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An Ecodevelopmental Exploration of Mediators Between Maltreatment in Childhood and Drug use During Pregnancy

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Abstract

Child maltreatment is associated with increased risk of substance abuse in adulthood. However, prior investigations have not examined substance use specifically in pregnancy, and have relied on self-report of substance use. The present study addresses these gaps via secondary analysis of 295 primarily low-income, Black postpartum women who agreed to complete a brief questionnaire and subsequently provided urine and hair samples. A clear relationship emerged between self-reported maltreatment and positive toxicology (with drug use present in 37.2% of maltreated participants and 17.1% of non-maltreated participants; $p < .001$). Depression and violence exposure were positively associated with maltreatment and with drug use. The combined effect of violence exposure and depression mediated the association between maltreatment and drug use during pregnancy (the bootstrapped 95% confidence interval of total indirect effect ranged from .17–.86). This investigation is the first to show an association between childhood maltreatment and toxicological evidence of drug use in pregnancy.

Keywords

Ecodevelopmental Theory; child maltreatment; drug use; pregnancy; mediation

Ecodevelopmental theory suggests that negative mental health outcomes such as substance abuse have their origins within the systems in which development takes place, from the most proximal (family of origin) to the most distal (societal influences); and further, that youth as well as families and their social contexts are all changing over time (Pantin, Schwartz, Sullivan, Prado, & Szapocznik, 2004). In keeping with ecodevelopmental theory, child maltreatment can be seen as a disruption in a key proximal system that can exert lasting effects through alterations in ongoing interactions with proximal as well as more distal systems.

Ecodevelopmental theory has thus been used to explain lasting negative consequences as a result of maltreatment in childhood. For example, child maltreatment in all forms (i.e., physical abuse, sexual abuse, and neglect) represents a major deviation of the average expectable environment within children's proximal system of development (Valentino,

Cicchetti, Toth, & Rogosch, 2006). The occurrence of maltreatment disrupts normative parental socialization and child mastery of age- and stage-relevant tasks (Cicchetti & Toth, 1995). Evidence suggests that maltreated children have impairments in the development of emotion regulation skills (Kim & Cicchetti, 2010), and that these impairments in emotion regulation have lasting effects on functioning in other domains. Ultimately, and consistent with the ecodevelopmental model, childhood maltreatment exerts a direct and indirect negative impact on multiple, inter-related child systems, and these vulnerabilities increase the risk of developing psychopathology (Alink, Cicchetti, Kim, & Rogosch, 2012; Kim & Cicchetti, 2010).

This broader developmental process has been seen as operating specifically in connections between maltreatment in childhood and later substance abuse. For example, a longitudinal study by White and Widom (2008) demonstrated that women who were abused as girls were more likely to engage in drug use as adults. A separate study showed that women who experienced physical abuse or neglect before the onset of drinking met criteria for alcohol dependence faster than women without a maltreatment history (Oberleitner, Smith, Weinberger, Mazure, & McKee, 2015).

A number of studies have examined possible mechanisms underlying this association. For example, White and Widom (2008) showed that the association between maltreatment and later substance abuse was mediated separately by PTSD, stressful life events, and delinquent behavior/crime, and that PTSD remained a significant mediator when all three were considered simultaneously. Similarly, Wilson and Widom (2010) showed that a second-order latent variable consisting of prostitution, homelessness, delinquency/crime, and school problems also mediated the association between maltreatment in childhood and drug use as an adult. A review by Simpson and Miller (2002) concluded that there is a link between childhood maltreatment and later substance use, and that—among women—this link was mediated by anxiety and depression. More recent research has also found that factors such as anger (Faulkner, Goldstein, & Wekerle, 2014), behavioral undercontrol (Oshri, Rogosch, & Cicchetti, 2013), and depression (Walsh & Cawthon, 2014) may mediate associations between maltreatment and later substance use. Such findings are consistent with suggestions that substance use can be partly driven by a need to cope with negative emotions (Khantzian, 1997; McKernan et al., 2015), and that it is more likely among persons with poor behavioral control (Zucker, Heitzeg, & Nigg, 2011). Notably, these findings are also consistent with suggestions noted earlier that early maltreatment can lead to emotional dysregulation (Kim & Cicchetti, 2010).

