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Multipartnered Fertility and Depression among Fragile Families

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Abstract

We used data from the Fragile Families and Child Wellbeing Study to examine the association between multipartnered fertility (MPF)—when parents have children with more than one partner—and depression. Random effects models suggested that MPF is associated with a greater likelihood of depression, net of family structure and other covariates. However, these associations disappeared in more conservative fixed effects models that estimated changes in MPF as a function of changes in depression. Results also suggested that social selection may account for the link between MPF and depression for fathers (but not mothers), as depressed fathers with no MPF were more likely to have a child by a new partner four years later. Ultimately, MPF and depression may be reciprocally related and part of broader processes of social disadvantage.

Keywords

depression; Fragile Families and Child Wellbeing Study; multipartnered fertility

The second half of the twentieth century witnessed widespread changes in family formation in the United States. Marriage was once a passage to adult status and the dominant institution that shaped individuals' lives, but individuals and families now have more alternatives through which to create and maintain kinship ties. Marriage has been delayed and become increasingly optional, and those who do marry approach the union with greater hesitancy and uncertainty (Coontz, 2005). The fragility of marriage is accompanied by other demographic trends in family formation, including a decoupling of marriage and childbearing, particularly among minorities and the less educated (Ellwood & Jencks, 2004). Nonmarital childbearing has risen steadily in recent years, and children born to unmarried parents now account for 41% of all births in the United States, including 72% of births to African Americans and 53% of births to Hispanics (Hamilton, Martin, & Ventura, 2010). In the context of these demographic changes, family structure and relationships are fundamentally different and more complex today than they were a half-century ago. These complexities imply that both adults and children experience substantial heterogeneity in living arrangements, and that they increasingly negotiate their roles with fewer accompanying social norms (Cherlin, 2004).

One consequence of these recent demographic changes is that adults often have biological children with more than one partner, referred to as *multipartnered fertility* (MPF). Although little longitudinal research exists, MPF may have become more prevalent in recent years, particularly among certain demographic groups. In 2002, 8% of American men ages 15 to 44 reported having had children with more than one woman; among Black men ages 35 to 44 with incomes below 150% of the poverty line, 37% reported MPF (Guzzo & Furstenberg, 2007a). Additionally, tabulations from a recent urban birth cohort of children showed that,

among couples who recently had a child together, 21% of married parents and 59% of unmarried parents reported MPF (Carlson & Furstenberg, 2006); these percentages can only increase over time, as some mothers and fathers in this sample will have children with additional partners throughout their childbearing years. As with the decoupling of marriage and childbearing, MPF is not randomly distributed across the population; mothers and fathers who have children with multiple partners generally experience more socioeconomic disadvantage than their counterparts who have two or more children with the same partner (Carlson & Furstenberg, 2006; Guzzo & Furstenberg, 2007a; Manlove, Logan, Ikramullah, & Holcombe, 2008).

Though the prevalence of MPF may be increasing, this is not a new phenomenon. MPF often includes unmarried parents who have children together, either within or outside a relationship, but can also include married couples where one or both parents have children with more than one partner. For example, a divorced parent who remarries and has a child within his or her new marriage is considered to have MPF. Researchers have explored the complexities of stepfamilies since the 1970s (see, for example, Cherlin, 1978), but are just beginning to understand the prevalence and consequences of MPF outside of marriage.

The scant but growing body of literature suggests that MPF has important implications for both adults and children. MPF among both men and women is associated with a reduced likelihood of marriage (Harknett & McLanahan, 2004; Waller & McLanahan, 2005), impaired relationship quality with intimate partners (Carlson, Furstenberg, & McLanahan, 2009; Hill, 2006), and less social support from friends and family members (Harknett & Knab, 2007). MPF is also linked to less time spent with and economic support for children (Manning & Smock, 1999; Manning & Smock, 2000; Manning, Stewart, & Smock, 2003) and to externalizing behavior problems and physical health problems among young children (Bronte-Tinkew, Horowitz, & Scott, 2009).

Impairments in mental health among adults may be an additional consequence of MPF, above and beyond the impairments in mental health associated with relationship instability (Lamb, Lee, & DeMaris, 2003; Meadows, McLanahan, & Brooks-Gunn, 2008). The former outcome has received much less attention in the literature (for an exception focused on children, see Bronte-Tinkew et al., 2009), but there are theoretical reasons to believe that having children with more than one partner may lead to mental health impairments such as depression among parents. MPF—and the childrearing across households that ensues—may create ambiguous family boundaries, increase conflict in couple relationships, and diminish the quality and quantity of parental investment in children, all of which may lead to impaired mental health (Carlson et al, 2009; Boss, 1980; Cherlin & Furstenberg, 1994; Jayakody & Seefeldt, 2005).

Thus, in this paper, we examined the link between MPF and one indicator of mental health, depression, among mothers and fathers. To our knowledge, this is the first study to examine the association between MPF and depression. We used data from the Fragile Families and Child Wellbeing Study, a longitudinal survey of nearly 5,000 mostly unmarried parents in 20 U.S. cities who gave birth between 1998 and 2000. Mothers and fathers were first interviewed in the hospital just after the focal child was born; they were re-interviewed when the child was about 1, 3, and 5 years old. We first used random and fixed effects models to examine the association between MPF and depression; then, we considered the extent to which depression may be an antecedent factor predicting subsequent MPF. The longitudinal data allowed us to pay attention to change over time in both MPF and depression and to take seriously selection (i.e., depressed individuals may be more likely to experience MPF). Given that depression among parents is linked to adverse economic and

social outcomes for adults and to diminished well-being for children, this research has important implications for both adults and children (Heflin & Iceland, 2009; Turney, 2011).

