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Father involvement, couple relationship quality, and maternal Postpartum Depression: the role of ethnicity among low-income families

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Abstract

Objectives Maternal postpartum depression (PPD) has been recognized as a serious and wide-spread mental health disorder that has long-term negative impacts on children's cognitive, social, and emotional development. This study extends prior research by examining the associations among predictors of PPD, including two different facets of father involvement and couple relationship quality, with a focus on testing these pathways across ethnic groups.

Method This study analyzed data from the Fragile Families and Child Wellbeing Study (FFCWS) including mothers' baseline interviews and one-year follow-up data sets ($n = 2{,}794$). Several models were tested using bootstrapping in structural equation modeling to explore the mediating paths and ethnic differences.

Results This study found that father involvement in sharing childcare responsibility had direct effects on reducing mothers' parenting stress and promoted maternal psychological adjustment, which was consistent across the three ethnic groups. The mediation pathways through couple relationship quality between father involvement (both father involvement in direct infant care and shared responsibilities) and PPD were detected significant for Black and white mothers.

Conclusions for Practice This study provided empirical evidence that father involvement in infant care is critical for mothers' perceived relationship quality. Maternal postpartum mental health may benefit from interventions and policies that encourage positive father engagement in infant care.

Keywords Father involvement · Couple relationship quality · Postpartum depression · Ethnicity · Low-income families

Significance Statement

What is already known on this subject? Social support is a significant protective factor for postpartum depression, and several qualitative studies indicated that fathers' involvement in caregiving activities promotes mothers' perceived relationship quality after delivery, which may decrease the risk of maternal postpartum depression.

What does this study add? This empirical study extends prior research by examining the pathways among father involvement, couple relationship quality, and postpartum depression with a focus on distinguishing the effects of two aspects of paternal involvement: father-infant interaction and father involvement in sharing responsibilities in infant care. In addition, the associations among these variables were examined across three ethnic groups representing predominantly low-income families in the United States.

Objectives

Maternal postpartum depression (PPD) is defined as a moderate to severe depression occurring within the first year after childbirth (Reichman et al., 2015). Common

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symptoms of postpartum depression include despondent mood, changes in sleeping and eating patterns, feeling tired, feelings of inadequacy as a parent, and impaired concentration (Miller 2002). Postpartum depression has been recognized as a serious and wide-spread mental health disorder with a rate of one in seven mothers affected globally (Brummelte & Galea, 2016; Reid & Taylor, 2015a; Tammentie et al., 2004); its prevalence is even higher in low-income mothers (Earls, 2010).

Postpartum depression is not only disruptive to mothers' daily life, but it is also an impediment to their responsiveness to their infant needs, such as showing positive affect and actively engaging in early mother-child interaction, which are essential behaviors for secure attachment formation (Baker & Kuhn, 2018; Balbierz et al., 2015; Field, 2010; Goodman, 2008; Herba, 2014; Josefsson & Sydsjö, 2007; Mezulis et al., 2004; Philipps & O'Hara, 1991; Tammentie et al., 2004). Deficits in these parental behaviors are associated with disadvantages in cognitive, neural, social-emotional, and behavioral development among children (Goodman & Gotlib, 1999; Herba, 2014; Josefsson & Sydsjö, 2007; Knoche et al., 2007; Mezulis et al., 2004). Additionally, the disrupted pattern of interactions between depressed mothers and their infants appear to be universal across cultures and socioeconomic status (Field, 2010).

The high prevalence of PPD and its associated negative outcomes makes it an important public health issue for psychologists, health care providers, and policymakers (Fagan & Lee, 2010). Researchers have been actively exploring processes that could help protect against postpartum depression. While one line of research has highlighted the role of hormonal changes after childbirth as a trigger for postpartum depression, another focus has been on investigating psychosocial factors, especially social support from family members, as potential protective factors (Beck, 2001; Letourneau et al., 2007; Reid & Taylor, 2015a; Robertson et al., 2004). The overall findings suggest that high levels of social support buffer the risk of postpartum depression through alleviating various life stressors experienced by mothers (Reid & Taylor, 2015b).