The importance of drug use during pregnancy

Although past investigations have examined the association between maltreatment and substance use in adult women, there is a need to expand such evaluations to focus specifically on pregnant women for at least two reasons. First, in-utero drug exposure—although its effects are more inconsistent and subtle than once feared—is nevertheless associated with a range of negative outcomes, including premature birth, growth restriction, placental abruption, autonomic nervous system disruptions, and increased likelihood of behavioral difficulties later in life (e.g., Chatterji & Markowitz, 2001; Minnes, Lang, &

Singer, 2011; Minnes et al., 2006; Shankaran et al., 2007), including later substance abuse (Porath & Fried, 2005). Greater understanding of the factors contributing to drug use during pregnancy, and of the mechanisms through which those factors exert their effects, would aid attempts to decrease drug use during this important period.

Second, most women cut down or quit drug use during pregnancy (Office of Applied Studies, 2009), meaning that those who do not are a unique subpopulation that is worthy of study in its own right. Women who continue to use substances during pregnancy are more likely to be younger (Cnattingius, 2004), to have problematic relationships (Wakschlag et al., 2003), to have a weaker sense of parental competence (Massey & Compton, 2013), and to have greater severity of pre-pregnancy use (Cnattingius, 2004). Examination of links between child maltreatment and drug use in this particular period is therefore needed. Given these significant differences, mediators between maltreatment and drug use may also be unique in this particular developmental period.

In addition to the positive impact reducing drug use during pregnancy would have, such a reduction may help to stabilize the proximal system (i.e., parenting practices, job stability), thereby promoting more positive outcomes for children. That is, reduction in prenatal drug use could also lead to reductions in drug use during the postpartum period. Maternal substance use has been associated with an increased risk of child maltreatment (Appleyard, Berlin, Rosanbalm, & Dodge, 2011; Besinger, Garland, Litrownik, & Landsverk, 1999; Chaffin, Kelleher, & Hollenberg, 1996; Ondersma, 2002). Pregnancy has been described as a “teachable moment” (McBride, Emmons, & Lipkus, 2003), a critical intervention point where women may be more willing to make important changes that could last into the postnatal period. Giving more attention to how the proximal system impacts prenatal drug use can inform what types of interventions are most likely to affect change during this period, and identify mechanisms to improve the personal, familial and health-related outcomes for vulnerable families.

The need to consider objective indicators of drug use

There is also a need to consider objective indicators of drug use, rather than only self-report; studies of the link between child maltreatment and later substance use have thus far only used self-report of drug use. Studies of the association between self-report of drug use and toxicological analyses have suggested that under-reporting is prevalent, particularly during the perinatal period in which drug use is stigmatized and can lead to legal or child protective services involvement (Grekin et al., 2010; Magura & Kang, 1996; Ostrea et al., 2001). The greater reliability of objectively measured drug use could enhance the validity of findings.

The present study

The present study thus sought to replicate and extend previous research by showing a link between child maltreatment and drug use in women, specifically during pregnancy, and by conducting a preliminary examination of potential mediators of that link. To our knowledge, links between child maltreatment and adult drug use have not been explored during pregnancy, and have not been studied using objective indicators of drug use as a primary

outcome. In terms of potential mediators, given evidence of potential associations with child maltreatment as well as with substance abuse in adulthood, we considered early conduct problems (before age 13), depression symptoms, and violence exposure during adulthood (Gutierrez & Van Puymbroeck, 2006; Heron et al., 2013; Le Strat, Dubertret, & Le Foll, 2011). We expected that rates of drug use, measured objectively through toxicological analysis of hair and urine samples, would be higher in pregnant women who report a history of childhood maltreatment. We further expected the impact of childhood maltreatment on substance use to be mediated by early conduct problems, depression, and violence exposure.

Method

Participants

The present study included secondary analysis of data from 295 primarily low-income, Black postpartum women who agreed to complete a brief series of questions on a tablet computer and who subsequently provided urine and hair samples. These participants were drawn from an earlier study of the association between self-report of drug use and urine/hair testing among postpartum women (Ondersma et al., 2012). In this study, rates of illicit drug use were high: A total of 66 participants (22.4%) returned hair and/or urine samples that tested positive for marijuana, cocaine, amphetamines, and/or opiates. (Note: this value does not include opiates detected in urine, which were not considered given the likelihood that such results reflect anesthesia or other pain control administered in the hospital.)