MPF as a Predictor of Mental Health

Researchers have long been interested in the interplay between family structure and mental health. A large, robust body of literature has documented the mental health benefits of marriage; married individuals generally have better psychological well-being than their unmarried counterparts (Ross, Mirowsky, & Goldsteen, 1990; Waite & Gallagher, 2001; Wood, Goesling, & Avellar, 2007). Those who are married, for example, report less depression, fewer depressive symptoms, and better subjective well-being (Kim & McKenry, 2002; Lamb et al. 2003; Meadows et al. 2008). Entry into marriage reduces mothers' depressive symptoms (Williams, Sassler, & Nicholson, 2008), and exiting both cohabitation and marriage increases depressive symptoms (Williams et al., 2008; Wu, Penning, Pollard, & Hart, 2003). This literature has burgeoned in recent years, as scholars have used new methodologies to better understand the multifaceted association between marriage and health. Despite knowing a great deal about the association between marriage and depression, we know very little about the role of depression in the correlates and consequences of more complex family forms, including families with MPF. Given recent dramatic demographic changes in family structure and the increasing prevalence of MPF, this is an important omission.

Theoretically, there are several reasons to expect that MPF, above and beyond family structure transitions, may lead to depression among parents. First, complex family situations such as those associated with MPF may create ambiguity with respect to family roles and boundaries (Boss, 1980). The literature on stepfamilies has extensively documented such ambiguity (Boss, 1980; Brown & Manning, 2009; Cherlin & Furstenberg, 1994; Ihinger-Tallman, 1988; Stewart, 2005), which includes disagreements about who is considered a member of one's family and about the expectations for family roles and obligations. This ambiguity may increase depression, either directly or indirectly (e.g., by creating more parenting stress, which may lead to depression) (Boss, 1980). Similarly, the ambiguity in family roles and relationships surrounding MPF may lead to impairments in mental health (see Boss, Caron, Horbal, & Mortimer, 1990, for an example focused on caregivers). Unlike stepfamilies, which by definition require remarriage and thus assume some of the traditional institutional norms associated with marriage, MPF often occurs outside of marriage (and can occur outside of a relationship). Expectations and norms about parental involvement and investments are even less straightforward than they are for marriage and remarriage after the dissolution of unions that were never legally defined or after a pregnancy occurs outside of a relationship. Partners of parents with MPF may also experience ambiguity about their role in parenting a non-biological child with whom they live. Also, the amount of child support paid by non-resident fathers is lower after a nonmarital birth than after divorce (Hanson, Garfinkel, McLanahan, & Miller, 1996), and MPF complicates the process of collecting child support from fathers (Meyer, Cancian, & Cook, 2005). Low financial resources may create stress for custodial mothers, and trying to meet financial obligations may create stress for noncustodial fathers; the literature has demonstrated a robust relationship between economic hardship and depression (Heflin & Iceland, 2009; Miech, Caspi, Moffitt, Wright, & Silva, 1999; Muntaner, Eaton, Miech, & O'Campo, 2004).

In addition to the ambiguity associated with MPF, there are other pathways through which MPF could negatively influence parental depression. Many parents, even those no longer in a relationship, cooperate and support one another in the joint task of raising their children (for a review, see Gable, Crnic, & Belsky, 1994). However, as suggested in the divorce literature, trying to rear children while living apart can also lead to conflict in the coparental

relationship (Madden-Derdich, Leonard, & Christopher, 1999). The logistical difficulty of coordinating childrearing is likely even more difficult with two or more partners than it is with one partner, particularly if the parents live far away from each other. Mothers with two partners, for example, may expend a great deal of energy dealing with the logistical and financial costs of coordinating with more than one partner (Jayakody & Seefeldt, 2005). Additionally, parents with multiple partners may not be able to rely on kin networks for instrumental support when negotiating childrearing responsibilities (Harknett & Knab, 2007). Thus, the tensions and conflicts that may arise in the coparental relationship, as well as the reduced social support, may lead to mental health impairments. Indeed, conflictual relationships and a lack of social support have been linked to depression (Kim & McKenry, 2002; Lin & Ensel, 1984; Turner, Sorenson, & Turner, 2000; Williams, 2003). Therefore, based on existing theory and empirical literature, our first hypothesis is as follows: Mothers and fathers who have MPF will be more likely to report depression than their counterparts with no MPF, even after adjusting for family structure and a host of demographic and socioeconomic characteristics.

Mental Health as a Predictor of MPF

Although there is reason to believe that depression may be a consequence of MPF, it is also possible that depression increases the likelihood of having children by more than one partner. MPF is a process that typically (though not always) involves several steps: dissolving a union, forming a new union, and having a child with the new partner. Although little is known about how depression may predict the final outcome—MPF—a robust body of literature has examined how depression and other mental health impairments may predict the two preceding steps: dissolving a union and forming a new union.

First, mental health problems are common predictors of union dissolution (Hope, Rodgers, & Power, 1999), and dissolving a union may lead to reduced psychological well-being among adults (Amato, 2000; Williams et al., 2008). Recent research, for example, found that mothers who exited a marital or cohabiting union were more likely to exhibit mental health problems prior to the dissolution; these mothers reported an increase in mental health problems after the dissolution (Meadows et al., 2008). Since MPF is more common among the unmarried than the married (Carlson & Furstenberg, 2006), and mental health problems may preclude mothers from forming a stable union (Teitler & Reichman, 2008), it is likely that mental health problems predict MPF among mothers and fathers. One paper examined this possibility and found that depressive symptoms were not predictive of MPF, though the sample was of young women (ages 19 to 25) regardless of parental status, and mental health was not the explicit focus of the analysis (Guzzo & Furstenberg, 2007b).

In addition, poor mental health may foster a lack of intention about childbearing and increase the chance of having an unplanned pregnancy (Mollborn & Morningstar, 2009; Reardon & Cougle, 2002), which may be a proximate determinant of having children by multiple partners. One study of parents found that both mothers and fathers were more likely to have had children by multiple partners if they reported they considered aborting the focal child (Carlson & Furstenberg, 2006); this lack of intention about childbearing may be more common among parents with mental health problems who have difficulty preparing for the future (Lachance-Grzela & Bouchard, 2009). Therefore, our second hypothesis is as follows: Mothers and fathers who report depression at the 1-year survey (but have no MPF) will be more likely than their nondepressed counterparts to have children with a new partner by the 5-year survey.