The Stress Process Model asserts that individuals are more prone to mental disorders, including depression after childbirth, when they are exposed to acute stressors and chronic strain (Reid & Taylor, 2015b). Thus, factors that reduce maternal stress, particularly father involvement in childrearing (Fagan & Lee, 2010), may decrease the likelihood of postpartum depression. Indeed, evidence in literature suggested that mothers' positive perceptions of paternal involvement helped alleviate maternal stress (Arnold et al., 2011; Harmon & Perry, 2011; Margolin et al., 2001; Nomaguchi et al., 2012). Moreover, specific to PPD, one longitudinal study found that paternal caregiving involvement in infancy was negatively associated with mothers' depressive symptoms, especially for children with developmental delays (Laxman et al., 2015). An important area of inquiry, however, concerns the pathways between father involvement and PPD, as it is unclear whether a direct effect or mediating pathways best describe this association.

Family system theory suggests that the link between fathers' support in childcare activities and postpartum depression may be more likely to work through indirect pathways rather than via direct protective effects as previously examined (Dennis & Ross, 2006; Webster-Stratton et al., 2011). The Family System Theory proposes that individuals and relationships within the family are seen as subsystems that interactively and reflectively shaping each other (Minuchin, 1985). The elements within the system are necessarily interdependent (Minuchin, 1985). The concept of homeostasis is very important that when a new subsystem (in this case is the newborn) is introduced, the system moves away from equilibrium and requires change in other subsystems to get to achieve a new balance. For example, without father's recognition of their role in the family as caregivers, mothers may spend extra time and energy in infant care, and could form enmeshed relationship with the newborns, which may threaten the couple's relationship integrity. Specifically, the lack of father involvement may prevent the family from achieving a new equilibrium and result in reduced relationship quality which erodes mothers' wellbeing (Cox & Paley, 2003; Minuchin, 1985).

The results of several qualitative studies support father involvement as a protective factor in this family process. Specifically, the results indicated that fathers' involvement in caregiving activities promoted couple relationship quality after delivery, which decreased the risk of postpartum depression (Chan et al., 2002; Rodrigues et al., 2003; Tammentie et al., 2004). These findings suggest that couple relationship quality could serve as a mediator in the association between father involvement and PPD, as the shared childrearing behaviors and father-infant interaction may be perceived by mothers as understanding, considerate, and emotionally supportive. This constructive dynamic could have positive influences on the couple's relationship quality (Negron et al., 2013), in turn alleviating maternal stress.

Despite these findings, uncertainty remains in how father's participation in specific infant care routines may impact depressive symptoms in mothers (Fagan & Lee, 2010). Specifically, a notable limitation of the extant literature is the narrow definition of father involvement (e.g., father's financial contribution and accessibility) that neglects key dimensions, such as father-infant interaction and father's involvement in sharing responsibility with mothers in infant care (Coltrane, 1995; Lamb, 2000) asserted that in additional to fathers' presence and/or accessibility to the child

and fathers' one-on-one interactive activity via caretaking, the dimension of responsibility, which is defined as fathers' engagement in caretaking that ties to the arrangement for resources to be available for child, is very important but less investigated (Guendelman et al., 2018). Therefore, the present study examines the unique effects of father's involvement in caretaking and in shared responsibility on relationship quality and PPD.

Another goal of this study was to extend our understanding of how the associations among these constructs may vary among different ethnic groups. Compared to white mothers, Black and Latinx mothers reported higher percentages of experiencing PPD (43.9% and 46.8% respectively compared to 31.3% for white mothers) (Howell et al., 2005). These ethnic differences could be the result of how social factors are embedded in different racial groups, such as broader situational demands and limited social support (Howell et al., 2005). However, little information is known regarding the protective factors that are associated with varied levels of fathers' involvement and couple relationship quality across ethnic groups (Gee et al., 2007). As a larger proportion of the minority families are living in poverty in the U.S. compared to white families, that living hardship may add risks to mothers' mental well-being. Thus, the discovery of protective factors against PPD, such as spousal support in caregiving and couple relationship quality, as strengths within a family could be beneficial for intervention programming for at-risk families.

