Published in final edited form as:

Subst Use Misuse. 2019 ; 54(11): 1774–1786. doi:10.1080/10826084.2019.1610446.

Maternal depressive symptoms, adolescent daughters' substance use, and father residence in minority families

Jina Sang,

The University of Akron, School of Social Work, Akron, OH

Julie A. Cederbaum,

University of Southern California, Suzanne Dworak-Peck School of Social Work, Los Angeles, CA.

Ahra C. Ko,

Los Angeles County Department of Mental Health

Michael S. Hurlburt

University of Southern California, Suzanne Dworak-Peck School of Social Work, Los Angeles, CA.

Abstract

The goal of this study was to investigate the association between maternal depressive symptoms and adolescent substance use, exploring father's residential status as a moderator for adolescents living with a mother with depressive symptoms. Participants were 167 mothers and their adolescent daughters aged 14–18, predominantly identifying as African American/Black. The sample included a subset of mothers with HIV. The results revealed that maternal depressive symptoms were not associated with adolescent substance use. However, father's residential status was found to be a significant moderator in the relationship between maternal depressive symptoms and adolescent substance use. Specifically, when fathers were involved in the daughter's life (residential or non-resident), substance use was higher in adolescents of mothers with high depressive symptoms than in those of mothers with low depressive symptoms. The results suggest that varied family dynamics are critical to understanding engagement in substance use among adolescent girls, including the influence of both mothers and fathers.

Keywords

adolescents; alcohol use; marijuana use; substance use; father residence; maternal depression

Children of mothers with depression are at elevated risk of negative psychosocial outcomes such as internalizing and externalizing problems (Allen, Manning, & Meyer, 2010; Betts, Williams, Najman, & Alati, 2013). Among these problems, adolescent substance use is of particular concern because use of alcohol or drugs during adolescence can interfere with normal development and lead to significant social, health, and financial repercussions. For

instance, early substance use may put youth at risk of harmful outcomes later in life, including delinquent and criminal behaviors (DeLisi, Angton, Behnken, & Kusow, 2015) and adult substance use (Moss, Chen, & Yi, 2014). The present study focuses on the possible moderating role of father's residential status in the association between maternal depressive symptoms and adolescent engagement in substance use.

Maternal Depression and Adolescent Substance Use

Maternal depression is a known correlate to adolescent substance use (Cortes, Fleming, Mason, & Catalano, 2009). Wickham, Senthilselvan, Wild, Hoglund, and Colman (2015) evaluated the relationship between childhood exposure to maternal depression and adolescent engagement in health risk behaviors, and found that adolescents exposed to maternal depressive symptoms during middle childhood were more likely to use substances including alcohol, marijuana, and hallucinogen at an earlier age. Further, children whose mothers have a history of clinical depression were more likely to report substance use disorders in late adolescence (Tartter, Hammen, & Brennan, 2014). These findings suggest that maternal depression—either as a clinical diagnosis or depressive symptoms—increase risk of substance use for adolescents.

The mechanism by which maternal depressive symptoms increase adolescent substance use is parenting behaviors. Evidence shows that depressive symptoms (e.g., irritability, anger, sadness, and hopelessness) of mothers can interfere with parenting ability (Kohl, Kagotho, & Dixon, 2011). Mothers with depression tend to be more irritable, critical, hostile, and controlling of their children, as well as less warm and supportive compared with mothers without depression (Foster, Garber, & Durlak, 2008; Thompson et al., 2010). These symptoms of irritability and anger may result in harsh discipline, while sadness and hopelessness can result in withdrawn and unresponsive behavior (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Silverstein, Augustyn, Young, and Zuckerman (2009) found that mothers with depressive symptoms were more likely to report spanking their children than those without depression. These negative parenting practices may be linked to children's subsequent behavior problems, including substance use in adolescence.

Maternal Depression and Girls

Female adolescents may be more vulnerable to substance use compared to their male counterparts (Vaughan, Gassman, Jun, & Seitz de Martinez, 2015), and one reason may be in part due to the influence of puberty. Adolescence is a developmental period that is marked by significant changes in hormones, and females tend to have a stronger emotional response to stressful events due to increases in cortisol (i.e., stress-related hormone) secretion (Stroud, Papandonatos, Williamson, & Dahl, 2011). When adolescent females undergo family-related stressors (e.g., having a mother with depression in the household), they may experience more psychological distress than males (Herman-Stahl et al., 2017). Youth who lack adequate affection and support, affected by depression, may not learn self-regulatory skills and, therefore, have an increased likelihood of using maladaptive coping methods (e.g., substance use; Lamis, Malone, Lansford, & Lochman, 2012). Furthermore, adolescent girls' risks for substance use are heightened for low-income minorities, who are exposed to other

environmental stressors, such as neighborhood risk factors, financial challenges, and racism (Bacio, Mays, & Lau, 2013).

The Role of Fathers

A considerable number of studies have investigated the role of fathers in children's lives. Having an involved father has been linked to positive outcomes in children, including decreased behavioral problems (Leon, Bai, & Fuller, 2016), decreased alcohol-related problems (Goncy & Dulmen, 2010), and delayed onset of sexual intercourse (Rink, Tricker, & Harvey, 2007).

In the United States, although nearly one in four children lives apart from their fathers (U.S. Census Bureau, 2015), many nonresident fathers continue to participate in rearing their children (Modecki, Hagan, Sandler, & Wolchik, 2015). When a mother is depressed, a present or available father may act as a protective factor against poor outcomes in children to the extent that he is involved in the child's life (Goodman et al., 2011). Previous research supports examining the role of fathers as a moderator in the link between maternal depression and children's internalizing and externalizing behaviors (Feldman, 2007; Mezulis, Hyde, & Clark, 2004). For example, using a nationally representative sample of families from the National Longitudinal Survey of Youth, Chang, Halpern, and Kaufman (2007) found that the relationship between maternal depressive symptoms and child problem behaviors varied by the father's level of involvement. These findings suggest that the presence of a father may buffer a child from depression affecting her mother.

The Current Study

Although research has established a link between maternal depression and negative child outcomes, most studies examining such links have focused on child psychopathology, covering aspects such as internalizing (e.g., depression, anxiety; Betts et al., 2013) and externalizing disorders (e.g., conduct disorder, ADHD; Allen et al., 2010). Maternal depression has been linked to substance use in adolescents, but the mechanisms of the relationship between maternal depression and adolescent substance use have not been thoroughly studied (Tartter et al., 2014; Wickham et al., 2015). Furthermore, previous literature has, on the whole, overlooked the role of fathers' residential status as a potential protective or exacerbating factor.

