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Sexual intercourse among adolescent daughters of mothers with depressive symptoms from minority families

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Abstract

This study investigated the association between maternal depressive symptoms and adolescent engagement in sexual intercourse in a non-clinical sample of mothers and their adolescent daughters from minority families. The current study explores ways in which maternal depression, family factors, and adolescent sex interact. Data were from a cross-sectional study of 176 mother-daughter dyads, including a subset of mothers with HIV. Logistic regression analyses revealed that among mothers who were not current marijuana users, more maternal depressive symptoms was associated with daughters' engagement in sexual intercourse. Neither parent-child conflict nor parental involvement significantly mediated the relationship between maternal depressive symptoms and adolescent sex. This study provides the first empirical evidence that non-clinical depressive symptoms in mothers are associated with adolescent engagement in sexual intercourse.

Keywords

adolescent sex; female adolescents; maternal depression; parent-child conflict; parental involvement

By the end of high school, almost 50 % of adolescents in the United States, including minority adolescent females, report engagement in sexual intercourse (Centers for Disease Control and Prevention [CDC], 2014). By the 12th grade, Black (53.4 %) and Hispanic (46.9 %) girls are more likely to have had sexual intercourse than White (45.3 %) girls. As girls transition through adolescence, sexual behavior is considered normative.

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Previous efforts to study adolescent sexual behavior have focused on both risky and deviant sexual behavior and positive aspects of sexual development. Although common, adolescent sexual activity is considered risky because adolescents are more likely to have multiple sexual partners in succession and less likely to use condoms, both of which increase their risk for sexually transmitted infections (STIs) and unintended pregnancy (Finer, 2010; Ott, Katschke, Tu, & Fortenberry, 2011). Sexual intercourse during adolescence places girls at particularly higher risk for STIs, including HIV. For example, the highest rates of chlamydia, a treatable but often undetected STI, were reported among girls aged 15–19 years, and Black and Hispanic adolescent girls reported higher rates than any other ethnic groups in the U. S. (CDC, 2014). In addition, despite the decline in recent years, teen pregnancy still remains a public health concern in the U.S., with rates higher for Black and Hispanic adolescent girls than for White girls (Jahromi, Umana-Taylor, Updegraff, & Lara, 2012). Considering the increasing normativeness of engagement in sex by adolescent females (CDC, 2014), many may be at risk for health consequences.

Although a large body of research has focused on risky sexual behavior among adolescents, a new perspective has emerged, focusing on the positive aspects of sexual development in middle or late adolescence (Zimmer-Gembeck & Helfand, 2008). These studies (e.g., Impett & Tolman, 2006; Tolman & McClelland, 2011) describe adolescent sexual activity as part of normal development, as many youths develop an interest in sexuality and begin to construct themselves as sexual beings during adolescence. Research with this perspective has examined adolescent sexual behavior from multiple aspects: social, emotional, and physical. Previous research has acknowledged the importance of social factors that may be associated with sexual intercourse during adolescence. For example, Rink, Tricker, and Harvey (2007) examined social factors, such as peer relationships and attachment to school, in relation to engagement in sex for female adolescents. They found that the female adolescents who reported a strong connection to their peers and enjoyed school were less likely to engage in sexual intercourse compared to their counterparts. Emotional contexts are also influential in shaping adolescent sexual behavior. This perspective focuses on emotional dimension as motivation toward or deterrent against engagement in sexual behavior. For example, adolescent girls may engage in sexual intercourse to have their emotional needs (e.g., intimacy) met (Ott, Millstein, Ofner, & Halpern-Felsher, 2006), and those with positive sexual self-concepts (as defined as positive sense of themselves as sexual beings) are more likely to engage in sexual activities including intercourse (Impett & Tolman, 2006). From the neuroscience perspective, sexual behavior is seen as related to physical factors such as hormones and physical maturation, making adolescent sex as biologically driven (Forbes & Dahl, 2010). When the emotional changes at puberty (i.e., desire to attract romantic partners) interact with physical maturation that is advanced by sex hormones, this may, in turn, influence behavior. Research also confirms the association between physical development and sexual behavior during adolescence (Zimmer-Gembeck & Helfand, 2008). Therefore, adolescent sexual behavior can be understood from social, emotional, and physical changes.