Previous research also suggests that father involvement may vary across ethnic groups. Familism, defined as placing a high value on the prominence of marriage and family, is endorsed in Latinx communities and contributes to fathers sharing more childrearing responsibility, especially with economic provisions (Hofferth, 2003; Tamis-Lemonda et al., 2009). However, it has been found that the amount of time that fathers put into father-infant interaction in the Latinx communities is less compared to white fathers (Guendelman et al., 2018). Another study indicated that Latinx fathers showed an equal amount of high involvement in infant care compared with Black fathers (Tamis-Lemonda et al., 2009); however, no other ethnic groups were included for comparison and the sample sizes in this study were relatively small (approximately 70 for each ethnic group). Moreover, a large percentage of individuals in Latinx communities adopt a more traditional attitude toward gender roles, which indirectly relates to fathering behaviors (Hofferth, 2003; Piontak, 2016). Traditional fathers may provide more instrumental support (e.g., financial support) rather than involvement in direct infant care or sensitive emotional support to mothers (Coley, 2001). Considering these differences in cultural norms, Latinx mothers' expectations on fathers' direct interactions with infants may be lower compared with white mothers. As a result, the amount of father involvement may not have as strong of an effect on couple's relationship quality compared to other ethnic groups, and thus may subsequently have less impact on mothers' mental health postnatally.

In contrast, studies have also found that Black fathers hold less traditional attitudes toward marriage and motherhood than white fathers (Hofferth, 2003). Black fathers also adopt more gender equity and individualistic attitudes toward childcare that may be associated with increased paternal involvement (Roopnarine et al., 2005), such as more caregiving and physical play activities compared to white fathers (Cabrera et al., 2011). However, Black families tend to live in multigenerational households, which may equate with lower expectations of father involvement in childcare compared with white fathers due to the more common expectation from grandmothers (Gee et al., 2007; Piontak, 2016). Therefore, with the low expectations for father involvement and high levels of fathers' infant care in practice, fathers' involvement could have more positive implications in couple relationship quality for Black couples. Thus, future research that explores variation in these pathways across different ethnic groups is necessary.

Based on the theories and findings aforementioned, the current study uses an ethnically diverse data set to (1) investigate to what extent two unique aspects of father involvement predict PPD, (2) examine the mediating role of couple relationship quality in the association between father involvement and PPD, and (3) explore whether the mediating pathways could be moderated by racial/ethnic groups across Black, Latinx, white Americans.

Method

This study used secondary data from the Fragile Families and Child Wellbeing Study (FFCWS). The use of the restricted data was approved by the institutional review board (IRB) that the first author was granted the usage and protection of the restricted data. At baseline, the predominantly low-income, minority sample included 4,898 children born between 1998 and 2000 in 20 U.S. cities. By design, children born to unmarried parents were oversampled (n = 3,711; compared to 1,187 children born to married parents and 1,783 children born to cohabitated parents), and cities were selected to be representative of all U.S. cities with populations of 200,000 or more (Reichman et al., 2001). The analytic sample included 2,794 mothers who lived with the focal child and the father one year after childbirth (n = 1,218 married parents; n = 2,346 parents living together). This selection was intentional to investigate how father's involvement in daily childcare may contribute to

the changes in couple relationships and the risks for PPD. Research has indicated that father's involvement may manifest in different ways (e.g., financial provision, phone calls, and letters) when fathers are not in residence with the child and resident fathers are generally involved in more direct one-on-one interactions due to proximity and access to their children (Castillo et al., 2011; Shannon et al., 2009). Mothers were interviewed in the hospital within 48 hours of the child's birth and received phone interviews for the one-year follow-up data collection.

As shown in Table 1, the analytic sample was predominantly socioeconomically disadvantaged with equal representation across the three ethnic groups of interest. It should be noted that the final analytic sample was no longer representative of mid-sized U.S. cities and was slightly less disadvantaged than the baseline population. For example, families in the analytic sample were more likely to be white (21.1% in the original sample vs. 27% in the analytic sample) or Latinx (27.3% in the original sample vs. 29.3% in the analytic sample), less likely to be Black (47.6% in the original sample vs. 40.7% in the analytic sample), more likely to have some college education (24.3% in the original sample vs. 26.2% in the analytic sample), and less likely to be below the poverty line (37% in the original sample vs. 34.7% in the analytic sample).