Another limitation in existing research is that many studies examining maternal depression and adolescent substance use have been conducted with White samples (e.g., Cortes et al., 2009). This is particularly important because African American women are more likely to report higher rates of depressive symptoms (Jackson & Williams, 2006). In addition, previous studies have combined both males and females in one sample (Lamis et al., 2012; Tartter et al., 2014). This is problematic because, compared to boys, girls are more sensitive to stressors often associated with maternal depression (Hammen, 2009) and react more strongly to the more aversive or less warm parenting style that depressed parents often use with girls (Hankin, Mermelstein, & Roesch, 2007).

The current study extends previous research by studying mothers and adolescent daughters in minority families to aid the understanding of the relationship between maternal depressive symptoms and adolescent daughters' substance use. We hypothesized that maternal depressive symptoms would be significantly associated with adolescent substance use (alcohol and marijuana). In addition, we investigated fathers' residential status as a possible moderator in the relationship between maternal depressive symptoms and adolescent substance use.

Methods

This is a secondary data analysis of a cross-sectional study with an original focus on examining mother-daughter communication about abstinence and safer sex, and differences by maternal HIV-status (Cederbaum, Hutchinson, Duan, & Jemmott, 2013).

Sampling Strategy

Non-probability sampling was utilized for this study. Participants were 176 African-American and Hispanic mother-daughter dyads from low-income families engaged with social service organizations. Participants were recruited from clinics and service organizations in Philadelphia, PA, Newark, NJ, and New York City through agency and participant referrals. The aim of the original work was to compare the experiences of mothers living with and without HIV; as such, close to 37% of the mothers in this sample reported being HIV-positive. The agencies that participated targeted services to HIV-infected women, victims of intimate partner violence, those in substance use recovery, and those receiving clinic/medical services. Inclusion criteria for adults were as follows: (1) female, (2) living with an HIV-negative daughter between the ages of 14 and 18, (3) self-identifying as African American/Black or Hispanic, and (4) English speaking. Criteria for youth were: (1) having an HIV-negative status, (2) age 14–18 years, (3) knowledge of mother's HIV status (positive or negative), and (4) English speaking. When the adult had more than one daughter between the ages of 14 and 18, the child who was closest in age to 16 (measured in months) was selected to participate. The protocol was approved by the Institutional Review Board (IRB) of the University of Pennsylvania and the IRB at University of Southern California.

Procedure

Participants completed paper and pencil surveys in their homes or at a community-based service organization. Participation was voluntary and participants were informed that they could withdraw from the study at any time without affecting the services they received at the recruitment site. Participants were assured of confidentiality, and mothers and daughters were assured that their responses would not be shared with each other. Mothers consented to their own and their daughters' participation and the daughters provided assent. Mothers and daughters completed the self-administered paper questionnaires individually and simultaneously. To reduce the likelihood of participants minimizing or exaggerating the reports of their experiences, the importance of responding honestly was emphasized. The self-administered questionnaires took 45 minutes to one hour. Mothers received \$20 and daughters received \$15 for their participation in the study.

Measures

Maternal HIV-status.—Maternal HIV-status was controlled for in the analyses because HIV infection has been found to be associated with reduced parenting skills, altering the mother-child interaction (Tompkins & Wyatt, 2008), and because the original study intentionally included participants with a higher likelihood of HIV infection. Maternal HIV-status was measured with a single item: “Are you HIV-positive? (yes/no)”

Maternal physical symptoms.—This study utilized maternal physical symptoms as a covariate because the presence of physical symptoms can compromise parenting behaviors (Field, 2010). This construct was obtained using an adapted version of the Physical Symptoms Inventory (Wahler, 1968) that assesses physical symptoms seen most often in HIV-positive women. The modified version (Armistead, Tannenbaum, Forehand, Morse, & Morse, 2001) consists of 23 items. Examples include “nausea,” “headaches,” “shakiness,” “weakness in your muscles,” and “chest pains.” Responses were based on a 5-point Likert scale with endpoints of “almost never” to “nearly every day.” Higher scores indicated more symptoms and scores ranged from zero to 108 (Armistead et al., 2001). For presentation simplicity, the continuous variable was divided into quartiles to create an ordered categorical variable with four levels (results between continuous and categorical did not vary). As measured by Cronbach’s alpha, the obtained reliability was .91 (Armistead et al., 2001). In the current study, excellent internal consistency was observed, with Cronbach’s alpha = .94

Maternal substance use.—This construct was included as an additional covariate because of evidence linking maternal substance use with adolescent substance use (Kilpatrick et al., 2000). In this study, two items from the Risk Assessment Battery (Metzger et al., 1993) were used to assess mothers’ current substance use: “used alcohol in the past 30 days” (yes/no) and “used marijuana in the past 30 days” (yes/no).

Maternal depression.—The 10-item short version of the Center for Epidemiologic Studies Depression Scale (CES-D 10; Lorig, Sobel, Ritter, Laurent, & Hobbs, 2001) was used as a measure of depression. Items were rated on a 4-point scale from zero to three about how the individual had felt or behaved in the past week: (0) *rarely or none of the time* (less than 1 day); (1) *some or a little of the time* (1–2 days); (2) *occasionally or a moderate amount of time* (3–4 days); and (3) *all of the time* (5–7 days). Examples include “I had trouble keeping my mind on what I was doing,” “I felt depressed,” “I felt hopeful about the future,” and “My sleep was restless.” Scale scores ranged from zero to 27 (mean = 9.89). Cutoff scores of both 8 and 10 have been used for the CES-D 10 in non-clinical adult samples (Andresen, Malmgren, Carter, & Patrick, 1994; Sang, Cederbaum, & Hurlburt, 2016). In this study, a dichotomized variable was created using a cutoff score of eight, a median split, to form lower (range 0–8) and higher levels (range 9–27) of depressive symptoms. Internal consistency of the scale is .84 (Lorig et al., 2001). In the current study, the Cronbach’s alpha coefficient was .82.

Mothers’ age.: Mothers’ age was included as an additional covariate because of evidence showing a correlation with maternal age at birth and offspring substance use (De Genna & Cornelius, 2015).

Fathers' residential status.—Demographic information included data on the residential status of a biological father. Fathers' residential status was coded as 0 = a non-resident father who has no involvement in the child's life, 1 = a non-resident father who is still involved in the child's life, and 2 = a resident father. The data were then coded as two dummy variables: (a) one representing a non-resident father who has no involvement in the child's life vs. a non-resident father who is still involved in the child's life; and (b) one representing a non-resident father who has no involvement in the child's life vs. a resident father.