Procedures

Data collection in the original study (Ondersma et al., 2012) took place in two steps. First, participants were recruited from their hospital rooms at a large Midwestern city women's hospital after giving birth, and answered self-report questions anonymously using an Audio Computer-Assisted Self-Interview (ACASI) approach. Second, participants were asked to provide hair and urine samples, which were tested for evidence of illicit drugs or their metabolites. Participants provided informed consent for computer-based, audio-enhanced (i.e., ACASI) assessment and hair/urine collection separately, but consecutively during the same visit. The research assistant read each of the IRB approved informed consent information sheets (completed in lieu of a signed consent form) with participants and answered any questions before any data collection occurred.

Measures

The study from which these data are drawn was focused on measurement of correlates of drug use, such as tobacco use, chronic pain, exposure to violence, marital status, depression, and neurobehavioral disinhibition. Items were selected from existing measures or were developed for the study. A total of 22 items from the original study, some of which were themselves from existing measures, were used to create the constructs for the present study. All 22 items were completed with use of the ACASI on study tablets.

Maltreatment history—Three items developed for this study measured maltreatment history (see Table 1). Given that an endorsement of any of these items suggests a history of maltreatment, a binary score was created with a score of 1 representing that *any* of the three

items were endorsed yes and a score of 0 representing that all of the three items were endorsed no.

Early conduct problems—Four items were created for the study to measure early conduct problems (see Table 1). Internal consistency of $\alpha = .56$ emerged; given moderate-low internal consistency, we created two variables: (a) a continuous score in which all items were summed (used in mediation analyses), and (b) a binary score (in which 1 = *any* of the four items were endorsed as yes, and 0 = all four items were endorsed no) in order to fully examine relationships between early conduct problems and other study constructs.

Depression—Nine items were summed to create a depression scale which resulted in good internal consistency (see Table 1); items were modified based on select items from the Child Abuse Potential Inventory (Milner, 1986), the ICD-10 International Personality Disorder Examination (Loranger, Janca, & Sartorius, 1997), the K6 (Kessler et al., 2003), and the Patient Health Questionnaire-9 (Kroenke, Spitzer, Williams, & Lowe, 2010).

Violence exposure—Six items were summed to create a violence exposure scale which resulted in adequate internal consistency (see Table 1). These items were based on select items from the PTSD Checklist – Civilian Version (Miles, Marshall, & Schell, 2008) and the Trauma Index (Skinner, Holt, Schuller, Roy, & Israel, 1984).

Drug use toxicology—Hair and urine samples were collected from all participants. Laboratory tests are well-established and reliable, with urine testing providing a window of 1-3 days for drugs such as cocaine, amphetamines, or opiates, and approximately two weeks (depending on chronicity of use) for marijuana. Hair testing provides an approximate 90 day window of detection. The results of hair and urine testing were combined, such that any evidence of any illicit drug, from either matrix, resulted in that participant being considered positive for drug use. As noted above, evidence of opiates in the urine sample were not considered in this analysis given the prevalence of opiate-based anesthesia during and after childbirth.

Missing data was very rare. For instance, there were no missing responses for items used to make the maltreatment construct, and only one case that had missing responses for items used to make the early conduct problems, depression, and violence exposure constructs.

Data Analysis

Using Pearson's chi-square and phi coefficient correlation analyses, we explored correlations between maternal demographic variables (i.e., maternal education, marital status, employment status), child maltreatment, potential mediators (i.e., early conduct problems, depression, violence exposure) on drug use. When associations emerged between demographic variables and outcomes, these potential constructs were include in mediation analyses.

To examine mediation hypotheses we used the statistical tool PROCESS for SPSS (Hayes, 2013). For dichotomous outcomes, such as in the present investigation, PROCESS estimates unstandardized model coefficients using maximum likelihood logistic regression. To

statistically evaluate mediation, PROCESS provides a single inferential test of the indirect effect (i.e., the effect of the predictor on the outcome through the potential moderator). This approach is superior to approaches that use multiple analyses to infer mediation (e.g., Baron & Kenny, 1986) as the likelihood of error is reduced (Hayes, 2013). Furthermore, PROCESS creates a bias-corrected 95% confidence interval of the indirect effect using bootstrapping. Bootstrapping is a resampling technique; that is, the original sample size is treated as small representation of the population and is then “resampled” with replacements thousands of times with the statistic of interest being continuously calculated. In mediation testing, this process is used to construct the confidence interval of the indirect effect (see Hayes, 2013 for more information) with support for mediation emerging when the upper and lower limits of the CI does not cross zero. For the present investigation, we requested 10,000 resamples. PROCESS can be used for both single and multiple mediator models. We examined each potential mediator in separate analyses and in a multiple mediator model.