Table 1 Demographic Information by Ethnic Groups (N = 2,794)

	Black	Latinx	white
Variable	Mean (SD) or %[a]	Mean (SD) or %[a]	Mean (SD) or %[a]
Child sex (at birth)	Boy = 616 (51.6)	Boy = 438 (51.8)	Boy = 396 (52.5)
Mother's age in years (at birth)	26.31 (6.45)	26.19 (5.77)	29.03 (6.45)
Marital status (year 1)	Married = 339 (28.4%)	Married = 366 (43.3%)	Married = 513 (67.9%)
Working Mother (year 1)	81.8%	59.2%	66.6%
Household income (year 1)			
<$40,000	71.3%	79.9%	38.4%
$40,000–60,000	15.6%	10.5%	22.8%
$60,000–80,000	6.6%	5.7%	14.7%
$80,000–100,000	3.3%	1.9%	9.3%
>100,000	3.2%	2%	12.3%
Education (%) (year 1)			
<high school	23%	47.3%	13.9%
High school or equivalent	34.6%	25.3%	22.9%
Some college	34%	22%	28.7%
College or graduate and above	8.3%	5.3%	34.4%

Note.[a]. Means and standard deviations are reported for continuous variables and percentages for categorical variables

Measures

Maternal postpartum depression. Postpartum depression was classified based on a probable diagnosis of major depression from the Composite International Diagnostic Interview – Short Form (CIDI-SF). The instrument was given to mothers at the first-year follow-up data collection. If mothers had experienced three or more of symptoms from the list, they were considered to be at-risk of experiencing postpartum depression in this study (1 = "probable cases" for depression, 0 = unlikely cases for depression). Mothers who indicated that they were taking medication for depression were automatically assigned a score of "1." Past research has shown a good Cronbach's alpha for test-retest reliability for PPD (range from 0.78 to 0.87) (Gigantesco & Morosini, 2008).

Father involvement—direct involvement. Mothers reported on fathers' daily activities with the focal children in a typical week at the one-year follow-up interview. The ten items included in this scale were intended to assess fathers' direct involvement behaviors and fit well onto one latent variable (Jessee & Adamsons, 2018). Mothers were asked questions such as how many days a week does the father play games like Peek-a-boo or Gotcha with the child, sing songs or nursery rhymes to the child, read stories to the child, and play inside with the child. The scores from these ten items were averaged to an overall score to represent fathers' direct involvement with the focal infant with higher scores representing a greater level of father involvement. Cronbach's alpha of this measure was 0.83.

Father involvement—shared childcare responsibilities. Mothers at one-year follow-up reported on ten items that reflected fathers' indirect cooperative caregiving behaviors. These items were considered to be measuring the shared responsibility aspect of father involvement as they asked about the frequency of involvement in arranging daily life activities (e.g., taking child to daycare/ doctor) and assistance in supporting mothers on achieving the child-care goals (e.g., respecting schedules/ rules mother make for child) (Lamb et al., 1987; Rinelli, 2009). The first four of these items were assessed on a 4-point Likert type scale with 1 representing "*very true*," and 4 representing "*never;*" the last six items were assessed using 3-point scale with 0 representing "*never true*," and 2 representing "*always true*." In order to calculate an average for this scale, the scores for first the four items were reversed and then all items were standardized. Higher scores represented greater levels of father involvement. The reliability as measured by Cronbach's alpha was 0.82.

Couple relationship quality. Couple relationship quality in this study was defined as mothers' perceptions of fathers' affect, behavioral patterns, and conflict behaviors

within the relationship (Bradbury et al., 2000). This construct was measured using an eight-item scale. Responses were measured on a three-point Likert scale (1 = often, 2 = sometimes, 3 = never) and example items include "how often does father express affection or love; listen when you need someone to talk to; and really understand your hurts and joys?" The higher overall average score indicated better relationship quality. The reliability as measured by Cronbach's alpha was 0.75.