Daughters' substance use.—In this study, daughters' substance use was measured using the four items from the Risk Assessment Battery (Metzger et al., 1993): “ever used alcohol,” “used alcohol in the past 30 days,” “ever used marijuana,” and “have used marijuana in the past 30 days.” Each had a yes/no response choice.

Data Analysis

Descriptive statistics were calculated for the research variables as well as for the demographic data. Pearson product moment correlation coefficients were calculated to determine whether the research variables were significantly correlated and, thus, needed to be controlled for in regression models. Next, bivariate analyses were conducted to determine whether maternal depressive symptoms (IV) correlates with adolescent substance use (DV; alcohol & marijuana). Finally, a series of binary logistic regression analyses was utilized to determine whether father involvement moderated the relationship between maternal depressive symptoms and adolescent substance use. Binary logistic regression was employed to contrast the moderating effects of a resident father (coded as “2”) vs. a non-resident father without involvement (coded as “0”) and for a non-resident father with involvement (coded as “1”) vs. a non-resident father without involvement (coded as “0”).

Results

Table 1 provides an overview of the demographic characteristics of mothers and daughters. Mothers' ages ranged from 27 to 70 years old ($M = 40.89$, $SD = 7.13$), and adolescent daughters' ages ranged from 14 to 18 years old ($M = 15.8$, $SD = 1.55$). The majority of the participants (86.3% of the mothers and 87.5% of the daughters) self-identified as African American.

Hypothesis Testing

Logistic regression analyses were run to test the relationship between maternal depressive symptoms and adolescent daughters' substance use (hypothesis 1). Maternal depression (IV) was included as a binary variable with control variables (maternal HIV-status, alcohol use, marijuana use, physical symptoms, and age).

Insufficient evidence was found to support a significant relationship between maternal depressive symptoms and adolescent daughters' alcohol and marijuana use (Table 2). The results remained non-significant when logistic regression analyses were conducted without control variables (tables not shown). Maternal physical symptoms, however, were significantly associated with adolescent daughters' alcohol use in the past 30 days, such that

greater numbers of symptoms were associated with lower probability of alcohol use ($OR = .26$; 95% $CI = .07, 1.00$, $p < .05$). In addition, maternal HIV-status was a significant risk for adolescent daughters' marijuana use in the past 30 days ($OR = 3.09$; 95% $CI = 1.21, 7.92$, $p < .05$).

According to the work of Baron and Kenny (1986), interactions do not always accompany significant main effects. As the strength of the relationship between maternal depression and adolescent substance use may still vary depending on the father's residential status, moderation model was tested using multiple regression, following the moderator model of Hayes (2009). For the outcome variables (alcohol & marijuana), the predictor, the moderators, and the interaction variables were entered into the analysis. For each outcome variable, the moderator analysis was conducted with covariates (maternal HIV-status, alcohol use, marijuana use, physical symptoms, and age).

Several interactions between maternal depressive symptoms and father residence on adolescent substance use were significant ($p < .05$; Table 3). When fathers were residential or non-resident but involved, the odds of adolescent substance use were higher if the mothers had high depression as compared with mothers having low depression. However, for girls with non-involved, non-resident fathers, the odds of substance use were lower if the mothers had high depression compared to those with low depression.

These findings from the logistic regressions are more readily seen in Tables 4 and 5, which are cross-tabulations of the daughters' lifetime alcohol use and lifetime marijuana use, respectively, according to the fathers' residential status and mothers' depression levels. In Table 4, it is seen that for non-involved, non-resident fathers, 51.7% of the daughters of low-depression mothers used alcohol, compared to only 25% of those of high-depression mothers, corresponding to an odds ratio of .31 (95% $CI: .09, 1.08$). On the other hand, for both involved, non-resident fathers and resident fathers, the odds ratios were reversed to 2.74 (95% $CI: .95, 7.98$) and 1.64 (95% $CI: .47, 5.79$), respectively, indicating a greater chance of alcohol use among daughters with highly depressed mothers (See Figure 1). Specifically, among the involved non-resident fathers, 26.7% of the daughters of low-depression mothers used alcohol, compared to 50% of those of highly depressed mothers. Similarly, among the resident fathers, 29.4% of the daughters of low-depression mothers used alcohol, compared to 40.6% of the daughters of highly depressed mothers.

In Table 5, lifetime use of marijuana is tabulated according to the fathers' status and mothers' depression levels. The pattern seen here for marijuana use is similar to what was observed in Table 4 for alcohol use. When the father was a non-involved non-resident, the odds of adolescent marijuana use were lower when the mother had high depression than when the mother had low depression ($OR = .66$; 95% $CI: .17, 2.57$). However, when the father was an involved non-resident or a resident, the odds of adolescent marijuana use were higher for mothers with high depression compared to those with low depression ($OR = 5.4$, 95% $CI: 1.34, 21.70$; $OR = 2.5$, 95% $CI: .47, 13.39$), respectively (See Figure 2). Specifically, when the father was a non-involved non-resident, daughters were more likely to have used marijuana when the mothers reported low levels of depressive symptoms (27.6%) than when they were highly depressed (20%). In contrast, when the father was an involved

non-resident or a resident, daughters with a highly depressed mother were more likely to have used marijuana (37.5%) compared to those whose mothers reported low levels of depression (10%). Among the resident fathers, 11.8% of the daughters of low-depression mothers used marijuana, compared to 25% of those of highly depressed mothers.

Discussion

We examined the relationship between maternal depressive symptoms and adolescent substance use among urban ethnic minority mother-daughter dyads. We hypothesized that living with a mother with depressive symptoms would be associated with maladaptive coping responses such as substance use in adolescent daughters. This was unsupported. Even though these results did not show a direct bivariate association, this study is still important because we found that the association between maternal depressive symptoms and adolescent substance use varied as a function of father's residential status.

Contrary to our hypotheses, as well as findings reported in other studies, which have shown a link between maternal depression and adolescent substance use (e.g., Tartter et al., 2014), results in the current work suggest that youth whose mothers report more depressive symptoms did not exhibit significantly heightened rates of substance use. This is consistent with Ohannessian et al. (2005), who suggested that adolescent substance use is better predicted by paternal psychopathology (e.g., alcohol and drug diagnoses) than maternal depression. Wickham et al. (2015) also found that adolescent substance use was not related to maternal depressive symptoms during adolescence, but children who were exposed to maternal depressive symptoms during middle childhood reported engagement in substance use.