Results

As noted above, participants were primarily low-income (254 participants, or 86.1%, reported receiving some form of public assistance in the past year) and Black (275; 93.2%). All participants were 18 or older; 105 (35.7%) were between 18 and 21 years of age, 124 (42.2%) were between 22 and 29 years of age, and 65 (22.1%) were 30 years or older. A total of 94 participants (31.9%) had neither graduated from high school nor received a GED, and 57 participants (19.3%) were currently married. This sample was representative of the hospital from which participants were recruited.

Association between Maltreatment and Drug Use

Analyses revealed an association between maltreatment and drug use (see Table 2). A total of 29 women (37.2%) who reported a maltreatment history ($n = 78$) tested positive for drug use, whereas 37 participants (17.1%) without a maltreatment history ($n = 217$) tested positive for drug use ($X^2 [df = 1] = 13.39, p < .00$).

Associations between Demographics, Maltreatment, Drug Use, and Potential Mediators

Correlation analyses examined associations between five maternal demographic variables (marital status, education, employment status, having health insurance, and receiving public assistance) and drug use (Table 2). Statistically significant associations emerged for maternal education, marital status, and employment status and drug use. Moreover, significant associations emerged between education and the potential mediators (with the exception of early conduct problems binary scores; employment status was significantly related to maltreatment, drug use, and each of the potential mediators). Neither having health insurance nor receiving public assistance was significantly related to maltreatment or any potential mediators. Subsequently, marital status, education, and employment status were accounted for in subsequent mediation analyses.

Next, correlation analyses examined associations among each potential mediator (i.e., early conduct problems, depression, and violence exposure), maltreatment history, and drug use (see Table 2). Early conduct problems (both binary and continuous scores) were related to

maltreatment, but not to drug use. Depression and violence exposure were related to both maltreatment and drug use. Finally, correlation analyses revealed that all the potential mediators were significantly related, with a moderate-strong association emerging between depression and violence exposure.

Mediation Analyses

Using the statistical tool PROCESS (Hayes, 2013), we first examined early conduct problems (using the continuous score) as a potential mediator of the association between maltreatment and drug use. No support emerged for the mediating role of early conduct problems, as the 95% CI of the indirect effect contained zero (Est. = -.04 [SE = .08] 95% CI [-.22, .10]). Given that neither the continuous or binary scores for early conduct problems were related to drug use, no further steps were taken to examine early conduct problems as a potential mediator.

Next, we examined depression as a potential mediator of the association between maltreatment and drug use. The lower and upper limits of the indirect effect did not contain zero, supporting the mediational role of depression (Est. = .29 [SE = .13] 95% CI [.06, .60]). The lower and upper limits of the direct effect also did not contain zero (Est. = .81 [SE = .34] 95% CI [.15, 1.47]), suggesting that depression did not fully explain the association between maltreatment and drug use. Second, a separate analysis examined violence exposure as a potential mediator of the association between maltreatment and drug use. Again, the lower and upper limits of indirect (Est. = .36 [SE = .17] 95% CI [.08, .74]) and direct effect (Est. = .73 [SE = .35] 95% CI [.05, 1.41]) did not cross zero, supporting the role of violence exposure as a mediator. Finally, in a multiple mediation analysis, both violence exposure and depression were entered as mediators. Results of this analysis no longer showed a direct effect of maltreatment on drug use (Est. = .66 [SE = .35] 95% CI [-.03, 1.35]). Also, the lower and upper limits of the CI of the indirect effect of both depression (Est. = .17 [SE = .16] 95% CI [-.10, .52]) and violence exposure (Est. = .26 [SE = .19] 95% CI [-.08, .69]) crossed zero, which is likely explained by the degree of multicollinearity between depression and violence exposure. However, the upper and lower limits of the CI of the *total* indirect effect did not cross zero (Est. = .43 [SE = .17] 95% CI [.14, .80]); suggesting that violence exposure and depression jointly mediate the association between maltreatment and drug use.

