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Health Limitations Among Mothers and Fathers: Implications for Parenting

Despite the good reasons in which poor health could impede parenting, relatively little research considers this possibility. This study uses data from the Fragile Families and Child Wellbeing Study (N = 3,376) and propensity score matching to examine the relationship between maternal and paternal health limitations—health conditions that limit the amount or type of work one can do—and mother- and father-reported parenting stress, cooperation in parenting, and engagement with children. First, the authors find that mothers' and fathers' health limitations are associated with greater parenting stress. Second, they find evidence of spillover associations; when compared with their counterparts, parents with health limitations report that their child's other parent exhibits less cooperation. Third, they find that the associations between health and parenting are not moderated by parents' coresidential status. Taken together, these findings inform the stress process perspective and its implications for family life.

A large literature suggests that health has implications for both individuals and families. Individuals' health may have consequences for

their own well-being and for the well-being of their family members (e.g., Thomeer, Umberston, & Pudrovska, 2013). In particular, a growing literature demonstrates that mothers' and fathers' health is related to children's well-being (e.g., Garbarski, 2014; Hardie & Landale, 2013; Hardie & Turney, 2017; Hogan, Shandra, & Msall, 2007; Turney 2011a, 2012). Despite recent interest in the relationship between parental health and children's well-being, little research considers the consequences of parental health for how individuals engage in their roles as parents.

The stress process perspective highlights the social patterning of stressors and how stressors from one domain can proliferate into stressors in other domains (Pearlin, 1989; Pearlin, Menaghan, Lieberman, & Mullan, 1981). Recent applications of the stress process perspective contend that stressors have implications for family life (Milkie, 2010). According to the theory of stress proliferation, stressors to one individual in a family unit can have consequences for others because of their close emotional and material bonds. By extension, maternal and paternal health problems are stressors that may be consequential for the family system. Health problems may reduce the time and energy parents have to devote to parenting and may exacerbate parenting *role strain*, defined as the stress associated with juggling multiple responsibilities within the parental role. Maternal and paternal health limitations may affect one's own parenting and the parenting of one's coparents (Milkie, 2010; Pearlin et al., 1981).

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In this article, we use data from the Fragile Families and Child Wellbeing Study (<https://fragilefamilies.princeton.edu>), a cohort of children born to mostly unmarried parents in urban areas, to examine the association between parental health limitations and the following three measures of mothers' and fathers' parenting: (a) parenting stress, an indicator of how mothers and fathers cope with the demands of the parental role; (b) cooperation in parenting, an indicator of how mothers and fathers collectively parent their shared child; and (c) engagement, an indicator of how many days per week mothers and fathers do various activities with their children. We use health limitations—defined as having a serious health problem that limits the amount or kind of work one can do—because it encompasses a wide range of potential health problems while being substantial enough to interfere with one's activities. We then examine whether the association between parental health limitations and parenting varies by parents' coresidential status, shedding light on the role of social support in minimizing the risk of stress spillover within families.

PARENTAL HEALTH LIMITATIONS IN THE STRESS PROCESS PERSPECTIVE

The stress process perspective offers a framework for considering the relationship between parental health limitations and parenting. This perspective examines the social patterning of stressors and their consequences (Pearlin et al., 1981) and has been applied to stress emanating from family strain (Milkie, Bierman, & Schieman, 2008; Pearlin, 1999; Pearlin et al., 1981; Pearlin & Turner, 1987), work–family role conflict (Bolger, DeLongis, Kessler, & Wethington, 1989), living with a mentally ill family member (Thomeer et al., 2013), and caring for a physically ill loved one (Pearlin, Aneshensel, & LeBlanc, 1997). We extend prior work on the stress process perspective by examining how parental health limitations are associated with three indicators of parenting: parenting stress, cooperation in parenting, and engagement. Importantly, although we refer to health limitations as a source of stress (i.e., “stressor”) within families, it is also true that health problems can be manifestations of stress (Chrousos, 2009). Indeed, the term *stress* can refer to an event or situation that causes stress (stressor) or the stress reaction (physical,

mental, or both) that occurs as a result. Health limitations may therefore arise as a result of an external injury or chance malady, or they may arise as a part of a stress proliferation process (Pearlin et al., 2005) in which stressors such as material hardship proliferate into health, another stressor, and then continue to proliferate into stressors at the family level.