Our findings contrast with those of Tartter et al. (2014), who found that maternal depression at or prior to child's age 15 predicted adolescent substance use by age 15 as well as between ages 16 and 20 in a sample of Australian families. This inconsistency may be due to participants' differences between the two studies: ethnicity (White vs. Blacks and Hispanics), reason for seeking services (maternity vs. HIV-infection, intimate partner violence, or substance abuse recovery), socioeconomic status (lower middle and working vs. low-income and only 47% of the mothers employed), and gender of adolescents (both boys and girls vs. girls only).

There are a number of potential ways to understand this finding. First, the methodological limitations might explain the results due to the modest sample size, the low variability on the measure of mothers' depressive symptoms, and dichotomization of the depression measure rather than using it dimensionally. It is possible that there was a restricted range on the mothers' CES-D 10, which would have reduced the ability to find significant relationships between maternal depressive symptoms and adolescent substance use.

The characteristics of the sample may also help explain the lack of a relationship between maternal depressive symptoms and adolescent substance use. Given that the sample in this study consists of Black and Hispanic families, who commonly rely on extended families for assistance (Taylor, Mouzon, Nguyen, & Chatters, 2016), it is possible that relatives or other

adults might have been involved in the child's life. When mothers are depressed, extended family or friends might provide more support to the mother (Atkins, 2016), which may facilitate the mother providing better quality parenting to the child. Furthermore, the relatives might also elect to provide support to the adolescents, and this may provide some protection against maternal depression, decreasing the likelihood of using substances to cope with the stress. Because we did not collect information on social support, we are unable to examine if it protected adolescents from engaging in substance use in this sample.

In addition, studies on race differences in family management style and adolescent substance use reveal that, relative to White parents, African American parents have more proactive parenting styles and anti-drug use attitudes (Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). More of the youth in this sample of minority families may have been exposed to abstinence messages and norms. Indeed, evidence suggests that African American adolescents, whose parents communicate with them about substance use, are less susceptible to use them (Clark, Belgrave, & Abell, 2012). It is also possible that the age of the daughters might have influenced the results as the mean age was around 16. Statistics reveal that among different adolescent age groups, youth ages 18 to 20 engage in the highest rate of illicit substance use (National Institute on Drug Abuse, 2015; Substance Abuse and Mental Health Services Administration, 2017). Literature reveals that late adolescents (i.e., ages 18 to 21) have higher susceptibility to substance use compared to middle adolescents (i.e., ages 15 to 17) due to an increase in risk-taking behaviors and peer influence during college (Schulenberg & Maggs, 2002).

The second hypothesis was that fathers' residential status would moderate the relationship between maternal depressive symptoms and adolescent daughters' substance use. The results indicated significant findings for the Maternal Depression $\times$ Father Residence interactions for the outcomes. We had anticipated that living with a father in the same household would be beneficial to adolescent daughters with a depressed mother, but instead, having a resident father was found to be linked with more substance use among daughters when mothers had higher levels of depressive symptoms. On the other hand, the opposite pattern was evident when the father was a non-resident and was not involved in the daughter's life. For these adolescents, higher levels of depression among their mothers were associated with lower substance use. Thus, the findings do not fully support what was hypothesized for this study and challenge previously held beliefs that resident fathers have more benefits for adolescents compared to non-resident fathers (Carlson, 2006). The finding does not concur with previous research documenting that father involvement compensates for limitations of maternal depression, reducing the risk of negative outcomes in children (Chang et al., 2007).

Although we are unable to fully account for the results in this study, a possible explanation may have to do with interparental conflict. Depression is often referred to as "relational pathology" (Lyons-Ruth, Zoll, Connell, & Grunebaum, 1986), as depression and interparental conflict frequently co-occur (Du Rocher Schudlich, Papp, & Cummings, 2011). Among daughters with a non-resident father, such interparental conflict would be less likely. Research has shown that more frequent, intense, and prolonged exposure to interparental conflict may negatively relate to children's well-being (Graham-Bermann & Perkins, 2010). Furthermore, when there are additional stressors within the family, such as poverty or

violence, interparental conflict can link to more significant outcomes on the children (Karriker-Jaffe, Foshee, Ennett, & Suchindran, 2013). Previous research has also demonstrated that adverse family environments, such as those characterized by interpersonal conflict, are associated with a high level of drug use in adolescents (Skeer, McCormick, Normand, Buka, & Gilman, 2009). Given that the participants in this study were from low-income families receiving services from social service organizations for reasons such as intimate partner violence, it may be the case that many adolescents in these families were exposed to long-lasting interparental conflict, which may have fostered in these adolescents a maladaptive means of coping with stress. In the current sample, maternal depressive symptoms were positively correlated with fathers' residential status, indicating that mothers with higher depressive symptoms were more likely to report having the child's father reside in the same house. The magnitude of this association, however, was minimal and should be interpreted with reservation.

Another alternative explanation concerns the possibility of assortative mating. That is, individuals are inclined to mate with others similar to them, and thus, spouses of depressed mothers tend to experience depressive symptoms themselves (Mathews & Reus, 2001). As has been suggested in prior literature, women with depression often have husbands with mood disorders or substance abuse problems (Brennan, Hammen, Katz, & Le Brocque, 2002; Tarter et al., 2014), or spouses living with a depressed person are more likely to report depressed mood and burden (Benazone & Coyne, 2000). Evidence suggests that dually-affected couples create dysfunctional family environments for their children (Burke, 2003). As such, fathers' depressive symptoms may be related to their spouses' vulnerability to depression and negative functioning as well as their children's substance use. Prior research has also suggested that adolescents with a father who is depressed or alcohol-dependent are more likely to show alcohol dependence in comparison to those without such a father, whereas maternal depression was not related to adolescent alcohol dependence (Ohannessian et al., 2005). Furthermore, psychopathology in fathers (particularly alcoholism and depression) is known to be highly related to behavior problems of adolescents, whereas maternal psychopathology, particularly depression, is more salient for younger children (Connell & Goodman, 2002). However, data on the fathers' psychopathology or substance use were unavailable and, thus, this potential relationship could not be explored.

The limitations of the current study must be noted. First, the participants were a convenience sample and are not representative of the general population of minority families. It should be noted that 37% of the mothers were HIV-positive and mothers were recruited from social service agencies where services are provided to HIV-infected women and those in substance use recovery. Therefore, this sample is uniquely different from the general population: Mothers in recovery may be less likely to have or allow substances in the household and may intervene with their child's substance use in ways that are different from children whose mother is not in recovery. Furthermore, because participants were limited to those who self-selected into the study, families most at risk may be less represented. For example, we may be missing an important subgroup of families with mothers who have more severe clinical levels of depression because their symptoms may have prevented them from participating in the study. However, it must be noted that the main purpose of the parent study was not to investigate maternal mental health, thereby not targeting women with

mental health issues. The current study did not focus on clinically diagnosed maternal depression but rather used symptoms of depression. Thus, the relationships found in this study might be somewhat different for mothers with clinical depression.