Additional Correlates of MPF and Depression

Our multivariate analyses controlled for a host of demographic and socioeconomic factors that may be correlated with MPF and depression. We adjusted for race, immigrant status, and whether or not the parents were a mixed-race couple, as prior research has suggested these are important correlates of both MPF and depression (Breslau, Kendler, Su, Gaxiola-Aguildar, & Kessler, 2005; Carlson & Furstenberg, 2006). MPF is also more common among older parents and those with more children, and depression varies by age and number of children (Blazer, Kessler, McGonagle, & Swartz, 1994; Guzzo & Furstenberg, 2007a; McLanahan & Adams, 1987). Given that the prevalence of both MPF and mental health problems is higher among the unmarried than the married (Carlson & Furstenberg, 2006; DeKlyen, Brooks-Gunn, McLanahan, & Knab, 2006), we controlled for parents' relationship status, as well as other factors associated with nonmarital fertility and depression such as religiosity (Lehrer, 2000), growing up with two biological parents (McLanahan & Sandefur, 1994), and educational attainment (Ellwood & Jencks, 2004; Goldstein & Kenney, 2001).

Method

Data Source

We used data from the Fragile Families and Child Wellbeing Study, a longitudinal birth cohort study of nearly 5,000 parents in large U.S. cities. The full sample included 3,712 children born to unmarried parents. Mothers completed a 30- to 40-minute in-person interview at the hospital after the birth of their child, between February 1998 and September 2000. Fathers were interviewed at the hospital, if possible, or soon after the birth. Mothers and fathers were re-interviewed by telephone when their children were approximately 1, 3, and 5 years old. See Reichman, Tietler, Garfinkel, & McLanahan (2001) for further information about the study design and response rates (also see Bendheim-Thoman Center for Research on Child Wellbeing, 2008).

The analytic sample for this paper consisted of 4,488 mothers and 3,708 fathers from the 4,898 observations in the original sample. We deleted the 410 mothers (8%) and 1,190 fathers (24%) who had at least one missing value on MPF or depression. The majority of these missing cases resulted from the mother or father not completing the survey at one or more of the follow-up waves. To maximize our analytic sample, we allowed mothers to be in the sample if fathers did not participate and vice versa. In supplemental analyses not presented, we restricted the mother sample only to observations in which both the mother and father have nonmissing data on MPF and depression, and the findings were robust to this specification. It is important to keep the analytic sample in mind when interpreting the findings, as supplemental analyses showed that those lost to follow-up were more disadvantaged than those in the full sample. Both mothers and fathers in the analytic sample, compared to those in the full sample ($p < .05$), were more likely to be White and less likely to be Black, less likely to have dropped out of high school and more likely to have a college degree, and more likely to be married or cohabiting than living apart.

Measures

MPF—MPF is a time-varying variable; at the 1-, 3-, and 5-year surveys, parents were asked if they had children with another partner besides the mother or father of the focal child (1 = *MPF*, 0 = *no MPF*). Importantly, parental reports of MPF included MPF that occurred prior to the baseline survey (and thus prior to the focal child's birth). In a minority of cases, a parent reported MPF in one wave and no MPF in a subsequent wave (e.g., 2% of mothers in the analytic sample reported MPF in the 1-year survey but not in the 3-year survey). Once a parent reported MPF, we considered him or her to have MPF at all subsequent waves, as we

believe parents would be more likely not to report an existing child than to report a non-existent child. Thus, all change in MPF status is moving *into* MPF, since one cannot go from having MPF to having no MPF.

Depression—Depression was measured using the Composite International Diagnostic Interview Short Form (CIDI-SF), version 1.0 (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998). At the 1-, 3-, and 5-year surveys, mothers and fathers were asked if, at some time during the past year, they had feelings of depression or were unable to enjoy things that were normally pleasurable. Those who experienced at least one of these two conditions most of the day, every day for a two-week period, were asked questions about depressive symptoms (about losing interest in things, feeling tired, experiencing a change in weight of at least 10 pounds, having trouble sleeping, having trouble concentrating, feeling worthless, or thinking about death); those who answered affirmatively to three or more of these questions were considered to be depressed. These are not lifetime measures but instead refer to major depressive disorder (MDD) in the previous year (1 = *presence of MDD*, 0 = *absence of MDD*). Although limitations to the CIDI-SF exist (Link, 2002), it is commonly used in large-scale community surveys to estimate the prevalence of depression in a population (Aalto-Setala, Haarasilta, Marttunen, Tuulio-Henriksson, Poikolaninen, Aro, & Lonnqvist, 2002).

Covariates—Covariates in the multivariate analyses included the following time-invariant variables, all measured at baseline: race, mixed-race couple, immigrant status, childhood family structure, and marital status. Also, measures of age, education, income-to-poverty ratio, self-rated health, number of children in the household, religiosity, and relationship status were included as time-varying variables in the random and fixed effects models described below (measured at the 1-, 3-, and 5-year surveys). In the logistic regression models described below, we used measures of these variables at baseline. The models examining the link between maternal MPF and depression controlled for covariates reported by the mother, and those predicting paternal MPF and depression relied on father-reported covariates.

Race was indicated by a series of dummy variables: White (reference category), Black, Hispanic, and other race. A dummy variable indicated whether the parents were a mixed-race couple, and a dummy variable indicated immigrant status. Childhood family structure was measured by a dummy variable indicating the parent lived with both of his or her biological parents at age 15, and baseline marital status was also measured by a dummy variable. Mother's and father's age, which were included as time-varying variables in the random and fixed effects models, were continuous variables. Education comprised a series of dummy variables: less than high school diploma (reference category), high school diploma (includes mothers with a GED), some college, and college degree or higher. Income-to-poverty ratio, a continuous variable, was the ratio of the total household income to the official poverty thresholds established by the U.S. Census Bureau. Poverty thresholds corresponded to the year before the interview and were based on reports of household size and composition. The number of children in the household was a continuous variable, and parents' self-reported adverse health was measured dichotomously (1 = *fair or poor health*, 0 = *excellent, very good, or good health*). Parents were asked how often they attended religious services, which was represented by a series of dummy variables: at least once a week (reference category), several times a month, several times a year or hardly ever, and never. The parents' relationship status, assessed at all survey waves, was represented by a series of dummy variables: married (reference category), cohabiting, romantically involved, and separated.