The stress process and stress proliferation perspectives elucidate the ways that stressors in one domain can cascade into other domains, exacerbating preexisting role strain (Pearlin et al., 1981). Thus, a stressor such as health limitations can exacerbate the everyday strains that accompany parenting, making it challenging for a parent to cope with parenting demands. Relatedly, stress experienced by one individual can proliferate to those connected to that individual. For example, recent scholarship elaborates on the stress proliferation perspective to specifically consider how stress may be transferred within a family unit (Milkie, 2010). This research suggests that stress proliferation between family members may occur by reconstituting family members' roles, by changing the quality of interpersonal relationships, and by stirring the emotional reactions of other family members to the individual's experience of stress. In what follows, we outline how one source of stress—parental health limitations—may have consequences for one's own parenting and how both the individual and spillover consequences of parental health limitations may result from preexisting demographic and socioeconomic characteristics. We also outline how parental health limitations may have spillover consequences for the parenting of one's coparent.

Individual consequences of health limitations

Theoretically, health limitations may increase parenting stress, decrease coparenting, and decrease engagement. First, health limitations may elevate an individual's stress and worry, which can have cascading consequences for other sources of strain such as parenting and relationships with coparents (Falconier, Nussbeck, Bodenmann, Schneider, & Bradbury, 2015). In addition, health limitations take time and resources to manage. Doctor's visits, coordinating with health insurance providers, and daily lifestyle changes take time and attention (Jowsey, Yen, & Mathews, 2012).

Furthermore, parents with health limitations may be distracted or emotionally fragile, leading them to withdraw from interacting with others (including their coparents and children). They may experience more conflict when coordinating child care with a coparent. Finally, parents coping with health limitations may feel more overwhelmed and exhausted by parenting than they might otherwise be, leading them to reduce the time and attention they devote to their children (Kempner, 2014).

It is also important to consider the role of health as a resource for performing one's roles, including that of a parent and partner. Much like income and wealth, social ties, and cultural knowledge (e.g., economic, social, and cultural capital), health can be invested to garner other resources (Grossman, 1972). Indeed, prior research shows that poor physical and mental health are associated with fewer socioeconomic resources (Frech & Kimbro, 2011), likely because poor health impedes individuals' work engagement and productivity (Gates, Succop, Brehm, Gillespie, & Sommers, 2008) and because health limitations cost money and time to address. Therefore, health is a form of capital—good health can be invested for greater resources, and poor health limits the opportunities individuals have to reap other rewards (and, indeed, may decrease preexisting resources). Parents in better health are likely to have greater economic resources that they can funnel into parenting their children. For example, money can purchase amenities used to engage in activities with children, such as a board game or tickets to a sporting event. Money can also ease relationships with coparents, thereby avoiding another source of stress. Furthermore, even if health limitations are not directly associated with short-term economic productivity, parents who anticipate cascading health problems may feel constrained from investing in children.

Socioeconomic resources also affect health, however. A large literature suggests that economic well-being shapes health behaviors (Pampel, Krueger, & Denney, 2010), access to quality health care (Centers for Disease Control and Prevention, 2013), and differential exposure to health hazards (Evans & Kim, 2010). In addition, much research suggests that inequality itself impacts health, where one's relative status vis-à-vis the economic distribution can shape health through greater

chronic stress, exacerbating allostatic load (Houckpatin, Wood, & Dunn, 2016). As a result, health limitations are more common among racial and ethnic minorities, those with low educational attainment, those in poverty, the unemployed, and the unmarried (e.g., Adler & Rehkopf, 2008; Blackwell, Villarroel, & Clarke, 2015; Liu & Umberson, 2008; Morello-Frosch, Zuk, Jerrett, Shamasunder, & Kyle, 2011). These demographic and socioeconomic characteristics are also associated with parenting stress, cooperation, and engagement (e.g., Braveman, Cubbin, Egerter, Williams, & Pamuk, 2010; Cabrera, Hofferth, & Chae, 2011), suggesting that any observed association between parental health limitations and parenting may result from these demographic and socioeconomic characteristics. Finally, parenting practices in earlier years—and particularly parenting stress (Thoits, 2010)—are likely to be associated with both later parenting practices and health. Therefore, parental health limitations may not be independently associated with parenting. For this reason, we use rigorous modeling strategies that account for selection into health on the basis of observed socioeconomic and demographic characteristics.