Previous work has attempted to identify factors related to early adolescent sexual activity; one area of focus has been the family (Buhi & Goodson, 2007). Negative parent-child relationships and low levels of parental involvement in children's lives may play a

significant role in explaining adolescents' engagement in sex. An extensive body of research (Deptula, Henry, & Schoeny, 2010; Merten & Henry, 2011; Regnerus & Luchies, 2006) supports the association between negative parent-child relationships and adolescent sex.

In addition to highlighting the importance of parent-child relationships, past studies have also sought to investigate the relationship between parental involvement and adolescent sex. Empirical findings demonstrate that lower levels of parental involvement are linked with earlier sexual initiation (Velez-Pastrana, Gonzalez-Rodriguez, & Borges-Hernandez, 2005). In addition, considerable research suggests that adolescents are likely to engage in sex when the family environment is characterized by both negative parent-child relationships and decreased parental involvement. Repetti, Taylor, and Seeman (2002) referred to families with high levels of conflict and aggression combined with unsupportive and uninvolved relationships as *risky families*, and concluded that children raised in risky families are more likely to engage in early and unprotected sexual intercourse than other children.

Weak parent-child relationships and a lack of parental involvement may be related to adolescent engagement in sexual intercourse for several reasons. Parents, especially mothers, are viewed as important sources of emotional support for adolescents (Steinberg, 2011). In addition, mothers who communicate well and who are more involved with their children may be better able to serve as positive role models, teach socially acceptable behaviors, communicate positive values, offer guidance and structure, and foster responsibility in their children (Day & Padilla-Walker, 2009; Pearson, Muller, & Frisco, 2006). In contrast, if mothers are overly controlling, or emotionally distant and unavailable, their children may be less receptive to their guidance. In fact, in a study of African American mothers and their adolescent daughters, Pittman and Chase-Lansdale (2001) showed that having a mother who is unsupportive and disengaged put the child at greater risk for early sexual initiation. These children are less likely to internalize values and adhere to the expectations of their mothers, such as abstaining from sex as adolescents, and more likely to turn to others, such as romantic partners, for support and attention, increasing their opportunities to engage in sex.

Children of mothers who are depressed are also at elevated risk of negative outcomes (Goodman, Rouse, Connell, Broth, Hall, & Heyward, 2011). Previous research has used both clinical depression as a diagnosis (Bohon, Garber, & Horowitz, 2007; Jaser, Champion, Dharamsi, Riesing, & Compas, 2011; Watson, Potts, Hardcastle, Forehand, & Compas, 2012) and non-clinical depressive symptoms (Allen, Manning, & Meyer, 2010; Campbell, Morgan-Lopez, Cox, & McLoyd, 2009) when measuring depression in mothers. These works have found links between mothers' diagnostic depression and adolescent outcomes, including poor adjustment (i.e., depression, anxiety, and behavioral problems; Goodman, 2007), physical illness (e.g., broken bones, ulcers, double vision; Lewinsohn, Olino, & Klein, 2005), major depression (Hammen, Brennan, & Keenan-Miller, 2008), and conduct disorders (Ohannessian et al., 2005). A small number of studies have examined non-clinical maternal depressive symptoms using community samples. For example, adolescent offspring of mothers with depressive symptoms are more likely to exhibit depressive phenomena (i.e., depressed mood, anxious/depressed syndrome, and major depressive disorder; Cortes, Fleming, Catalano, & Brown, 2006), externalizing behaviors (Allen et al., 2010), and aggression (Pugh & Farrell, 2012), and use alcohol, cigarettes, and marijuana (Cortes,

Fleming, Mason, & Catalano, 2009). Thus, regardless of diagnosis, these children of mothers experiencing depression are at increased risk of a range of emotional and behavioral symptoms and difficulties in functioning.