The second limitation is that maternal depression was dichotomized, leading to low variability on measure. In addition, the measure of depressive symptoms asked participants about their symptoms regarding only the past week. The relationships among maternal depressive symptoms, the moderator, and the outcomes may vary depending on whether the mother's symptoms are acute or chronic in nature. However, the fact that the moderator was found to be significant in relation to maternal depressive symptoms for this brief time period suggests the potential robustness of these relationships. Third, the cross-sectional design limited our ability to examine the causal relationships or knowledge of the direction of the relationships among the variables. Fourth, the current study used self-report measures to assess adolescent substance use. Although the mothers and daughters completed the surveys simultaneously but separately, and even though they were assured of confidentiality, the daughters may have underreported substance use. Fifth, the categorical nature of the substance abuse variables does not capture variation in frequency and quantity of substance use. Lastly, no data were collected in this study on additional demographic variables that may be related to adolescent substance use, such as reason for referral to social services and birth order of adolescent daughters.

Despite limitations, the current study had a number of strengths. This study extends current knowledge concerning fathers' residential status with adolescent children by providing evidence that fathers' residential status may be negatively related to the well-being of adolescent daughters when the mother is depressed. Moreover, the majority of the sample in this study was an understudied and underrepresented group of minority mothers and their adolescent daughters, predominantly African American. The use of a non-clinical sample is also noteworthy.

The essential focus in adolescent treatment should be on providing emotional support to adolescents. Family protective factors, such as having a close relationship with a caring parental figure and connections to extended supportive family networks, have been shown to be related to resilience in children (Cederbaum et al., 2013). Thus, it is important to assess the child's resilience by looking at his or her support system, such as extended family members (e.g., grandmothers and aunts), who can provide support that may be absent in the home. Previous research also found that adolescents of a depressed mother are more likely to be resilient if they receive kinship social support (Shook, Jones, Forehand, Dorsey, & Brody, 2010). Such support may be further beneficial to the family with a depressed mother because it may help alleviate the mother's depressive symptoms, thereby improving her relationship with the child.

The findings of the current study point to the importance of assessing other family factors as a possible moderating factor in the relationship between maternal depression and adolescent substance use. Future research should also assess family size and other caregivers in the family, and explore adolescents' relationships with them. Therefore, research should follow families through time to examine whether any causal relationships exist between these

variables and the direction of the causation. Such a longitudinal design would also be helpful in exploring whether there is an increase or decrease across time in the number of adolescent daughters of mothers with depression engaging in substance use. In addition, replication with a clinically depressed sample is needed to fully understand the relationship between maternal depression, adolescent substance use, and father residence.

Acknowledgements:

This work was sponsored by a grant from the National Institute of Mental Health (F31 MH076697–01A1). The authors would like to thank Richard Einsporn, Ph.D., Dale Deuble, and Mohsen Zaker Esteghamati for their helpful suggestions.

References

- Allen JP, Manning N, & Meyer J (2010). Tightly linked systems: Reciprocal relations between maternal depressive symptoms and maternal reports of adolescent externalizing behavior. *Journal of Abnormal Psychology*, 119, 825–835. doi:10.1037/A0021081 [PubMed: 21090880]
- Andresen EM, Malmgren JA, Carter WB, & Patrick DL (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine*, 10, 77–84. [PubMed: 8037935]
- Atkins R (2016). Coping with depression in single Black mothers. *Issues in Mental Health Nursing*, 37, 172–181. doi:10.3109/01612840.2015.1098760 [PubMed: 26979572]
- Armistead L, Tannenbaum L, Forehand R, Morse E, & Morse P (2001). Disclosing HIV status: Are mothers telling their children? *Journal of Pediatric Psychology*, 26, 11–20. 10.1093/jpepsy/26.1.11 [PubMed: 11145728]
- Bacio GA, Mays VM, & Lau AS (2013). Drinking initiation and problematic drinking among Latino adolescents: Explanations of the immigrant paradox. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 27, 14–22. doi:10.1037/a0029996 [PubMed: 23025707]
- Baron RM & Kenny DA (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182. [PubMed: 3806354]
- Betts KS, Williams GM, Najman JM, & Alati R (2014). Maternal depressive, anxious, and stress symptoms during pregnancy predict internalizing problems in adolescence. *Depression and Anxiety*, 31, 9–18. doi:10.1002/da.22210 [PubMed: 24395339]
- Benazon NR, & Coyne JC (2000). Living with a depressed spouse. *Journal of Family Psychology*, 14, 71–79. 10.1037/0893-3200.14.1.71 [PubMed: 10740683]
- Brennan PA, Hammen C, Katz AR, & Le Brocque RM (2002). Maternal depression, paternal psychopathology, and adolescent diagnostic outcomes. *Journal of Consulting and Clinical Psychology*, 70, 1075–1085. doi:10.1037//0022-006X.70.5.1075 [PubMed: 12362958]
- Burke L (2003). The impact of maternal depression on familial relationships. *International Review of Psychiatry*, 15, 243–255. doi:10.1080/0954026031000136866 [PubMed: 15276963]
- Carlson MJ (2006). Family structure, father involvement, and adolescent behavioral outcomes. *Journal of Marriage and Family*, 68(1), 137–154. doi:10.1111/j.1741-3737.2006.00239.x
- Cederbaum JA, Hutchinson MK, Duan L, & Jemmott LS (2013). Maternal HIV serostatus, mother-daughter sexual risk communication and adolescent HIV risk beliefs and intentions. *AIDS and Behavior*, 17, 2540–2553. doi:10.1007/s10461-012-0218-x [PubMed: 22677973]
- Chang JJ, Halpern CT, & Kaufman JS (2007). Maternal depressive symptoms, father's involvement, and the trajectories of child problem behaviors in a US national sample. *Archives of Pediatrics & Adolescent Medicine*, 161, 697–703. doi:10.1001/archpedi.161.7.697 [PubMed: 17606834]
- Clark TT, Belgrave FZ, & Abell M (2012). The mediating and moderating effects of parent and peer influences upon drug use among African American adolescents. *Journal of Black Psychology*, 38, 52–80. doi:10.1177/0095798411403617