Control variables. Several social and demographic variables that correlate with either PPD, father involvement, or couple relationship quality were entered into the model as control variables. These variables include mother's age (Hudson et al., 2000; Reid & Taylor, 2015a), mother's prenatal mental health history (Reid & Taylor, 2015a), mother's employment status (employed or unemployed in the first year) (Buckley & Schoppe-Sullivan, 2010; Miyake et al., 2011; Piontak, 2016), couple relationship status (married or in romantic) (Gee et al., 2007; Reid & Taylor, 2015a), household poverty ratio (Beck, 2001; Heflin & Iceland, 2009; Williams & Cheadle, 2016), mother's health after childbirth, and the focal child's health (Fagan & Lee, 2010; Hudson et al., 2000; Piontak, 2016; Reid & Taylor, 2015b; Williams & Cheadle, 2016). In addition, in order to assess father involvement with the mother prior to and during the childbirth to see whether it impacted later couple relationship quality, we added father's involvement at the baseline as a control variable. This variable was created by mother's report at the baseline in hospitals on an index built from three questions: (1) whether the focal child will be using father's last name, (2) whether father's name will be on the birth certificate, and (3) whether father visited the mother in the hospital. This variable ranges from 0 to 3 and served as a proxy variable indicating paternal involvement at the baseline with a greater score representing a higher level of involvement.

Data Analysis

The data was analyzed using SPSS 28 and AMOS 26. Nested binary logistic regression models in a structural equation modeling (SEM) framework was used for testing direct and indirect pathways simultaneously. All models controlled for the same set of seven covariates. Specifically, direct links between aspects of father involvement and postpartum depression were tested by bivariate Person correlation analyses. The mediating effect of couple relationship quality was tested using bias-corrected bootstrapping to estimate the confidence intervals in SEM (Hayes, 2009). Ethnic group differences were tested by multi-group path analyses to examine differences in the paths and the mediation effect for each ethnic group (Duncan et al., 2003). Several overall goodness-of-fit indexes were used and the threshold values were set to be larger than 0.95 for Comparative Fit Index (CFI) and goodness-of-fit (GFI), and less than 0.08 for the root-mean-square error of approximation (RMSEA) to mark a good model fit. An alpha level below 0.05 was indicated statistically significant. Little's Missing Completely at Random (MCAR) test (Little & Rubin, 1989) indicated that data were missing at random. Missing values at the item level were replaced by mean scores and used maximum likelihood estimation in AMOS.

Results

The descriptive statistics and correlation matrix are presented in Tables 1 and 2, respectively. The PPD rate in this sample was 13.2%, which is higher than the national estimate of 11.5% in 2012 (Ko et al., 2017). The correlation analyses showed a significant association between family poverty ratio and postpartum depression ($r = .11$, $p < .01$). The results indicated significant correlations between father involvement (father-direct involvement) with PPD ($r = -.08$, $p < .01$) and fathers' involvement in sharing responsibilities with PPD ($r = -.18$, $p < .01$); the latter correlation coefficient was larger than the former.

The mediation models were tested using the bias-corrected bootstrapping to estimate the confidence intervals (Hayes, 2009). This multiple-group path model was tested by running the same unconstrained path model (as shown in Fig. 1) across the three ethnic groups with seven control variables included. This allows the analyses of three groups at the same time simultaneously to test a theoretical model for its applicability to different groups (Duncan et al., 2003). The overall model fit the data well with CFI = 0.995 and RMSEA = 0.018. The bootstrapping results showed that couple relationship quality was a significant mediator for the relationship between father's involvement in direct interaction and maternal PPD for both Black (95% confidence interval [CI]: −0.016, −0.004) and white mothers (95% confidence interval [CI]: −0.019, −0.002). In addition, couple relationship quality was also a significant mediator for the relationship between father's involvement in shared responsibility and maternal PPD for mothers from these two ethnic groups (95% confidence interval [CI]: −0.051, −0.014 for Black mothers and 95% confidence interval [CI]: −0.051, −0.005 for white mothers). The standardized path coefficients are shown in Table 3. In order to count the possible direction of depression as the predictor for later couple relationship quality, we added maternal depression history collected from the baseline as a covariate and allowed it to predict couple relationship quality measured at the one-year