Procedures

In this paper, we estimated three types of multivariate models in Stata 11.1 to examine the association between MPF and depression among parents: random effects, fixed effects, and logistic regression. We began by using random effects logistic regression models to estimate depression as a function of MPF and controls. We structured the data in a parent-wave format where each parent was observed up to three points in time. We estimated these random intercept models separately for mothers and fathers, with three models for each. First, we estimated the bivariate relationship between MPF and depression. Second, we added both time-invariant (race, mixed-race couple, immigrant status, childhood family structure, marital status at baseline) and time-varying (age, education, income-to-poverty ratio, number of children, self-rated health, and religiosity) covariates. In the final model, we included one additional time-varying covariate, parents' relationship status. Because MPF is strongly associated with relationship status (Carlson & Furstenberg, 2006), this model provides information about whether MFP is linked to depression over and above how it might affect union dissolution (i.e., the indirect effect); therefore, it likely underestimates the total consequences of MPF. Supplemental models (not presented, but discussed below) examined the extent to which cooperation in parenting, parenting stress, and perceived instrumental support are mechanisms that link MPF to depression.

Next, we used fixed effects models to estimate depression as a function of MPF. Fixed effects models estimate variation only within individuals over time, as opposed to the between- and within-individual variation captured by the random effects models. This more conservative technique allowed us to examine how a change in MPF between waves was linked to a change in the likelihood of depression, net of time-varying observed characteristics and all time-invariant characteristics. In effect, individuals were used as their own controls, and we observed how depression changes over time when an individual moves into MPF. Although we cannot draw strong causal conclusions, the fixed effects models account for some unobserved heterogeneity across individuals and thus more closely estimate the causal relationship between MPF and depression. We estimated these models in the same order as the random effects models.

As we describe below, the findings from the random and fixed effects models suggested a potentially bi-directional association between MPF and depression. Though the random effects models are useful because they incorporate multiple waves of data for each individual, they cannot be used to discern the causal direction of the relationship. Thus, we further examined this relationship with logistic regression models that allowed us to establish appropriate time ordering. The logistic regression models predicted the odds of reporting MPF at the 5-year survey as a function of depression at the 1-year survey and controls, using only those cases that reported no MPF at 1 year (i.e., the outcome is moving into MPF between years 1 and 5). We estimated the models in a similar fashion to the random and fixed effects models predicting depression. We first presented the bivariate association between depression and MPF (Model 1), added a host of controls including relationship status at baseline (Model 2), and finally adjusted for relationship status at the 5-year survey (Model 3). We did this because, presumably, separation from one partner is necessary before MPF can occur. In other words, this final model indicated whether depression affects MPF only through a greater likelihood of the focal couple's break-up. Whenever possible, we used covariates from baseline to ensure they were as exogenous to depression as possible.

Few observations within the analytic sample are missing on the covariates, and we used the *ice* (imputation by chained equations) command in Stata 11.1 (Royston, 2004) to impute missing data on the covariates. We did not impute observations missing information on our two dependent variables, MPF and depression, as imputing the dependent variables may

lead to biased estimates (von Hippel, 2007). In the imputation model, we included variables related to the research questions or to the likelihood of being missing (Allison, 2002). Analyses that used listwise deletion (not shown) produced substantively similar estimates.

Sample Characteristics

Table 1 presents baseline time-invariant characteristics for mothers and fathers in the analytic sample, weighted by city sampling weights. More than half of parents are racial and ethnic minorities: 34% of mothers and fathers are Black, and 30% of mothers and 32% of fathers are Hispanic. More than one fourth of parents (27% of both mothers and fathers) are foreign-born and just more than half of mothers and fathers in their respective analytic samples were married at baseline (53% of mothers and 55% of fathers).

In Table 2, we present time-varying characteristics of mothers and fathers at the 1-, 3-, and 5-year surveys. About 26% of mothers and 25% of fathers in the respective (weighted) analytic sample reported MPF at the 1-year survey. The frequency increased to 30% of mothers and 29% of fathers at the 3-year survey, and 32% of mothers and 31% of fathers at the 5-year survey. About 13% of mothers in the analytic sample reported depression in the 1-year survey, 18% in the 3-year survey, and 13% in the 5-year survey. Among fathers, 10%, 15%, and 10% of fathers reported depression in the 1-, 3-, and 5-year interviews, respectively. Descriptive statistics showed that both mothers and fathers who reported multi-partnered fertility were more likely to report depression. For example, about 18% of mothers with MPF at the 1-year survey also reported depression at the 1-year survey, compared to 12% of mothers without MPF. Similarly, 12% of fathers with MPF and 9% of fathers without MPF reported depression at the 1-year survey (results not shown).

Table 2 also includes a host of time-varying demographic and socioeconomic characteristics. At the 1-year survey, the average mother was 28 years old, and the average father was 31 years old. The majority of parents (56% of mothers and 53% of fathers) did not have education beyond high school at the 1-year survey, and about 13% of mothers and 8% of fathers reported fair or poor health during that wave. About 36% of mothers and 33% of fathers had separated by the time their joint child was 5 years old.

Results

MPF as a Predictor of Depression

Though descriptive results discussed above suggest an association between MPF and depression, these findings do not account for the possibility that differences in depression are artifacts of other heterogeneity across individuals. Therefore, we used multivariate analyses to further examine the association between MPF and depression. Table 3 (left side) presents results from the random effects models that estimated maternal depression. Model 1, the bivariate model, demonstrated a strong relationship between mothers' MPF and depression. Mothers who reported having children with more than one partner, compared to their counterparts with children by only one partner, were 1.66 times more likely to report depression ($p < .001$). When we included a host of individual-level covariates (Model 2), maternal MPF was still predictive of maternal depression. As expected, the inclusion of the covariates attenuated the size and significance of the coefficients. The final set of models controlled for parents' relationship status; it is important to keep in mind these models likely provide conservative estimates, given the strong correlation between MPF and relationship status (Carlson & Furstenberg, 2006). These models show that mothers' mental health suffers when they have children with more than one partner even net of time-varying relationship status. Mothers with MPF, compared to their counterparts with no MPF, were 1.25 times more likely to report depression ($p < .05$).