- Connell AM, & Goodman SH (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, 128(5), 746–773. doi:10.1037//0033-2909.128.5.746 [PubMed: 12206193]
- Cortes RC, Fleming CB, Mason WA, & Catalano RF (2009). Risk factors linking maternal depressed mood to growth in adolescent substance use. *Journal of Emotional and Behavioral Disorders*, 17, 49–64. doi:10.1177/1063426608321690 [PubMed: 20160836]
- DeLisi M, Angton A, Behnken MP, & Kusow AM (2015). Do adolescent drug users fare the worst? Onset type, juvenile delinquency, and criminal careers. *International Journal of Offender Therapy and Comparative Criminology*, 59, 180–195. doi:10.1177/0306624X13505426 [PubMed: 24071557]
- De Genna NM, & Cornelius MD (2015). Maternal drinking and risky sexual behavior in offspring. *Health Education & Behavior*, 42, 185–193. doi:10.1177/1090198114547812 [PubMed: 25156314]
- Du Rocher Schudlich TD, Papp LM, & Cummings EM (2011). Relations between spouses' depressive symptoms and marital conflict: A longitudinal investigation of the role of conflict. *Journal of Family Psychology*, 25, 531–540. doi: 10.1037/a0024216 [PubMed: 21668119]
- Feldman R (2007). Maternal versus child risk and the development of parent–child and family relationships in five high-risk populations. *Development and Psychopathology*, 19, 293–312. doi: 10.1017/S0954579407070150 [PubMed: 17459172]
- Field T (2010). Postpartum depression effects on early interactions, parenting, and safety practices: A review. *Infant Behavior & Development*, 33, 1–6. doi: 10.1016/j.infbeh.2009.10.005 [PubMed: 19962196]
- Foster CJE, Garber J, & Durlak JA (2008). Current and past maternal depression, maternal interaction behaviors, and children's externalizing and internalizing symptoms. *Journal of Abnormal Child Psychology*, 36, 527–537. doi:10.1007/s10802-007-9197-1 [PubMed: 18071896]
- Goncy EA, & van Dulmen MHM (2010). Fathers do make a difference: Parental involvement and adolescent alcohol use. *Fathering*, 8, 93–108. doi:10.3149/fth.0801.93
- Goodman SH, Rouse MH, Connell AM, Broth MR, Hall CM, & Heyward D (2011). Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review*, 14, 1–27. doi:10.1007/s10567-010-0080-1 [PubMed: 21052833]
- Graham-Bermann SA, & Perkins S (2010). Effects of early exposure and lifetime exposure to intimate partner violence (IPV) on child adjustment. *Violence & Victims*, 25, 427–439. doi: 10.1891/0886-6708.25.4.427 [PubMed: 20712143]
- Hammen CL (2009). Children of depressed parents In: *Handbook of depression* (eds. Gotlib I & Hammen C), pp. 275–297. NY: Guilford Press.
- Hankin BL, Mermelstein R, & Roesch L (2007). Sex differences in adolescent depression: Stress exposure and reactivity models. *Child Development*, 78, 279–295. doi: 10.1111/j.1467-8624.2007.00997.x [PubMed: 17328705]
- Hayes AF (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76, 408–420. doi:10.1080/03637750903310360
- Herman-Stahl M, Saavedra LM, Morgan-Lopez AA, Novak SP, Warner TD, & Fishbein DH (2017). Maternal depressive symptoms and adolescent alcohol use: The mediating role of youth depressive symptoms. *The Journal of Early Adolescence*, 37, 453–474. doi:10.1177/0272431615617290
- Jackson PB, & Williams DR (2006). Culture, race/ethnicity, and depression In Keyes C & Goodman S (Eds.), *Women and depression: A handbook for the social, behavioral, and biomedical sciences* (pp. 328–359). New York: Cambridge University Press.
- Karriker-Jaffe KJ, Foshee VA, Ennett ST, & Suchindran C (2013). Associations of neighborhood and family factors with trajectories of physical and social aggression during adolescence. *Journal of Youth and Adolescence*, 42, 861–877. doi:10.1007/s10964-012-9832-1 [PubMed: 23054352]
- Kilpatrick DG, Acierno R, Saunders B, Resnick HS, Best CL, & Schnurr PP (2000). Risk factors for adolescent substance abuse and dependence: Data from a national sample. *Journal of Consulting and Clinical Psychology*, 68, 19–30. doi:10.1037//0022-006X.68.1.19 [PubMed: 10710837]
- Kohl PL, Kagotho JN, & Dixon D (2011). Parenting practices among depressed mothers in the child welfare system. *Social Work Research*, 35, 215–225. doi:10.1093/swr/35.4.215

- Lamis DA, Malone PS, Lansford JE, & Lochman JE (2012). Maternal depressive symptoms as a predictor of alcohol use onset and heavy episodic drinking in youths. *Journal of Consulting and Clinical Psychology*, 80, 887–896. doi:10.1037/a0028959 [PubMed: 22686123]
- Leon SC, Bai GJ, & Fuller AK (2016). Father involvement in child welfare: Associations with changes in externalizing behavior. *Child Abuse & Neglect*, 55, 73–80. 10.1016/j.chiabu.2016.04.003 [PubMed: 27110849]
- Lorig KR, Sobel DS, Ritter PL, Laurent D, & Hobbs M (2001). Effect of a self-management program on patients with chronic disease. *Effective Clinical Practice*, 4, 256–262. [PubMed: 11769298]
- Lovejoy MC, Graczyk PA, O'Hare E, & Neuman G (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*, 20, 561–592. 10.1016/S0272-7358(98)00100-7 [PubMed: 10860167]
- Lyons-Ruth K, Zoll D, Connell D, & Grunebaum HU (1986). The depressed mother and her one-year-old infant: Environment, interaction, attachment, and infant development. *New Directions for Child and Adolescent Development*, 1986(34), 61–82. doi:10.1002/cd.23219863407
- Mathews CA, & Reus VI (2001). Assortative mating in the affective disorders: A systematic review and meta-analysis. *Comprehensive Psychiatry*, 42, 257–262. doi:10.1053/COMP.2001.24575 [PubMed: 11458299]
- Metzger D, Woody GE, Navaline H, McLellan AT, Meyers K, Boney T, ... O'Brien CP (1993). The risk assessment battery (RAB): Validity and reliability. Paper presented at the Sixth Annual Meeting of National Cooperative Vaccine Development Group for AIDS Alexandria, VA.
- Mezulis AH, Hyde JS, & Clark R (2004). Father involvement moderates the effect of maternal depression during a child's infancy on child behavior problems in kindergarten. *Journal of Family Psychology*, 18, 575–588. doi:10.1037/0893-3200.18.4.575 [PubMed: 15598163]
- Modecki KL, Hagan MJ, Sandler I, & Wolchik SA (2015). Latent profiles of nonresidential father engagement six years after divorce predict long-term offspring outcomes. *Journal of Clinical Child & Adolescent Psychology*, 44(1), 123–14. doi:10.1080/15374416.2013.865193 [PubMed: 24484456]
- Moss HB, Chen CM, & Yi H (2014). Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample. *Drug and Alcohol Dependence*, 136, 51–62. doi:10.1016/j.drugalcdep.2013.12.011 [PubMed: 24434016]
- National Institute on Drug Abuse. (2015). Nationwide Trends. Retrieved from <https://www.drugabuse.gov/publications/drugfacts/nationwide-trends>
- O'hannessian CM, Hesselbrock VM, Kramer J, Kuperman S, Bucholz KK, Schuckit MA, & Nurnberger II (2005). The relationship between parental psychopathology and adolescent psychopathology: An examination of gender patterns. *Journal of Emotional and Behavioral Disorders*, 13, 67–76. doi:10.1177/10634266050130020101
- Resnicow K, Soler R, Braithwaite RL, Ahluwalia JS, & Butler J (2000). Cultural sensitivity in substance use prevention. *Journal of Community Psychology*, 28(3), 271–290. 10.1002/(SICI)1520-6629(200005)28:3<271::AID-JCOP4>3.0.CO;2-I
- Rink E, Tricker R, & Harvey SM (2007). Onset of sexual intercourse among female adolescents: The influence of perceptions, depression, and ecological factors. *Journal of Adolescent Health*, 41, 398–406. 10.1016/j.jadohealth.2007.04.017 [PubMed: 17875466]
- Sang J, Cederbaum JA, & Hurlburt MS (2016). Sexual intercourse among adolescent daughters of mothers with depressive symptoms from minority families. *Journal of Adolescence*, 51, 81–91. doi:10.1016/j.adolescence.2016.06.002. [PubMed: 27326541]
- Schulenberg JE, & Maggs JL (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol Supplement*, 14, 54–70.
- Shook SE, Jones DJ, Forehand R, Dorsey S, & Brody G (2010). The mother–coparent relationship and youth adjustment: A study of African American single-mother families. *Journal of Family Psychology*, 24, 243–251. doi:10.1037/a0019630 [PubMed: 20545397]