Table 2 Bivariate Correlations Among Variables in the Model (N = 2,794)

		1	2	3	4	5	6	7	8	9	10	11
1	Father Involvement (Direct involvement)	1										
2	Father Involvement (Sharing responsibility)	0.46**	1									
3	Couple Relationship Quality	0.30**	0.58**	1								
4	Postpartum Depression	−0.08**	−0.18**	−0.19**	1							
5	Mother's health	−0.05**	−0.05**	−0.12**	0.09**	1						
6	Mother's age	-0.02	0.04*	-0.00	-0.01	−0.06**	1					
7	Maternal Depression History	-0.02	−0.06**	−0.07**	0.11**	0.11**	0.03	1				
8	Couple Relationship Status	0.05**	0.04*	0.08**	-0.0	−0.09**	0.36**	−0.06*	1			
9	Child's Health	−0.10**	−0.08**	−0.10**	0.05**	0.24**	-0.02	0.06**	−0.07**	1		
10	Father Involvement at Childbirth	0.12**	0.17**	0.06**	-0.03	-0.01	0.00	-0.04	0.06**	−0.05*	1	
11	Poverty Ratio	0.07**	0.06**	0.11**	−0.05**	−0.24**	0.35**	−0.05*	0.37**	−0.14**	0.11**	1
	Mean/ Frequency	4.27	−.01[a]	2.7	370[b]	2.06	27.01	208[c]	1218[d]	1.49	2.76	2.1
	SD	1.35	0.86	0.3	N/A	0.93	6.12	N/A	N/A	0.79	0.58	2.28

*. p < .05 (2-tailed); **. p < .01 (2-tailed). [a]. This scale is standardized; [b]. frequency reported for probable cases; [c]. frequency reported for cases with records of mental illness history; [d]. frequency reported for married cases

follow-up survey. This pathway was not found significant for any of the three ethnic groups.

Discussion

The results of this study suggest that father involvement in infant care decreases the risk of maternal postpartum depression. Previous longitudinal research on father involvement suggests that assisting mothers with childcare may improve couple relationship quality (Kalmijn, 1999; Rinelli, 2009). This study extends these findings by supporting couple relationship quality as an important mechanism through which father involvement may reduce the mother's likelihood of developing postpartum depression within one year after childbirth. This study emphasizes that when mothers are under stress after childbirth, help from fathers in support of childcare has particular meanings for how mothers perceive the couple's relationship quality. In particular, it is possible that closeness and a positive relationship are meaningful for mothers during the stressful time after childbirth, as theoretically indicated by the Stress Process Framework (Pearlin et al., 1981; Reid & Taylor, 2015a).

The results further highlight the importance of examining the unique aspects of father involvement within family dynamics. The items measuring father involvement in this study are considered to tap into both the engagement and the responsibility dimension of Lamb et al.'s (2000) framework of father involvement. The results support the independent contributions of both dimensions, which have significant meanings for increasing couple relationship quality. Interestingly, however, the link is stronger for sharing infant care responsibilities. This pattern aligns with those of previous studies in documenting the importance of shared parental responsibility postnatally (McClain & Brown, 2017) and highlights the effectiveness of fathers' providing adequate support involving infant care for family wellness. Fathers' sharing infant care responsibilities help split infant care tasks between both parents, which brings couples closer (Tammentie et al., 2004) and further buffers the risk of maternal PPD.