Several determinants, including biological factors, stressors, and cognitive vulnerability, have been hypothesized to account for the association between maternal depression and child outcomes (Hammen, 2009). One such mechanism may be family factors, including parent-child relationship and parental involvement. Evidence shows that the depressive symptoms of mothers are likely to interfere with their parenting abilities (Cornish, McMahon, Ungerer, Barnett, Kowalenko, & Tennant, 2006). Mothers with depression are more irritable, critical, hostile, and controlling toward their children, as well as less warm and supportive compared with mothers without depression (McCarty, McMahon, & Conduct Problems Prevention Research Group, 2003). Depressive symptoms such as irritability and anger may result in harsh discipline of children, while sadness and hopelessness can lead to withdrawn and unresponsive behavior toward children (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). These behaviors, in turn, may then translate into dysfunctional interaction patterns in relationships between mothers and children and may decrease the likelihood of parental involvement. Repeatedly, mothers with depression are found to be more likely to experience negative relationships with children (Frye & Garber, 2005). These family factors can contribute to problems in children's development.

Overall, these findings suggest that dysfunctional family interactions can exacerbate youths' engagement in sex. Although previous 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; Rohde, Lewinsohn, Klein, & Seeley, 2005) and externalizing (e.g., conduct disorder, ADHD; Allen et al., 2010) disorders. The relationship between maternal depression and sexual behavior among adolescents is less understood. Bohon, Garber, and Horowitz (2007) did investigate this relationship and found that the interaction between fathers' absence and chronicity/severity of maternal depression significantly predicted adolescent sexual behavior. This study relied on a clinical sample of predominantly White mothers who had histories of mood disorders. Opportunities to further understand these issues in minority families with depressive symptoms that are non-clinical is particularly needed, given that Black and Hispanic women report higher rates of depressive symptoms (Boyd, Joe, Michalopoulos, Davis, & Jackson, 2011; Chaudron, Kitzman, Peifer, Morrow, Perez, & Newman, 2005).

Empirical evidence shows that negative family interactions may be part of an etiological mechanism for the development of adverse child outcomes including adolescent sexual behavior. For example, James, Ellis, Schlomer, and Garber (2012) demonstrated the mediating effects of family factors, including parent-child conflict, in the relationship between maternal depressive symptoms and adolescent sex. However, they used a largely White sample, consisting of both boys and girls. Examining these associations among more diverse families is important because family plays a central role in the lives of adolescents from minority families (Clark, 1989; Pernice-Duca, 2010). They may be particularly vulnerable to dysfunction within the family system that threatens closeness and trust in

parent-child relationships (Kuperminc, Blatt, Shahar, Henrich, & Leadbeater, 2004). As such, the current study extends previous research by studying mothers and adolescent daughters in minority families to aid understanding of the relationship between maternal depressive symptoms, family factors (i.e., parent-child conflict and parental involvement), and adolescent daughters' engagement in sexual intercourse. We hypothesized that: (1) adolescent daughters whose mothers report more depressive symptoms will report more engagement in sexual intercourse than those whose mothers report fewer depressive symptoms; (2) adolescent daughters whose mothers report more depressive symptoms will report more negative parent-child relationships (i.e., more conflicts) and lower parental involvement than those whose mothers report fewer depressive symptoms; (3) parent-child conflict and lower parental involvement will be associated with adolescent daughters' engagement in sexual intercourse; and (4) the relationship between maternal depressive symptoms and adolescent daughters' engagement in sexual intercourse will be significantly reduced (partial mediation) or eliminated (complete mediation) when parent-child conflict and parental involvement are accounted for.

Method

This is a secondary data analysis of a cross-sectional, cross-generational study conducted with 176 Black and Hispanic mother-daughter dyads from low-income families involved with social service organizations or community-based clinics. All 176 participants were from the original study, whose focus was to examine mother-daughter communication about abstinence and safer sex, and differences by maternal HIV status (Cederbaum, Hutchinson, Duan, & Jemmott, 2013). Non-probability sampling was utilized for this study. Participants were recruited from clinics and service organizations in Philadelphia, PA, Newark, NJ, and New York City between June 2008 and July 2009. 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. Recruitment was accomplished through flyers and provider referrals. 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. When the adult had more than one daughter between the ages of 14 and 18, the child that was closest in age to 16 (measured in months) was selected to participate. The protocol was approved by the Institutional Review Board 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 the community-based service organization where they were recruited. 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 one another. Mothers consented to their own and their daughters' participation and the daughters provided assent. Mothers and daughters sat either in different parts of the room or in adjoining rooms in their home (where both were still visible to the data collector) to

simultaneously complete the self-administered questionnaire. To reduce the likelihood of participants minimizing or exaggerating the reports of their experiences, the importance of responding honestly was emphasized. Self-administered questionnaires required about 45 minutes to one hour to complete. Mothers received \$20 and daughters received \$15 for participation in the study.