Spillover consequences of health limitations

Parental health limitations can also result in spillover stress that hinders the other parent's parenting (Conger & Elder, 1994). The relationship between one parent's health limitations and the other parent's parenting could operate in two ways. On one hand, a parent's health limitations may put new demands on other family members, either to care for the sick parent or to take on new responsibilities. For example, one parent's health limitations may lead the other parent to increase his or her engagement and cooperation because he or she sees a clear need to do so. On the other hand, parents may also withdraw in the face of their coparents' health problems. Mothers report social support declines in response to health problems (Harknett & Harknett, 2011), and this may be true of fathers as well. Relatedly, a parent's health limitations may elevate his or her coparent's stress, either as a result of concern over the illness or in response to an ill parent's strained interactions. We focus on how health limitations may spill over into a coparent's parenting.

CORESIDENTIAL STATUS AS A BUFFER

It is well known that coresidential status shapes parenting (Tach, Mincy, & Edin, 2010), and, relatedly, the association between parental health limitations and parenting may vary by parents' coresidence. Among coresidential parents, the consequences of health may be distributed between both parents, alleviating the stress of the ill parent while increasing the chances of spillover stress for the other parent. Specifically, the support of a coresidential coparent may buffer the individual consequences of health limitations (Cohen & Wills, 1985; Thoits, 1995). Healthy coresidential coparents may take on additional responsibilities in response to their partner's health limitations, which may reduce stress for the parent with health limitations. At the same time, the parent shouldering these additional tasks may experience spillover stress in response to extra parenting responsibilities and caring for an ill partner.

Although coresidential parents may share the burden of one parent's health limitations within the family unit, the case of nonresidential parents (all of whom are fathers in our study) is more complex. First, the association between health limitations and parenting may be weaker for nonresidential fathers if they are already less engaged in parenting by not living in the home. In addition, the spillover consequences of mothers' health problems may be less consequential for fathers if they are less likely to perceive or respond to a need for greater engagement and cooperation. Indeed, research shows that nonresidential fathers' involvement with their children declines sharply in the early years of a child's life (Tach et al., 2010). Second, mothers' health problems may be more consequential for their own parenting because they cannot rely on fathers to take on extra responsibilities. They may shoulder the burden of nonresidential fathers' health limitations, however, if fathers with health limitations withdraw, putting a greater parenting responsibility on mothers. Thus, we expect to find a stronger association between maternal health problems and mothers' parenting and a weaker association between maternal health problems and fathers' parenting when parents live separately compared to when they live together. We also expect nonresidential fathers' health limitations to be less strongly associated with their own parenting when compared with coresidential fathers, although we expect nonresidential fathers' health limitations

to be associated with greater maternal parenting stress and lower cooperation.

PRIOR RESEARCH ON PARENTAL HEALTH LIMITATIONS AND PARENTING

Relatively few studies have examined the relationship between parental health and parenting or how this association varies by coresidential status. One study finds associations between the frequency and severity of maternal illnesses and parenting practices, with stronger associations among single mothers when compared with married mothers (Sitnick, Masyn, Ontai, & Conger, 2016). Another study finds that in two-parent households, health limitations are associated with less maternal school involvement and fewer educational resources in the home. This study also finds that paternal disability is associated with lowered maternal monitoring and fewer family activities (Hogan et al., 2007). Finally, previous research finds that maternal mental health problems, such as depression, have negative implications for parenting (Frech & Kimbro, 2011; Goodman, 2007; Turney, 2011a). Taken together, the limited prior research suggests a relationship between parental health and parenting.

THE CURRENT STUDY

Given that the stress process perspective suggests that parental health limitations could alter parenting, in conjunction with relatively little research on the topic, it is imperative to examine whether and under what circumstances mothers' and fathers' health limitations are associated with parenting. The current study provides one of the first examinations of the relationship between health limitations and parenting, the first examination of the spillover relationship between health limitations and coparents' parenting, and the first examination of how these associations vary by coresidential status. We focus on health limitations that impede work because this includes health problems that are substantial enough to interfere with the affected family member's activities. An alternative option would be to focus on self-rated health, but this indicator is subject to more reporter interpretation. Furthermore, health ratings of "fair" or "poor" may not indicate health problems that are meaningful to other members of the family unit. Findings inform the

theoretical literature on how stress proliferates within families, contribute to research on the social consequences of health, and suggest that parenting may be a mechanism linking parental health limitations to deleterious outcomes for children.