This study compares the mediation pathways across Black, Latinx, and white mothers, and the results show both similarities and differences across the three ethnic groups. The mediation model for the two aspects of father involvement was largely consistent across Black and white groups. For these groups, in addition to the mediation pathway, father's involvement in shared infant care responsibility directly negatively predicted maternal PPD. For Latina mothers, both aspects of father involvement predicted their perceived couple relationship quality, and father's sharing of infant care responsibilities directly predicted maternal

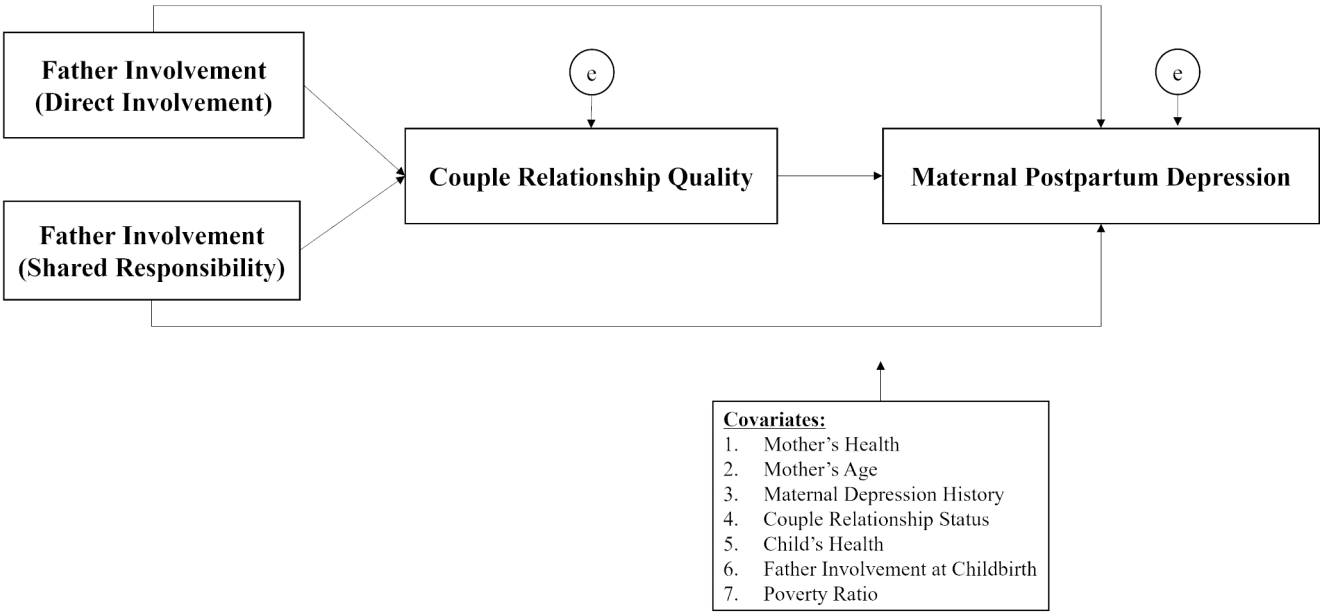

Fig. 1 *Proposed Model: Couple Relationship Quality as the Mediator of the Relationship Between Father Involvement and PPD*

Table 3 Standardized Path Coefficients in the Multigroup Mediation Model (N = 2,794)

Paths	Black	Latinx	white
Father Involvement (Direct involvement) ◊ CRQ	0.02	0.07*	0.03
Father Involvement (Sharing responsibility) ◊ CRQ	0.57**	0.55**	0.58**
CRQ ◊ PPD	−0.13**	−0.1*	−0.12**
Father Involvement (Direct involvement) ◊ PPD	0.04	−0.03	0.02
Father Involvement (Sharing responsibility) ◊ PPD	−0.12**	-1*	−0.11*
Mother's health ◊ CRQ	−0.03	−0.1**	−0.1**
Mother's health ◊ PPD	0.07*	0.05	0.05
Mother's age ◊ PPD	−0.04	0.05	−0.01
Maternal Depression History ◊ CRQ	−0.04	−0.01	−0.04
Maternal Depression History ◊ PPD	0.11**	0.03	0.08
Couple Relationship Status ◊ CRQ	−0.01	0.04	0.06*
Child's Health ◊ PPD	−0.02	0.04	0.07*
Father Involvement at Birth ◊ CRQ	−0.05	−0.08*	0.03
Poverty Ratio ◊ PPD	−0.02	0.02	−0.03
F(df)	31 (15); $p = .01$		
Model R^2 (predicting PPD)	0.07	0.05	0.06