Measures

Maternal HIV-status—Maternal HIV-status was controlled for in 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—We utilized maternal physical symptoms as a covariate because the presence of physical symptoms can compromise a parent’s ability to respond to their child. This was an adapted version (Armistead, Tannenbaum, Forehand, Morse, & Morse, 2001) of the Physical Symptoms Inventory (Wahler, 1968). The 23-item inventory (e.g., “nausea,” “headaches,” “shakiness,” “trouble sleeping,” “weakness in your muscles,” and “chest pains”) highlights current physical symptoms to understand their degree of chronic illness. Responses were based on a 5 - point Likert scale with higher scores indicating more symptoms (range 0 – 108; $\alpha = .91$; Armistead et al., 2001); reliability in this study was $\alpha = .94$. 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).

Maternal substance use—This construct was included as an additional covariate because maternal substance use is linked to poorer parenting skills (Fisher, Eke, Cance, Hawkinds, & Lamb, 2008). Two items from the Risk Assessment Battery (Metzger et al., 1993) were used in this study: “used alcohol in the past 30 days” and “used marijuana in the past 30 days.”

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 depressive symptoms. Items about how the individual had felt or behaved in the past week were rated on a 4-point scale: (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 hopeful about the future,” and “My sleep was restless.” Scale scores ranged from 0 to 27. Although CES-D 10 has no established cutoff scores, both 8 and 10 have been used in past studies to indicate risk for depression (Andresen, Malmgren, Carter, & Patrick, 1994). 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 ($\alpha = .82$).

Mothers' age—Mothers' age was controlled for in analyses because children of younger mothers have been found to be more likely to be sexually active than those of older mothers due to lack of parental monitoring (Hope & Chapple, 2005).

Mediators

We investigate two possible mediators of the relationship between adolescent engagement in sex and maternal depression: (a) parent-child conflict and (b) parental involvement. Daughters' reports were used in the analyses because mothers with higher levels of depressive symptoms are likely to over-report problems with their children (Gartstein, Bridgett, Dishion, & Kaufman, 2009).

Parent-child conflict—Parent-child conflict was assessed using a subscale of the Conflict Behavior Questionnaire (CBQ; Prinz, Foster, Kent, & O'Leary, 1979). Higher scores on the 10-item communication subscale ("true/false") indicate more conflictual communication between mother and child. Example items are "My mother and I almost never seem to agree," and "Talking with my mother is very frustrating." Prinz et al. (1979) reported $\alpha = .90$; in the current study, $\alpha = .86$.

Parental involvement—The 8-item involvement subscale from the Parent-Child Relationship Inventory (Gerard, 1994) was used. Item responses include 1 = *disagree strongly*, 2 = *disagree*, 3 = *agree*, 4 = *agree strongly*, with higher scores indicating more involvement. Examples are "My mother and I spend a lot of time with one another," and "My mother is very involved in my school and other activities." Cronbach's alpha coefficient was .80 in this sample.

Engagement in sex—The index of adolescent daughters' sexual intercourse was based on their answers to "Have you had sexual intercourse (i.e., a boy's penis in your vagina) in the past three months? (yes/no)". This allowed for retention of girls who were sexually active at the time of the survey.

Data Analysis

Descriptive statistics were calculated for all variables. Pearson 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 depression correlated with adolescent engagement in sexual intercourse.

Regression analyses were then conducted to test whether parent-child conflict and parental involvement mediated the relationship between maternal depression and adolescent sexual intercourse. The Mackinnon and Dwyer (1993) approach was undertaken to assess for mediation effects as the mediators are continuous and the dependent variable categorical. Complete mediation is considered when a significant relationship between an independent and dependent variable is no longer significant when mediators are accounted for. Partial mediation is considered when the relationship is significantly reduced by including hypothesized mediators. In addition, Sobel tests (Preacher & Hayes, 2004) were conducted

to directly test the effect sizes and significance of mediation in the relationship between maternal depression and adolescent engagement in sexual intercourse.