In the next series of models in Table 3 (right side), we used fixed effects models to estimate the link between mothers' MPF and depression. As noted above, by only taking into account within-person changes in MPF and depression, these models provide a more conservative estimate of this relationship. Contrary to the random effects models, the fixed effects models showed no statistically significant link between MPF and depression, even at the bivariate level. A change in MPF across survey waves was not associated with a change in reported depression, suggesting that pre-existing characteristics (i.e., selection) may be partly responsible for the association between MPF and depression in the random effects models.

The models in Table 4 predict paternal mental health. The random effects estimates (left side of table) show that fathers' MPF is strongly associated with depression. In the bivariate models, fathers with children by more than one mother were more likely than their counterparts to report depression ($OR = 1.76$, $p < .001$). The covariates, however, did not completely attenuate this association. Even in the most conservative models, those that control for relationship status, fathers with MPF were 1.41 times more likely to be depressed ($p < .01$). The fixed effects estimates (right side of table) that predict paternal depression are similar to the fixed effects models that predict maternal depression. These models show that fathers who have a child by another partner between waves are not, in fact, more likely to report depression than their counterparts with no change in MPF.

Additional covariates—The results for the covariates were generally consistent with prior literature. The random effects models showed that, holding constant a host of individual-level characteristics, Black and Hispanic mothers and fathers, as well as immigrant fathers, were less likely to report depression than their White and American-born counterparts. Mothers with greater income-to-poverty ratios were less likely than their more disadvantaged counterparts to report depression. Also consistent with expectations, mothers and fathers who reported fair or poor health were more likely to report depression. Mothers and fathers not in a romantic relationship, compared to their married counterparts, were more likely to be depressed.

Alternative modeling strategies—The findings from the random and fixed effects models were shown to be robust to a host of alternative modeling strategies. First, in supplemental analyses (not shown), we substituted the dichotomous indicators of MPF for count variables that indicated the number of partners with whom a parent has had a biological child (which, at the 5-year survey, ranged from 1 to 7 for mothers and 1 to 10 for fathers). For both mothers and fathers, the random effects models showed that the count indicator was more strongly predictive of depression than the dichotomous indicator. In the fixed effects models predicting maternal depression, MPF was statistically significant in all models, indicating that the link between MPF and depression persists, despite unobserved time-invariant and observed time-varying characteristics. Because the data do not include information about fathers' number of partners at the 1-year survey, we preferred to use the dichotomous indicators of MPF in our main analyses.

Additionally, it is possible that the association between MPF and depression varies across relationship status and socioeconomic status, as MPF and depression disproportionately affect the unmarried and those with low socioeconomic status (Carlson & Furstenberg, 2006; Kessler & Zhao, 1999). However, supplemental analyses suggested no difference in the association between MPF and depression by relationship status or by two indicators of socioeconomic status—income-to-poverty ratio and education: MPF was consistently associated with depression.

Finally, the prior analyses were limited in that they did not consider how the MPF of the other parent of the focal child may be linked to depression for the respondent. A mother

without MPF, for example, may experience mental health impairments if the father of the focal child has MPF. Splitting parenting responsibilities across multiple households may mean the father has less economic and emotional resources to provide to the focal child, which may negatively affect maternal mental health if she feels her child is not receiving adequate attention. When both mothers and fathers have MPF, the mental health implications may be particularly detrimental. In supplemental analyses, we included an additional dummy variable that indicated whether the father (in the models estimating maternal depression) or mother (in the models estimating paternal depression) had MPF. We found that MPF of the other parent was not associated with depression, and the inclusion of this variable did not substantively alter the coefficient of interest.

Mental Health as a Predictor of MPF

Why, given the strong link between MPF and depression in the random effects models, did the fixed effects results provide only limited evidence for this relationship? There are several possible explanations for the lack of association between MPF and depression in the fixed effects models. First, the association may disappear because relatively few mothers and fathers reported new MPF between waves: Only 354 mothers and 444 fathers reported new MPF between the 1- and 3-year surveys, and 218 mothers and 244 fathers reported new MPF between the 3- and 5-year surveys. Similarly, few parents reported changes in depression; for example, of mothers not depressed at the 1-year survey, only 15% ($n = 503$) and 12% ($n = 405$), respectively, reported depression at the 3- and 5-year surveys. This may explain part of the weak association in the fixed effects models—there is simply not enough change in the independent and dependent variables to identify an effect of one on the other.

Second, it is important to recognize that the random and fixed effects models are capturing different aspects of MPF. The random effects models reflect both prior and subsequent MPF, whereas the fixed effects models reflect only subsequent MPF among couples who had not experienced MPF as of the 1-year survey. Having a new child by a new partner over the four years between one and five years after the focal birth is a relatively rare occurrence that likely reflects quite different circumstances than those experienced by the larger group of parents who reported MPF as of the 1-year survey.

A third explanation for the weak associations in the fixed effects models is that the results from the random effects models may have been driven by unobserved heterogeneity that affects both MPF and depression. The difference in the random and fixed effects estimates suggests that having children with multiple partners does not cause impairments in mental health but instead suggests that parents with poor mental health may select into MPF. We directly explored this possibility with the results in Table 5, predicting mothers' and fathers' MPF at the 5-year wave among those with no MPF at the 1-year wave. We used logistic regression models in order to specify the proper time-ordering of depression occurring prior to MPF.

On the left side of Table 5, we estimated mothers' new MPF at the 5-year survey as a function of mothers' depression at the 1-year survey. The bivariate model showed a strong association between maternal depression and mothers' likelihood of reporting MPF at the 5-year survey ($OR = 1.52$, $p < .01$). This association was reduced to statistical insignificance in the next model that included a host of baseline demographic and socioeconomic characteristics ($OR = 1.26$). The final model included a dummy variable indicating the parents' relationship status at the 5-year survey and slightly reduced the magnitude of the (statistically insignificant) estimate. Net of covariates, depression does not appear to predict mothers' future MPF.