Discussion

This investigation is the first to show an association between maltreatment in childhood and toxicological evidence of drug use in pregnancy. Further, we also found preliminary support for two mediators of this link. Specifically, mediation analyses suggest that this association may be driven by a combination of increased depression and violence exposure in adulthood. This finding is consistent with ecodevelopmental theory, in that it demonstrates long-term effects of disruption in a key social system, mediated by more proximal effects (i.e., depression, violence exposure). It is also consistent with other studies with non-pregnant women showing positive relationships between child maltreatment, emotional problems (specifically depression and traumatic stress reactions), and drug use in adulthood

(Garner, Hunter, Smith, Smith, & Godley, 2014; Simpson & Miller, 2002; White & Widom, 2008). Further, the review by Simpson and Miller (2002) also suggested that depression could be a key mediator of the link between child maltreatment and adult substance abuse. The present findings expand these previous studies by considering only drug use during pregnancy, and also by considering the combined effect of depression and violence exposure.

Violence exposure also emerged as a partial mediator in the present analysis. Violence exposure is well known as a predictor of later substance abuse (Dube et al., 2006; Frank et al., 2014), with suggestions in the literature that this connection may be directly related to allostatic load (e.g., wear and tear on the body from chronic stress) and its effects on brain structure and function (Anda et al., 2006). Similarly, links between child maltreatment and violence exposure may be present through multiple routes, such as neglect/poor monitoring or behavior problems (e.g., Johnson et al., 2002). The relatively high levels of violence exposure in urban settings (which nevertheless are not universal; e.g., Ondersma, Delaney-Black, Covington, Nordstrom, & Sokol, 2006) may have facilitated identification of this association.

However, and contrary to expectations given prior research with non-pregnant women, early conduct problems did not mediate the association between maltreatment and drug use in this population of pregnant women. These results are in contrast to the work of White and Widom (2008) who report that delinquent behavior played a role in explaining the association between maltreatment and drug use in women. The source of this difference is unclear, but may result from our focus on conduct problems in childhood or very early adolescence, whereas White and Widom (2008) examined adolescent and adult delinquency. The association between maltreatment and early conduct problems in this sample was relatively low ($r = .25$, vs. $r = .36$ and $.41$ for depression and violence exposure, respectively). In addition, early conduct problems showed no association at all with drug use in our sample, further removing any possibility of a successful mediation model with this variable. The relatively high levels of crime and drug use in the community from which the study sample was drawn may also have a role in influencing early conduct problems, and may do so in a way that alters patterns of associations with factors such as drug use or early maltreatment.

Strengths, limitations, and future directions

This study has several strengths, including the use of toxicological results rather than self-report of drug use, our focus on the perinatal period, and the anonymous, ACASI approach for data collection. These data collection methods have been shown to improve disclosure of sensitive information (Beatty, Chase, & Ondersma, 2014; Chase, Beatty, & Ondersma, 2011). This study also has a number of limitations. First, maltreatment was based only on self-report. However, as shown by Elwyn and Smith (2013), the link between maltreatment and substance use problems in adulthood may be stronger for retrospective self-report than official documentation of maltreatment. Therefore, memory of maltreatment may be just as important, if not more, in understanding the influence of ecological contexts in the development of substance use in adulthood; that is, as with social support and other

important intrapsychic constructs, perceptions may be more important than objective indicators (e.g., Lakey & Heller, 1988; Lakey, Orehek, Hain, & Van Vleet, 2010). Possibly, the lasting effect of maltreatment may be present because of the lasting memory it leaves and the way in which it shapes perceptions or negative biases of the individual. Further, official records are known to capture only a small proportion of actual episodes of maltreatment (Sedlak & Broadhurst, 1996). Finally, studies by Widom and colleagues have suggested that retrospective recall of operationally defined abuse events is valid, particularly with women (Widom & Morris, 1997; Widom & Shepard, 1996). In line with these findings, the present investigation measured maltreatment with items referencing specific examples of maltreatment (e.g., “When I was a child, an adult hit me hard enough to cause bleeding, bruises or welts”) rather than asking generally about “abuse” and leaving participants to make their own interpretation about what constitutes abuse.

Other limitations include the use of self-report on a single measure to address many domains, and the cross-sectional design. As such, all aspects of constructs may not be fully represented, which may result in underestimation of the experience of our participants (e.g., questions about neglect and emotional abuse were not available and therefore, maltreatment experiences may be underestimated.) These limitations are clear, and consistent with the status of this study as secondary data analysis. Replication of these findings using a longitudinal design is needed to further clarify the unfolding of these processes overtime and fully understand potential mediators. Specifically, our study design does not allow conclusions regarding the directionality of associations found between mediators and drug use. Further, anxiety—found to be important by Simpson and Miller (2002)—was not examined in the present study. It may be helpful for future studies to explore whether anxiety during adulthood has any link between childhood maltreatment and substance use during pregnancy. Lastly, the sample reflects an urban Midwestern population; the extent to which the findings generalize to more nationally representative samples is unknown.