Results

Descriptive Statistics

Table 1 provides an overview of the demographic characteristics of mothers and daughters. Age of the mothers, all of whom were biological mothers of the adolescent girls, ranged from 27 to 70 years ($M = 40.89$, $SD = 7.13$); 86 % ($n = 145$) self-identified as Black and 17.2 % ($n = 28$) as Hispanic. Thirty-seven percent ($n = 65$) of the mothers reported being HIV-positive. Mothers had diverse educational backgrounds; more than one-third had not completed high school and just over one-fifth had completed vocational school or college. The majority of the mothers were unmarried (75%). As a group, mothers reported relatively low levels of depressive symptoms ($M = 9.89$; range = 0 – 27) and physical symptoms ($M = 15.91$; range = 0 – 89).

Adolescent daughters' age ranged from 14 to 18 years ($M = 15.8$, $SD = 1.55$); 87.5 % of the daughters self-identified as Black. The majority (90.9 %) were in school with almost 40 % in eighth or ninth grade, and almost one-third in 11th or 12th grade. Among daughters, 42.6 % reported ever having had sexual intercourse and 34.1 % reported having had sexual intercourse in the past three months. The mean for the parental involvement subscale was 24.22 ($SD = 4.99$); scores were normally distributed. For parent-child conflict, the mean was 5.33 ($SD = 3.29$), which indicates neither positive nor negative communication, and normally distributed.

Correlations

Table 2 provides a correlation matrix summarizing associations between seven parent variables and maternal depression as a binary variable. Among these predictor variables, the strongest relationship was found between maternal HIV status and physical symptoms ($r = .41$, $p < .01$) and the weakest between maternal physical symptoms and parent-child conflict ($r = -.01$, $p = .90$). Maternal depression was correlated with her HIV-status, marijuana use, physical symptoms, and parent-child conflict. Contrary to expectation, parent-child conflict had an inverse relationship with maternal depression; greater parent-child conflict was associated with lower levels of depression. Although significant, this relationship was weak ($r = -.16$).

Multivariate Analyses

Maternal HIV-status, marijuana use, and physical symptoms were correlated with maternal depression and thus, controlled for in multivariate analyses. Maternal alcohol use and mothers' age were included as additional covariates.

Relationship between maternal depression and adolescent engagement in sex

We ran a logistic regression model to test the first hypothesis regarding the relationship between maternal depression and adolescent engagement in sexual intercourse. Maternal

depression (IV) was included as a binary variable, along with control variables (maternal HIV-status, alcohol use, marijuana use, physical symptoms, and age).

The relationship between maternal depressive symptoms and adolescent daughters' engagement in sexual intercourse was not significant in bivariate analyses (Table 2). However, when parent characteristics were statistically controlled, a significant relationship was found between maternal depression and adolescent daughters' engagement in sexual intercourse (Table 3). This finding indicates that adolescent daughters of mothers who reported more depressive symptoms had odds 2.8 times higher of reporting sex in the past three months (95 % CI = 1.19, 6.73) compared to daughters of mothers with fewer depressive symptoms.

Although a significant relationship between maternal depressive symptoms and daughters' engagement in sexual intercourse was observed in multivariate analyses, given the non-significant bivariate correlation, we further explored this association. We conducted additional analyses by adding and subtracting control variables from the logistic model. Results (not shown) revealed that the odds ratios for maternal depression changed when marijuana use was excluded from the model. To explore a potential three-way interaction between maternal depressive symptoms, marijuana use, and daughters' engagement in sexual intercourse, we examined a three-way crosstab; the association between maternal depressive symptoms and daughters' engagement in sex was present and strong for mothers not using marijuana, but weaker when mothers reported use. Adolescent sexual activity was positively associated with maternal depressive symptoms when mothers did not use marijuana ($n = 130$) ($\chi^2 = 5.64$, $p < .05$). Among mothers reporting no current marijuana use, 38.2 % of daughters reported sexual activity when maternal depressive symptoms were low and 59.3 % when maternal depressive symptoms were high. There were no differences in sexual activity for daughters of mothers who were current marijuana users ($n = 19$). This significant relationship between maternal depressive symptoms and daughters' engagement in sex, observed in multivariate analyses, was mostly present for mothers not using marijuana.