We also estimated fathers' MPF at the 5-year survey (among those with no MPF at the 1-year survey), shown on the right side of Table 5. The bivariate results showed that paternal depression is associated with a greater likelihood of MPF ($OR = 1.84$, $p < .001$). This association was attenuated but remained statistically significant in the next model accounting for baseline characteristics ($p < .05$). Nevertheless, the estimate became smaller and was no longer statistically significant once relationship status at the 5-year survey was included; this suggests that depression affects new MPF by increasing the likelihood that the focal couple will break up by the 5-year survey. In results not shown, we also included both parents' mental health status in predicting each parents' MPF at the 5-year survey, since mental health of either parent may be a factor in their breaking up and, thus, a risk factor for each parent being at risk of new MPF; our results were not altered.

Discussion

Given the dramatic demographic changes of the past five decades, particularly the decoupling of marriage and childbearing, adults and children increasingly have to negotiate complex family structures. MPF, when parents have biological children with more than one partner, is one aspect of complex family structures that may have negative consequences for adults and children (Bronte-Tinkew et al., 2009; Carlson, Furstenberg, & McLanahan, 2009; Harknett & Knab, 2007). Theoretically, there are reasons to believe that mental health impairments such as depression may be one consequence of MPF among both mothers and fathers, though it is plausible that the direction of causality also goes from depression to MPF.

In this paper, we used longitudinal data from the Fragile Families and Child Wellbeing Study to examine the potentially bidirectional association between MPF and depression among mothers and fathers. Several key findings emerged. First, by and large, random effects models suggested a strong correlation between MPF and depression for both mothers and fathers, above and beyond the effect of family structure. Also, supplemental interaction analyses (not shown) indicated that the association between MPF and depression did not differ by family structure. Because the models presented do not take into account the MPF of parents' current or former partners, these results are likely a lower bound estimate of the link between MPF and depression.

The random effects models were consistent with our expectations about the association between MPF and depression. MPF is a complex family situation that may create ambiguity with respect to family roles and boundaries, which may directly or indirectly lead to depression (Boss, 1980; Brown & Manning, 2009). Or, it may be that the difficulty of coordinating childrearing across multiple households, which is common among parents with MPF, may lead to depression (Jayakody & Seefeldt, 2005). In supplemental analyses (not shown), we examined three mechanisms that may explain the association between MPF and depression: cooperation in parenting, parenting stress, and perceived instrumental support. These factors, considered both independently and jointly, did little to attenuate the association between MPF and depression among both mothers and fathers. It is possible that these measures do not adequately capture the difficulties that arise from parenting with multiple partners, or it may be that this relationship results from factors not included such as role ambiguity (no measure of this is available in the Fragile Families data). Therefore, in this paper, we can only speculate about the potential mechanisms that link MPF and depression, though this is an important direction for future research. Qualitative data may be particularly useful for understanding how parents with MPF negotiate their childrearing roles and responsibilities (Hill, 2006; Jayakody & Seefeldt, 2005).

Additionally, in this paper, we found that much of the link between MPF and depression disappeared in the fixed effects models, suggesting that the primary differences may be between, rather than within, individuals. The lack of statistically significant findings in the fixed effects models may be due to the fact that few individuals reported a change in MPF and depression across waves. Alternatively, these fixed effects models may demonstrate that the association was due to variation across individuals or unobserved time-invariant characteristics of these mothers. Additional findings presented in Table 5, which showed that depression at the 1-year survey was associated with a greater likelihood of subsequent MPF by the 5-year survey, at least for fathers, provided further evidence that MPF and depression may go hand in hand.

As discussed earlier, our analyses could not discern the causal direction of the link between MPF and mental health. The fixed effects models, which allowed us to come closest to discerning a causal relationship, were limited in several ways. First, though they did account for time-invariant characteristics of parents, they did not account for unobserved time-varying characteristics such as treatment for depression. Also, as noted, relatively few parents reported changes in MPF and mental health across waves, which meant that few parents were included in the fixed effects analyses. An additional limitation is that the Fragile Families data included a relatively young sample of parents, and these analyses only considered MPF through the focal child's fifth birthday. A substantial proportion of parents may go on to have subsequent MPF over time; if this is true, our estimates of the mental health consequences of MPF are likely to be underestimated. Also, it is important to keep in mind that our analyses of fathers were limited to the subset that were interviewed in the Fragile Families Study, and we suspect that those fathers who did not participate were more likely to have both MPF and mental health problems. Indeed, according to mothers' reports of fathers' MPF at the 1-year survey, those fathers who did not participate in the baseline survey were much more likely to have MPF than their counterparts who did participate (56% compared to 33%). Hence, our estimates of this association may be downwardly biased. Finally, our analyses did not fully consider that MPF, similar to stepfamily formation, is a process that often includes the dissolution of one union, the formation of another union, and having a child within the new union. Future research will benefit from more explicitly considering all steps in this process.

Despite these limitations, this research adds to the broader literature on family formation and mental health. We used data from the Fragile Families and Child Wellbeing Study, a longitudinal survey of new parents, to provide, to our knowledge, the first examination of the mental health implications of MPF for adults. We found that, for both mothers and fathers, there was a strong link between MPF and depression. Theoretically, the direction of causality is ambiguous, and our empirical results suggested that MPF may indeed lead to depression or that parents (especially fathers) who report depression may be more susceptible to MPF. These findings have important implications for child well-being, as children exposed to depressed parents face an increased likelihood of impaired behavioral, cognitive, and health outcomes from infancy through adulthood (Goodman & Gotlib, 2002; Turney, 2011). Depression, for example, may impair a mother's ability to engage or interact with her child, and interactions that do occur may be negative or withdrawn (Frech & Kimbro, 2010; Lovejoy, Graczyk, O'Hare, & Neuman 2000). Thus, MPF (and family instability, more generally) may be an additional mechanism through which parents transmit disadvantages to their children, and future research should explicitly consider how MPF is associated with outcomes throughout childhood and adolescence.

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Table 1
Descriptive Statistics of Time-Invariant Baseline Characteristics

	Mothers	Fathers
	%	%
Race		
White	29.5	27.9
Black	34.3	34.3
Hispanic	29.8	31.9
Other race	6.5	5.9
Mixed-race couple	15.5	15.5
Immigrant	27.2	27.4
Lived with both biological parents at age 15	53.6	58.1
Married	52.7	55.1
N	4,488	3,708

Note: All figures are weighted by city sampling weights.