- Silverstein M, Augustyn M, Young R, & Zuckerman B (2009). The relationship between maternal depression, in-home violence and use of physical punishment: What is the role of child behavior? *Archives of Disease in Childhood*, 94, 138–243. doi: 10.1136/adc.2007.128595
- Skeer M, McCormick MC, Normand ST, Buka SL, & Gilman SE (2009). A prospective study of familial conflict, psychological stress, and the development of substance use disorders in adolescence. *Drug and Alcohol Dependence*, 104(1–2), 65–72. 10.1016/j.drugalcdep.2009.03.017 [PubMed: 19446409]
- Stroud LR, Papandonatos GD, Williamson DE, & Dahl RE (2011). Sex differences in cortisol response to corticotropin releasing hormone challenge over puberty: Pittsburgh pediatric neurobehavioral studies. *Psychoneuroendocrinology*, 36, 1226–1238. doi:10.1016/j.psyneuen.2011.02.017 [PubMed: 21489699]
- Substance Abuse and Mental Health Services Administration. (2017). Age- and gender-based populations. Retrieved from <https://www.samhsa.gov/specific-populations/age-gender-based>
- Tartter M, Hammen C, & Brennan P (2014). Externalizing disorders in adolescence mediate the effects of maternal depression on substance use disorders. *Journal of Abnormal Child Psychology*, 42, 185–194. doi:10.1007/s10802-013-9786-0 [PubMed: 23975078]
- Taylor RJ, Mouzon DM, Nguyen AW, & Chatters LM (2016). Reciprocal family, friendship and church support networks of African Americans: Findings from the national survey of American life. *Race and Social Problems*, 8, 326–339. doi:10.1007/s12552-016-9186-5 [PubMed: 27942269]
- Tompkins TL, & Wyatt GE (2008). Child psychosocial adjustment and parenting in families affected by maternal HIV/AIDS. *Journal of Child and Family Studies*, 17, 823–838. doi:10.1007/s10826-008-9192-3
- Tompson MC, Pierre CB, Boger KD, McKowen JW, Chan PT, & Freed RD (2010). Maternal depression, maternal expressed emotion, and youth psychopathology. *Journal of Abnormal Child Psychology*, 38, 105–117. doi:10.1007/s10802-009-9349-6 [PubMed: 19693663]
- United States Census Bureau. (2015). American's Families and Living Arrangements [Data file]. Retrieved from <https://www.census.gov/hhes/families/data/cps2015.html>
- Vaughan EL, Gassman RA, Jun MC, & Seitz de Martinez BJ (2015). Gender differences in risk and protective factors for alcohol use and substance use problems among Hispanic adolescents. *Journal of Child & Adolescent Substance Abuse*, 24, 243–254. doi:10.1080/1067828X.2013.826609
- Wahler HJ (1968). The physical symptoms inventory: Measuring levels of somatic complaining behavior. *Journal of Clinical Psychology*, 24, 207–211. [PubMed: 5650548]
- Wickham ME, Senthilselvan A, Wild TC, Hoglund WLG, & Colman I (2015). Maternal depressive symptoms during childhood and risky adolescent health behaviors. *Pediatrics*, 135, 59–67. doi: 10.1542/peds.2014-0628 [PubMed: 25535266]

Figure 1.
Percent of Daughters' Lifetime Alcohol Use

Figure 2.
Percent of Daughters' Lifetime Marijuana Use

Table 1.

Sample demographics (N = 176 Mother-daughter dyads)

Variable	Frequency (percent)
Age (years)	
Mothers [27–70]	M = 40.89 (SD = 7.13)
Daughters [14–18]	M = 15.8 (SD = 1.55)
Race or ethnicity	
Mothers	
Black	145 (86.3%)
Hispanic	28 (17.2%)
Daughters	
Black	147 (87.5%)
Hispanic	19 (11.3%)
Mother's highest level of education	
Less than 12 th grade	60 (25.9%)
High school degree	71 (42.5%)
Vocational school or college	36 (21.6%)
Mother is employed—yes	83 (46.9%)
Maternal depression	M = 9.89 (SD = 6.22)
Low (range 0–8)	81 (49%)
High (range 9–27)	86 (51%)
Maternal physical symptoms	M = 15.91 (SD = 16.60)
Lowest (range 0–2)	42 (24.7%)
Low (range 3–10)	45 (26.5%)
High (range 11–24)	42 (24.7%)
Highest (range 25–89)	41 (24.1%)
Parental HIV-status	
Mother is HIV-positive—yes	65 (37.1%)
Father is HIV-positive—yes	28 (15.9%)
Mother's substance use in the past 30 days	
Alcohol	58 (33%)
Marijuana	19 (12.5%)
Father's involvement	
Father lives in the same household	57 (32.8%)
Father lives away but is still involved in child's life	63 (35.8%)
Father is not involved in child's life	49 (29%)
Daughters' alcohol use	
Have ever used alcohol	69 (39.2%)
Have used alcohol in the past 30 days	50 (28.4%)
Daughter's marijuana use	
Have ever used marijuana	39 (22.2%)
Have used marijuana in the past 30 days	33 (19%)

Table 2.