Involvement and conflict as mediators of maternal depression on adolescent sex

Next, regression analyses were conducted to determine whether parental involvement or parent-child conflict mediated the relationship between maternal depressive symptoms and adolescent engagement in sexual intercourse. Mediation effects were determined using logistic regression (Baron & Kenny, 1986; MacKinnon & Dwyer 1993; MacKinnon, Fairchild, & Fritz, 2007) and confirmed by a Sobel test. Note that the Sobel test results reported here reflect the adjustment of MacKinnon and Dwyer (1993) to account for the binomial outcome variable (yes/no).

Adolescent sex—The mediational model for engagement in sexual intercourse was also tested. In model 1 (See Table 3), maternal depressive symptoms had a significant relationship with adolescent daughters' engagement in sex ($p = .02$). This finding indicates that daughters of a mother with more depressive symptoms had odds 2.8 times higher of

reporting having had sexual intercourse in the past three months (95 % CI = 1.19, 6.73). Table 4 displays *B* coefficient, SE, Wald Statistics, *p*-values, and odds ratios.

In the second model including parental involvement and parent-child conflict as the DVs and maternal depressive symptoms and the control variables as IVs (Tables not shown), maternal depressive symptoms was not significantly associated with parental involvement or parent-child conflict, suggesting that step two of the mediational procedure was not met. Therefore, we did not pursue further examination of this relationship.

Discussion

The purpose of this study was to understand the relationship between maternal depressive symptoms and adolescent engagement in sexual intercourse among inner-city mother-daughter dyads from minority families. Two dimensions of family factors (parent-child conflict and parental involvement) were examined as possible mediators of the relationship between maternal depressive symptoms and adolescent engagement in sexual intercourse.

The first hypothesis was supported; there was a direct association between maternal depressive symptoms and adolescent engagement in sexual intercourse. When looking closer at this relationship, more nuanced results emerged. We found that the relationship between depressive symptoms and adolescent engagement in sexual intercourse differed for mothers as a function of marijuana use. Among mothers who were not current marijuana users, maternal depressive symptoms was significantly associated with higher odds of adolescent sexual activity. This finding is noteworthy, but how to explain this is unclear. Further exploration is needed. This finding supports the work of Bohon et al. (2007), who found that youth of mothers with severe depression were at increased risk of reporting sexual intercourse. The current study builds on the existing literature as no previous studies have examined the sexual activity of adolescents whose mothers have depressive symptoms in a non-clinical sample. Further, it provides evidence that even low levels of depression can be associated with increased sexual behavior in adolescent daughters.

The second hypothesis explored the associations between maternal depressive symptoms and adolescent sex and the mediating role of family factors (i.e., parent-child conflict and parental involvement). While the main associations between maternal depressive symptoms and adolescent sex achieved statistical significance, a mediation model was unsupported. Our findings contrast with those of James et al. (2012), who demonstrated the pathway from maternal depressive symptoms to lower quality family relationships (i.e., more family conflicts), which then predicted earlier sexual debut and increased sexual risk taking among adolescents. This inconsistency may be due to differences between the two studies in participants' ethnicity (White vs. Blacks and Hispanics), severity of depression (histories of depressive disorders vs. depressive symptoms), and gender of adolescents (both boys and girls vs. girls only). Lack of mediating effects in the present study suggests that, for minority families, maternal depressive symptoms may more directly be related to adolescent sex, or family issues other than parent-child conflict and parental involvement contribute to adolescent sex.

There are several explanations as to why maternal depression might increase the likelihood of adolescent daughters' sexual activity. One interpretation posits sex as a coping mechanism; mothers with depression may be less capable of providing the attention and affection their children desire (Goodman, 2007). Adolescents who feel their parents care are less likely to engage in sexual activity (Lammers, Ireland, Resnick, & Blum, 2000). When mothers are not a source of emotional support, adolescents may seek love and affection from their romantic partners. Connolly and McIsaac (2011) also documented love and affection as major motives for decision-making to engage in sex among female adolescents. For these girls, sexual experience may be a way to compensate for unsupportive parental relationships.