Table 2

Descriptive Statistics of Time-Varying Characteristics

	Mothers						Fathers					
	1-year		3-year		5-year		1-year		3-year		5-year	
	% or *M*	(*SD*)	% or *M*	(*SD*)	% or *M*	(*SD*)	% or *M*	(*SD*)	% or *M*	(*SD*)	% or *M*	(*SD*)
Depression	13.1		17.8		13.1		9.8		14.6		10.0	
Multipartnered fertility	25.5		29.5		32.2		24.6		28.8		31.0	
Age (mean)	28.24	(6.23)	30.02	(6.23)	32.17	(6.26)	31.11	(7.26)	32.88	(7.28)	35.01	(7.27)
Frequency of religious attendance												
At least once a week	22.5		36.2		36.9		19.1		3.2		32.8	
Several times a month	31.0		22.3		20.7		32.8		19.3		21.2	
Several times a year or hardly ever	30.6		30.9		30.8		30.5		32.4		28.9	
Never	16.0		10.6		11.7		17.5		13.1		17.1	
Education												
Less than high school	26.8		25.3		24.0		26.5		24.8		24.2	
High school diploma or GED	29.5		27.4		24.5		26.2		24.7		23.3	
Some college	23.3		26.2		29.5		24.0		26.7		28.2	
College degree or higher	20.3		21.0		21.9		23.4		23.8		24.3	
Income-to-poverty ratio	2.83	(3.75)	3.10	(4.83)	2.75	(3.37)	3.60	(4.88)	3.72	(5.12)	3.73	(4.20)
Number of children in household (mean)	2.27	(2.23)	2.24	(1.28)	2.41	(1.27)	1.90	(1.34)	1.84	(1.40)	1.97	(1.38)
Fair or poor health	12.6		11.6		13.6		8.3		6.8		8.1	
Relationship status												
Married	54.9		55.6		51.3		58.9		59.3		54.3	
Cohabiting	19.3		14.2		9.5		21.8		15.5		9.5	
Romantic	6.6		3.1		2.8		6.0		3.6		3.7	
Separated	19.2		27.1		36.4		13.4		21.6		32.5	
N						4,488						3,708

Note: All figures are weighted by city sampling weights. *M*: Mean; *SD*: Standard deviation.

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Table 3

Random and Fixed Effects Logistic Regression Models Estimating Depression among Mothers (Odds Ratios)

	Random effects models			Fixed effects models		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Multipartnered fertility	1.66 (0.08) ***	1.32 (0.09) **	1.25 (0.09) *	1.11 (0.19)	1.06 (0.20)	1.05 (0.20)
Race						
White (reference)		---	---		---	---
Black		0.74 (0.12) *	0.70 (0.12) **			
Hispanic		0.54 (0.14) ***	0.54 (0.14) ***			
Other race		0.72 (0.26)	0.71 (0.26)			
Mixed-race couple		1.19 (0.12)	1.15 (0.12)			
Immigrant		0.74 (0.14) *	0.79 (0.14)			
Lived with both biological parents at age 15		0.73 (0.09) **	0.75 (0.09) **			
Marital status at baseline		0.91 (0.12)	0.96 (0.14)			
Age		1.00 (0.01)	1.00 (0.01)		1.04 (0.02) *	1.02 (0.02)
Education						
Less than high school (reference)		---	---		---	---
High school diploma or GED		0.88 (0.11)	0.89 (0.12)		0.79 (0.33)	0.84 (0.34)
Some college		1.04 (0.10)	1.03 (0.10)		0.54 (0.28) *	0.54 (0.28) *
College degree or higher		0.85 (0.18)	0.84 (0.18)		1.99 (0.61)	2.00 (0.61)
Income-to-poverty ratio		0.90 (0.03) ***	0.91 (0.03) ***		0.93 (0.04)	0.94 (0.04)
Fair or poor health		4.61 (0.09) ***	4.58 (0.09) ***		2.10 (0.11) ***	2.10 (0.11) ***

	Random effects models			Fixed effects models		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Number of children in household		0.98 (0.03)	0.99 (0.03)		1.04 (0.04)	1.04 (0.04)
Frequency of religious attendance						
At least once a week (reference)		---	---		---	---
Several times a month		1.01 (0.09)	1.03 (0.09)		0.97 (0.011)	0.97 (0.11)
Several times a year or hardly ever		1.29 (0.09) **	1.32 (0.09) **		1.19 (0.12)	1.18 (0.12)
Never		1.17 (0.11)	1.20 (0.12)		0.96 (0.16)	0.97 (0.16)
Relationship status						
Married (reference)		---	---		---	---
Cohabiting			0.79 (0.13)			0.70 (0.19)
Romantic			1.03 (0.17)			0.96 (0.23)
Separated			1.44 (0.12) **			1.32 (0.18)
Constant	−2.61	−1.99	−2.11			
X^2	37.35	443.28	473.69	0.32	75.24	95.60
Log likelihood	−5,319	−5,105	−5,083	−1,263	−1,225	−1,215
N (unique cases)	12,347	12,347	12,347	3,462	3,462	3,462
Person-year observations	4,486	4,486	4,486	1,196	1,196	1,196

Note: X^2 and log likelihood presented for first imputed data set. For both the random and fixed effects models, the overall fit significantly improved with each subsequent model ($p < 0.001$).

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$.

