.02	.64	
ASI Drug at intake	−.05	.35	
ASI Alcohol at intake	−.04	.49	
ASI Employment at intake	−.06	.27	
ASI Family at intake	.05	.37	
ASI Legal at intake	−.05	.38	
ASI Medical severity at intake	.13	.02	
ASI Psychiatric severity at intake	.11	.06	
Step 3			.17
Child age	−.07	.14	
Child gender (male vs. female)	.06	.24	
Ethnicity of mother (Hispanic vs. white)	−.13	.02	
Ethnicity of mother (Black vs. white)	−.06	.28	
Ethnicity of mother (Asian/others vs. white)	−.09	.08	
Education of mother (high school or above vs. not)	.03	.58	
ASI Drug at intake	−.04	.47	
ASI Alcohol at intake	−.06	.30	
ASI Employment at intake	−.03	.51	
ASI Family at intake	.02	.71	
ASI Legal at intake	−.07	.16	
ASI Medical severity at intake	.09	.07	
ASI Psychiatric severity at intake	.06	.27	
ASI Drug at follow-up	.04	.45	
ASI Alcohol at follow-up	.03	.60	
ASI Employment at follow-up	−.06	.25	
ASI Family at follow-up	.16	.00	

	Standardized Beta	p-value	Adj R square
ASI Legal at follow-up	−.03	.57	
ASI Medical severity at follow-up	.01	.86	
ASI Psychiatric severity at follow-up	.26	.00	