Despite these limitations, our findings suggest directions for better understanding ecological influences on drug use during pregnancy. Specifically, future research should consider depression and violence exposure as targets for prevention efforts, especially during the preconception or pregnancy period. Replication of these findings in other population groups and use of prospective and longitudinal data to further clarify the findings would also be of value. Lastly, research is needed to understand whether the timing of maltreatment in childhood impacts drug use in the prenatal period. Several studies have shown the importance of the age of the first maltreatment occurrence in relationships between other proximal effects (i.e., internalizing or externalizing symptoms) and the individual’s outcomes; particularly suggesting that early maltreatment has the most deleterious impact (Keiley, Howe, Dodge, Bates, & Petti, 2001; Manly, Kim, Rogosch, & Cicchetti, 2001). The current study did not assess timing of maltreatment, so it remains unclear if early or late maltreatment has an impact on functioning and substance use in the prenatal period.

Conclusions

The findings in the current study may serve as a first step in better understanding the link between child maltreatment and drug use during pregnancy (which again is a unique

subsample of drug-using women, since many are able to quit during pregnancy). Prevention and intervention programs should carefully incorporate these and similar findings regarding modifiable mediators in order to better limit the long-term consequences of child maltreatment, particularly those—as with drug use during pregnancy—that are most likely to confer further disadvantage on subsequent generations.

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Table 1**Items Used to Measure Constructs of Interest, and Internal Consistency**

Construct	Item	Internal Consistency (α)
Maltreatment History	When I was a child, an adult hit me hard enough to cause bleeding, bruises or welts When I was a child, an adult touched my private parts in a sexual manner or got me to touch their private parts in a sexual manner When I was a child, I spent time in foster care	NA (binary)
Early Conduct Problems	When I was younger than 13 years old, I often stayed out past midnight When I was younger than 13 years old, I often skipped school or classes When I was younger than 13 years old, I often started physical fights When I was younger than 13 years old, I sometimes did illegal things like breaking into someone's home or car, or stealing from others	.56 (binary score also created)
Depression	I often feel empty inside I feel overwhelmed by my life and my problems Things have usually gone against me in life I am easily upset about things There have been times in my life for at least two weeks straight where I felt completely worthless There have been times in my life for at least two weeks straight where I felt completely hopeless about things There have been times in my life for at least two weeks straight I felt so down or depressed that nothing could cheer me up There have been times in my life for at least two weeks straight I felt like everything was an effort Over the past month, I have felt down, depressed or hopeless	.82
Violence Exposure	I have seen or experienced worse things than most other people have I experience flashbacks of bad things that have happened to me I have repeated and disturbing memories of stressful things that happened to me Since my 16 th birthday I have been injured in an assault or fight (not counting injuries during sports) As an adult, I have been badly beaten up at least once As an adult, I have seen someone get stabbed or shot or seriously beaten	.74

Table 2

Correlations Among Maternal Demographics, Maltreatment History, Drug Use, and Possible Mediators

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
<i>M (SD)/n (%)^a</i>										
1. Marital status ^a	57 (19.3%)									
2. Education ^a	.22**	201 (68.01%)								
3. Employment status ^a	.23**	.29**								
4. Having health insurance ^a	.34**	.27**	.28**							
5. Receiving Public Assistance ^a	-.26**	-.23**	-.20**	-.32**						
6. Maltreatment history ^a	.08	-.10	-.12*	-.01	-.05					
7. Drug use ^a	-.16**	-.21**	-.17**	-.06	.04	.21**				
8. Early Conduct problems (continuous)	-.07	-.13*	-.14*	-.02	-.02	.25**	.06			
9. Early Conduct problems (binary) ^a	-.07	-.08	-.15*	.02	-.01	.25**	.07	.88**		
10. Depression	-.07	-.12*	-.21**	-.08	.09	.36**	.25**	.32**	.33**	
11. Violence Exposure	-.08	-.12*	-.14*	-.03	.04	.41**	.27**	.35**	.33**	.59**

* $p < .05$;

** $p < .01$

^a n (%) of parents with positive scores (i.e., score of 1) for binary construct