Note: *. p < .05 (2-tailed); **. p < .01 (2-tailed). CRQ: couple relationship quality; PPD: maternal postpartum depression

PPD. Different cultures hold different childrearing values (Piontak, 2016), and the nature of family subsystems may vary by race/ethnicity (Cabrera et al., 2011). It is possible that mothers from different cultures place different expectations on fathers' participation in infant care according to the sociocultural acceptance of the definition of gender roles and the division of labor in childcare. Minority families typically adopt a more traditional father role and active involvement from grandparents (Krishnakumar & Black, 2003); it could be possible that these mothers hold low expectations for the father's engagement, and a high level of the father's actual involvement could have a more positive effect on the mother's perception of couple relationship quality (Roopnarine et al., 2009). Indeed, past research and this study found a similar tendency of greater father involvement in infant care and play activities in Black fathers compared to Latinx and white fathers (Cabrera et al., 2011). Nonetheless, the results of this study support the idea that, for minority families who are living in poverty in the U.S., when living hardships add risks to the mother's mental well-being, the father's involvement in childcare could be a protective factor against maternal PPD.

This study was based on the existing process of data collection procedure that limited us from examining a longitudinal model as no data was collected between baseline and one-year follow-up on father involvement and couple relationship quality. Ideally, we would need information on aspects of father involvement at multiple time points by the first year. However, we were able to add father's involvement at the baseline as a control variable. The results suggested that baseline father involvement predicted couple relationship quality for Latinx and white mothers. This indicated that it is likely to be that the various levels of paternal involvement contributed to couple relationship quality,

which in turn influenced maternal PPD rather than the other way around.

This study focused exclusively on identifying the protective effects of fathers' behavior on mothers' mental health; the influence of other relatives in the household was not considered. For example, evidence in the literature suggested that both spousal support and family support uniquely contribute to reducing the risk of maternal PPD (Reid & Tyler, 2015a). The impacts of relatives, especially the grandparents' involvement within minority cultures, could be a valuable element that requires more consideration when trying to understand the dynamics between couples postnatally. Due to the complex dynamics among grandparents' involvement, couples' behaviors, and couples' relationship quality as reported in previous research (Krishnakumar & Black, 2003), future studies that consider these complex relationships are needed to fully investigate the dynamics within multigenerational households.

Although the amount of paternal involvement and fathers' favoring attitudes toward childcare have been increasing across recent decades (McClain & Brown, 2017), this study has the value of empirically supporting the importance of fathers' roles in family wellness. The findings from this study have important implications for prevention and intervention programs. For example, the results could inform prenatal training programs by including increasing fathers' knowledge and skills related to newborn care and providing strategies for fathers to take on more responsibilities in childcare. Intervention programs may also benefit from emphasizing the importance of spouse's practice in supporting mothers by advancing the knowledge of the prevalence, early signs, and risk factors of PPD, therefore allowing couples to self-identify and work on issues causing strains in couple relationships, especially for families experiencing financial difficulties. For example, one study reported that after attending the postnatal distress prevention program, fathers were more aware of mothers' negative feelings, and mothers reported greater satisfaction over the relationship (Matthey et al., 2004). Medical health providers, such as obstetricians, gynecologists, and pediatricians, often get first opportunities to help families to recognize mothers' mental symptoms and to provide education to the families. Training on screening PPD and the understanding of the importance of spousal support should be highlighted for these medical professionals. Finally, as the first year after childbirth is such a critical time for families, policies should be designed to support fathers who need to invest time to adjust to new roles and efforts in infant care. Indeed, after the effectiveness of a two-week paid paternity leave in 2012 in Sweden, a 26% decrease in anti-anxiety prescriptions for mothers in the first six months postpartum was observed (Persson & Rossin-Slater, 2019). The U.S. still lags behind most developed countries in its mandated paternal leave policies (McClain & Brown, 2017). In order to help couples to get through the challenging time, more flexible working arrangements for fathers and a mandated paid paternity leave policy could be beneficial as they would give fathers time and energy to be involved in infant care and to attend to mothers' emotional and instrumental needs.

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