Another potential interpretation is that depressed mothers face difficulties in monitoring their children; lack of monitoring may lead to increased risk of engaging in sex because of increased opportunity. If children do not feel that their parents care about their activities and whereabouts, they may spend more time outside their homes, increasing the likelihood of acting-out through sexual behavior (Huang, Murphy, & Hser, 2012).

Another possibility is that results may be attributed to cultural influences related to family structure among participants in the sample, which consisted of Black and Hispanic families. Black families are known to be tightly organized into extended families, and parenting by relatives is common (MacAdoo & Younge, 2009). Similarly, in Hispanic culture which emphasizes *familismo*, extended family members play a central role in children's development (Levitt et al., 2005; Pernice-Duca, 2010). In minority families, mothers may not be the primary and only caregiver for their children, especially when the mother is mentally and/or physically ill. This may buffer the effects of maternal depression on mother-daughter relationships and adolescent behavior. Pachter, Auinger, Palmer, and Weitzman (2006) documented that the effects of maternal depression on child behavioral problems were unmediated through parenting practices in a Black sample, whereas the effects of maternal depression were partially mediated through parenting in a White sample. As this study did not collect information on other influential adults, we are unable to examine how the outcomes of interest may be influenced by relationships with others.

Contrary to previous findings suggesting that adolescents with depressed mothers are more likely to experience negative communication patterns in their interactions with their mothers (Kiernan & Huerta, 2008), maternal depressive symptoms was associated with less parent-child conflict in the current sample. The magnitude of this association, however, was minimal and should be interpreted with reservation.

Further, most of the previous studies on parental depression (e.g., McLearn, Minkovitz, Strobino, Marks, & Hou, 2006) have documented an association between mothers with elevated depressed moods and reduced levels of parental involvement. In the present study, the severity of depressive symptoms in mothers was unrelated to parental involvement. This may be influenced by the more limited level of variation in depressive symptoms in this sample. Also, it is possible that parental involvement is simply weakly associated with maternal depression.

Several limitations of the current study must be noted. First, participants were a convenience sample and are not representative of the general population. We may be missing an important subgroup of families with mothers who have more severe clinical levels of depressive symptoms because their symptoms may have prevented them from participating in the study. In addition, this was a secondary analysis of an existing data set. Thus, the main purpose of the parent study was not to investigate maternal mental health, thereby not specifically targeting women with diagnosed mental health issues. Because the data were not collected to answer the research questions that we examined in this study, maternal depression was not assessed in the way we would have chosen. Second, the cross-sectional and correlational nature of the research design precludes any causal conclusions. For example, adolescent engagement in sex cannot be solely attributable to maternal depressive symptoms. It is also possible that daughters' sexual activity could affect mothers' depressive symptoms. In addition, because our data do not provide clear evidence that maternal depression temporally preceded daughters' sexual activity, results should be interpreted with caution. Longitudinal studies examining the temporal relationships between maternal depression and adolescent sexual intercourse should be conducted. Third, we used self-report measures. Although mothers and daughters completed the surveys simultaneously but separately, the daughters may have underreported sexual behaviors.

Lastly, it is important to note that 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 different for mothers with a clinical diagnosis of depression. While more work exploring how maternal depression may influence adolescents' propensity for sexual activity are needed, the findings address the need for clinicians to have an increased awareness of the potential relationship between maternal depressive symptoms and adolescent engagement in sexual intercourse. When a mother is depressed, children are also likely affected. Family systems would be considered in clinical intervention, treating the entire family and not only the mother. In this model, for example, when a depressed mother seeks treatment, a clinician would also assess the children within the family. Providing support and intervention to families prior to adolescence will be critical, as this is the time, developmentally, in which teens will be at increased risk of beginning to explore their sexuality and engage in sexual behavior (Sawyer et al., 2012). This may be especially important for adolescent females, who may seek love and attention through sexual relationships.