Logistic regression analyses of daughters' alcohol and marijuana use, controlling for mother characteristics variables

	Odds Ratio (95 % Confidence Interval)		Marijuana in lifetime	Marijuana in the past 30 days
	Alcohol in lifetime	Alcohol in the past 30 days		
Control Variables				
Age	1.01 (.96, 1.06)	1.01 (.95, 1.06)	1.05 (.98, 1.11)	1.06 (.99, 1.13)
HIV-status	1.26 (.59, 2.70)	2.18 (.91, 5.23)	2.19 (.93, 5.19)	3.09 (1.21, 7.92)
Alcohol use	1.84 (.87, 3.91)	1.73 (.76, 3.98)	.71 (.28, 1.79)	.65 (.24, 1.75)
Marijuana use	1.10 (.37, 3.26)	.88 (.27, 2.89)	1.02 (.29, 3.60)	1.45 (.40, 5.28)
PHSY				
PHSY (1)	1.01 (.33, 3.08)	1.15 (.36, 3.61)	.85 (.21, 3.49)	1.18 (.29, 4.80)
PHSY (2)	1.24 (.40, 3.85)	.26 (.07, 1.00)	1.02 (.26, 4.09)	.61 (.14, 2.69)
PHSY (3)	.65 (.68, 3.51)	.29 (.07, 1.23)	1.09 (.25, 4.85)	.51 (.10, 2.51)
Maternal depression	1.54 (.68, 3.51)	2.27 (.87, 5.92)	1.82 (.71, 4.64)	1.97 (.71, 5.44)
Model χ^2	5.54	12.96	11.68	12.77

Note. Significant results are in boldface.

PHSY = Physical Symptoms

For the physical symptoms variable, the lowest response level served as a reference category.

Table 3.

Results of regression models testing the moderating effects of father's residential status in the relationship between maternal depression and adolescent daughters' substance use

	Alcohol in Lifetime		Alcohol 30 Days		Marijuana in Lifetime		Marijuana 30 Days	
	B (SE)	OR	B (SE)	OR	B (SE)	OR	B (SE)	OR
Age	.01 (.03)	1.01	.02 (.03)	1.02	.03 (.03)	1.03	.05 (.04)	1.05
HIV-status	.34 (.42)	1.41	.84 (.47)	2.31	.86 (.47)	2.36	1.20* (.52)	3.32
Maternal alcohol	.46 (.41)	1.59	.43 (.46)	1.54	-.46 (.50)	.63	-.63 (.56)	.53
Maternal marijuana	.27 (.59)	1.32	.07 (.66)	1.08	.04 (.66)	1.04	.45 (.69)	1.56
Physical symptoms								
PS (1)	.01 (.62)	1.01	.11 (.66)	1.12	-.23 (.76)	.79	.11 (.77)	1.12
PS (2)	.30 (.62)	1.35	-1.24 (.75)	.29	-.20 (.75)	.82	-.78 (.82)	.46
PS (3)	-.36 (.70)	.70	-1.16 (.78)	.31	.03 (.79)	1.03	-.79 (.86)	.45
Depression	-1.12 (.76)	.33	-.17 (.81)	.85	-1.02 (.85)	.36	-.65 (.88)	.52
FR 1	-.67 (.60)	.51	-.23 (.64)	.79	-1.11 (.78)	.33	-.99 (.80)	.37
FR 2	-.78 (.69)	.46	-1.88 (1.14)	.15	-1.02 (.91)	.36	-1.52 (1.16)	.22
Depression × FR 1	2.24* (.93)	9.38	.58 (.99)	1.78	2.76* (1.11)	15.8	2.57* (1.13)	13.06
Depression × FR 2	2.07* (1.01)	7.96	3.08* (1.36)	21.85	2.09 (1.22)	8.12	1.71 (1.48)	5.51

Note. OR = Odds Ratio; Father's residential status 1(FR 1) = Non-resident father with involvement vs. Non-resident father without involvement; Father's residential status 2(FR 2) = Resident father vs. Non-resident father without involvement; Reported values are unstandardized betas. Significance levels are indicated by

* ($p < .05$).

Table 4.

Descriptive statistics for daughters' lifetime alcohol use depending on father residence and maternal depression

Father Residence	Maternal Depression N (%)		Alcohol Use N (%)		Odds Ratio (CI)
			No	Yes	
Non-resident father without involvement	Low	29 (59.2%)	14 (48.3%)	15 (51.7%)	.31 (.09, 1.08)
	High	20 (40.8%)	15 (75%)	5 (25%)	
	Total		29 (59.2%)	20 (40.8%)	
Non-resident father with involvement	Low	30 (48.4%)	22 (73.3%)	8 (26.7%)	2.74 (.95, 7.98)
	High	32 (51.6%)	16 (50%)	16 (50%)	
	Total		38 (61.3%)	24 (38.7%)	
Resident father	Low	17 (34.7%)	12 (70.6%)	5 (29.4%)	1.64 (.47, 5.79)
	High	32 (65.3%)	19 (59.4%)	13 (40.6%)	
	Total		31 (63.3%)	18 (36.7%)	

Table 5.

Descriptive statistics for daughters' lifetime marijuana use depending on father residence and maternal depression

Father Residence	Maternal Depression N (%)		Marijuana Use N (%)		Odds Ratio (CI)
			No	Yes	
Non-resident Father without Involvement	Low	29 (59.20%)	21 (72.4%)	8 (27.6%)	.66 (.17, 2.57)
	High	20 (40.8%)	16 (80%)	4 (20%)	
	Total		37 (75.5%)	12 (24.5%)	
Non-resident Father with Involvement	Low	30 (48.4%)	27 (90%)	3 (10%)	5.4 (1.34, 21.70)
	High	32 (51.6%)	20 (62.5%)	12 (37.5%)	
	Total		47 (75.8%)	15 (24.2%)	
Resident Father	Low	17 (34.7%)	15 (88.2%)	2 (11.8%)	2.5 (.47, 13.39)
	High	32 (65.3%)	24 (75%)	8 (25%)	
	Total		39 (79.6%)	10 (20.4%)	