Table 4

Random and Fixed Effects Logistic Regression Models Estimating Depression among Fathers (Odds Ratios)

	Random effects models			Fixed effect models		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Multipartnered fertility	1.76 ***	1.67 ***	1.41 **	1.27	1.15	1.16
	(0.10)	(0.11)	(0.11)	(0.23)	(0.25)	(0.25)
Race						
White (reference)		---	---		---	---
Black		0.54 ***	0.48 ***			
		(0.15)	(0.15)			
Hispanic		0.54 ***	0.54 ***			
		(0.17)	(0.17)			
Other race		0.62	0.56 *			
		(0.29)	(0.29)			
Mixed-race couple		1.64 **	1.60 **			
		(0.14)	(0.14)			
Immigrant		0.49 ***	0.56 **			
		(0.18)	(0.18)			
Lived with both biological parents at age 15		0.83	0.84			
		(0.12)	(0.12)			
Marital status at baseline		0.96	1.33			
		(0.14)	(0.17)			
Age		0.98 **	0.98 **		1.05	1.02
		(0.01)	(0.01)		(0.03)	(0.03)
Education						
Less than high school (reference)		---	---		---	---
High school diploma or GED		0.80	0.82		1.06	1.18
		(0.13)	(0.13)		(0.59)	(0.60)
Some college		0.74 *	0.78		1.28	1.36
		(0.14)	(0.14)		(0.46)	(0.46)

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	Random effects models			Fixed effect models		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
College degree or higher		0.59 *	0.66		0.70	0.63
		(0.23)	(0.23)		(1.02)	(1.06)
Income-to-poverty ratio		0.98	0.97		1.01	1.00
		(0.02)	(0.02)		(0.03)	(0.03)
Fair or poor health		4.35 ***	4.35 ***		2.04 ***	2.10 ***
		(0.12)	(0.12)		(0.16)	(0.17)
Number of children in household		0.87 ***	0.95		0.86 **	0.89 *
		(0.03)	(0.04)		(0.05)	(0.05)
Frequency of religious attendance						
At least once a week (reference)		---	---		---	---
Several times a month		0.81	0.83		0.99	1.00
		(0.13)	(0.13)		(0.16)	(0.17)
Several times a year or hardly ever		1.16	1.22		1.33	1.33
		(0.12)	(0.12)		(0.17)	(0.17)
Never		1.37 *	1.41 *		1.44	1.44
		(0.14)	(0.14)		(0.21)	(0.21)
Relationship status						
Married (reference)		---	---		---	---
Cohabiting			1.11			1.02
			(0.17)			(0.25)
Romantic			1.79 **			1.71
			(0.21)			(0.29)
Separated			3.02 ***			1.86 **
			(0.16)			(0.23)
Constant	−3.15	−1.51	−2.20			
X^2	31.98	286.22	353.63	1.07	47.83	66.40
Log likelihood	-3,242	−3,097	−3,049	−683	−660	−651
N (unique cases)	9,349	9,349	9,349	1,881	1,881	1,881

	Random effects models			Fixed effect models		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Person-year observations	3,708	3,708	3,708	671	671	671

Note: X^2 and log likelihood presented for first imputed data set. For both the random and fixed effects models, the overall fit significantly improved with each subsequent model ($p < 0.001$).

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$.

Table 5

Logistic Regression Models Predicting MPF at 5 Years among Those with No MPF at 1 year (Odds Ratios)

	Mother's MPF			Father's MPF		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Depression (1-year)	1.52 (0.14) **	1.26 (0.16)	1.19 (0.16)	1.84 (0.17) ***	1.48 (0.19) *	1.33 (0.19)
Race						
White (reference)		---	---		---	---
Black		1.33 (0.18)	1.16 (0.19)		2.87 (0.21) ***	2.69 (0.22) ***
Hispanic		0.94 (0.20)	0.92 (0.21)		1.42 (0.24)	1.50 (0.25)
Other race		1.38 (0.37)	1.52 (0.40)		2.17 (0.40)	2.00 (0.41)
Mixed-race couple		1.22 (0.17)	1.07 (0.18)		1.09 (0.19)	1.03 (0.19)
Immigrant		0.51 (0.22) **	0.67 (0.23)		0.39 (0.27) ***	0.45 (0.27) **
Age		0.96 (0.01) **	0.97 (0.02)		1.06 (0.01) ***	1.07 (0.01) ***
Education						
Less than high school (reference)		---	---		---	---
High school diploma or GED		0.84 (0.14)	0.82 (0.15)		1.00 (0.15)	0.98 (0.16)
Some college		0.56 (0.18) **	0.53 (0.19) **		0.75 (0.20)	0.78 (0.20)
College		0.36 (0.42) *	0.43 (0.43)		0.26 (0.39) **	0.29 (0.40) **
Income-to-poverty ratio		0.80 (0.05) ***	0.81 (0.05) ***		1.00 (0.03)	1.01 (0.03)
Lived with both biological parents at age 15		0.99 (0.13)	1.04 (0.14)		0.83 (0.14)	0.81 (0.15)
Fair or poor health		1.31 (0.22)	1.37 (0.24)		0.95 (0.27)	0.97 (0.27)
Number of children in household		1.05 (0.05)	1.07 (0.05)		1.14 (0.05) *	1.16 (0.05) **

	Mother's MPF			Father's MPF		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Frequency of attendance at religious services						
At least once a week (reference)		---	---		---	---
Several times a month		0.88 (0.19)	0.86 (0.20)		1.21 (0.24)	1.16 (0.25)
Several times a year or hardly ever		0.74 (0.16)	0.75 (0.16)		0.99 (0.20)	0.96 (0.21)
Never		0.79 (0.19)	0.81 (0.20)		1.07 (0.24)	1.06 (0.25)
Relationship status at baseline						
Married (reference)		---	---		---	---
Cohabiting		1.30 (0.22)	0.91 (0.24)		3.01 (0.22) ***	2.61 (0.24) ***
Romantic		2.02 (0.23) **	1.09 (0.25)		4.14 (0.23) ***	2.96 (0.25) ***
Separated		3.12 (0.24) ***	1.34 (0.26)		8.56 (0.27) ***	5.21 (0.29) ***
Relationship status at 5-year						
Married (reference)			---			---
Cohabiting			0.98 (0.36)			0.81 (0.26)
Romantic			0.93 (0.64)			1.29 (0.37)
Separated			8.63 (0.26) ***			2.92 (0.20) ***
Constant	−1.89	−0.70	−2.09	−1.83	−4.88	−5.54
X^2	7.82	304.39	493.67	11.19	299.45	360.33
Log likelihood	−1,108	−959	−865	−984	−840	−810
N	2,761	2,761	2,761	2,376	2,376	2,376

Note: X^2 and log likelihood presented for first imputed data set. For both mothers and fathers, the overall fit significantly improved with each subsequent model ($p < 0.001$).

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$