In this study, the association between maternal depressive symptoms and parent-child conflict was relatively weak, albeit statistically significant. Given these findings, clinicians must be careful not to assume a negative relationship between a mother with depressive symptoms and her adolescent daughter. Adolescent daughters do not necessarily experience more conflict with a depressed mother or have mothers who are less engaged. Together with families, clinicians can explore how depressive symptoms in mothers have affected other family members, especially adolescent daughters, whether their relationships have changed, and how the individual members are trying to improve their relationships.

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Table 1

Sample Demographics (N = 176 Mother-Daughter Dyads)

Variable	Frequency (percent)
Age (years)	
Moms [27 – 70]	M = 40.89 (SD = 7.13)
Daughters [14 – 18]	M = 15.8 (SD = 1.55)
Race or ethnicity	
Moms	
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 %)
Daughters currently in school	160 (90.9 %)
Current grade in school	
Less than 8 th	3 (1.9 %)
8 th	15 (15.6 %)
9 th	37 (23.1 %)
10 th	41 (25.6 %)
11 th	14 (15 %)
12 th	23 (14.4 %)
More than 12 th	7 (4.4 %)
Mother's marital status—ever married	51 (30.5 %)
Mother is employed—yes	83 (46.9 %)
Mother is HIV-positive—yes	65 (37.1 %)
Biological father lives in the same house—yes	58 (33 %)
Maternal depression	M = 9.89 (SD = 6.22)
Low (range 0 – 8)	81 (49 %)
High (range 9 – 27)	86 (51 %)
Maternal physical symptoms	
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 %)

Variable	Frequency (percent)
Mother's substance use in the past 30 days	
Alcohol	58 (33 %)
Marijuana	19 (12.5 %)
Daughters' engagement in sex in the past three months—yes	59 (34.1 %)

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Table 2
Pearson Correlations Among Participant Characteristics and Relationship Variables

	1	2	3	4	5	6	7	8	9
1. Mom's Depression	1.0	.16*	-.05	.22**	.29**	-.03	-.16*	-.10	.13
2. Mom's HIV-Status		1.00	-.01	.10	.41**	.10	.10	.00	.13
3. Mom's Alcohol Use			1.00	.25**	.09	.14	-.13	.08	.04
4. Mom's Marijuana Use				1.00	.17*	-.05	-.13	.05	.01
5. Physical Symptoms					1.00	.04	-.01	.18*	.09
6. Mothers' Age							-.09	-.10	.12
7. Parent-Child Conflict							1.00	.08	-.10
8. Parental Involvement								1.00	-.02
9. Daughters' sex									1.00

Note. Significant results are in boldface.

* $p < .05$,

** $p < .01$.

Table 3

Logistic Regression Analyses of Engagement in Sex, Controlling for Parent Characteristics Variables

	Sex in the past three months Odds Ratio (95 % Confidence Interval)
Control Variables	
Mothers' age	1.02 (.97, 1.08)
HIV-status	1.76 (.79, 3.87)
Maternal alcohol use	1.25 (.56, 2.77)
Maternal marijuana use	.66 (.21, 2.10)
Physical symptoms	
Physical symptoms (1)	.47 (.15, 1.50)
Physical symptoms (2)	.42 (.13, 1.37)
Physical symptoms (3)	.39 (.10, 1.46)
Maternal depression	2.83 (1.19, 6.73)
Model χ^2	10.83

Note. Significant results are in boldface.

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

Table 4

The Influence of Maternal Depression on Adolescent Daughters' Engagement in Sex

Variable	<i>B</i>	<i>SE</i>	Wald	Sig.	Exp (B)
Depression	1.04	.44	5.51	.02	2.83
Mothers' Age	.02	.03	.56	.46	1.02
HIV-status	.56	.40	1.93	.16	1.75
Maternal alcohol	.22	.41	.30	.58	1.25
Maternal marijuana	-.41	.59	.49	.49	.66
Physical Symptoms			2.51	.47	
Physical Symptoms (1)	-.75	.59	1.61	.20	.47
Physical Symptoms (2)	-.87	.61	2.08	.15	.42
Physical Symptoms (3)	-.95	.68	1.98	.16	.39
Constant	-1.39	.44	1.25	.26	.25

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