METHOD

Data

Data for the current study come from the Fragile Families and Child Wellbeing Study. Fragile Families is a cohort study of 4,898 children born to mostly unmarried parents in 20 U.S. cities in 1998–1999 (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Mothers and fathers were initially interviewed in person shortly after their child's birth and were again interviewed by telephone when their child was 1, 3, 5, and 9 years old. Response rates, especially among mothers, were relatively high compared to other longitudinal studies. About 86% of the sampled mothers participated in the baseline survey, and response rates for the 1-, 3-, 5-, and 9-year surveys were 90%, 88%, 87%, and 76%, respectively. At baseline, 78% of eligible fathers participated, and fathers' response rates for the follow-up surveys were 69%, 67%, 64%, and 59%, respectively.

The analyses use two analytic samples. The first analytic sample, used for estimates of mothers' outcomes, comprises 3,376 observations. This analytic sample excludes observations in which the mother did not participate in the 9-year survey ($n = 1,383$), the survey wave when the outcome variables are measured, and additional observations missing information on any of the three mother-reported outcome variables ($n = 139$). The second analytic sample, used for estimates of fathers' outcomes, comprises 2,201 observations (after excluding the 2,246 observations in which the father did not participate in the 9-year survey and the 451 additional observations missing information on any of the three father-reported outcome variables). These two samples are mostly overlapping couples, as 92% of observations in the second analytic sample are in the first analytic sample, but we use the first analytic sample for estimates of mothers' outcomes and the second analytic sample for estimates of fathers' outcomes. Relatedly, results are robust to restricting analyses to observations in both analytic samples and to using the second analytic sample to estimate mothers' outcomes. We preserve missing covariates in both analytic

samples by producing five multiply imputed data sets (Allison, 2001).

There are some statistically significant observed differences between the baseline Fragile Families sample and the two analytic samples. Mothers in the analytic sample, when compared with mothers in the baseline sample, are less likely to be foreign born, have more education, and are more likely to be employed ($p < .05$). Fathers in the analytic sample are more likely to be non-Hispanic White, less likely to be Hispanic, less likely to be foreign born, and have higher levels of education. Fathers in the analytic sample are more likely to be married to and less likely to be separated from the child's mother at baseline. They are also more likely to be employed and less likely to be in poverty ($p < .05$).

Measures

Outcome variables. The outcome variables include three measures of mother-reported parenting and three measures of father-reported parenting, all measured at the 9-year survey: parenting stress, cooperation in parenting, and engagement. Mother- and father-reported parenting stress is measured by averaging responses to the following four statements (1 = *strongly disagree* to 4 = *strongly agree*): (a) being a parent is harder than I thought it would be; (b) I feel trapped by my responsibilities as a parent; (c) taking care of my children is much more work than pleasure; (d) I often feel tired, worn out, or exhausted from raising a family ($\alpha = .66$ for mothers, $.67$ for fathers).

Mother-reported cooperation in parenting is an average of responses to the following six statements (1 = *never* to 4 = *always*): (a) when father is with child, he acts like the kind of parent you want for your child; (b) you can trust father to take good care of child; (c) father respects the schedules and rules you make for child; (d) father supports you in the way you want to raise child; (e) you and father talk about problems that come up with raising child; and (f) you can count on father for help when you need someone to look after child for a few hours ($\alpha = .97$). Father-reported cooperation is measured on the same scale (1 = *never* to 4 = *always*), with the father being asked to report on the mother's cooperation ($\alpha = .89$).

Mother- and father-reported engagement is an average of responses to the following 10

statements about activities with the child (1 = *not once in the past month* to 5 = *every day*): (a) do dishes, prepare food, or do other household chores together; (b) play sports or do outdoor activities together; (c) watch television or videos together; (d) play video or computer games together; (e) read books with child or talk with him or her about books the child reads; (f) participate in indoor activities together such as arts and crafts or board games; (g) talk with child about current events, such as things going on in the news; (h) talk with child about his or her day; (i) check to make sure child has completed his or her homework; and (j) help child with homework or school assignments ($\alpha = .73$ for mothers, .91 for fathers).

Importantly, the measures of parenting stress (Beck, Cooper, McLanahan, & Brooks-Gunn, 2010; Cooper, McLanahan, Meadows, & Brooks-Gunn, 2009), cooperation in parenting (Berger, Carlson, Bzostek, & Osborne, 2008; Carlson, McLanahan, & Brooks-Gunn, 2008), and engagement (Carlson et al., 2008; Gibson-Davis, 2008) have been used frequently in prior research. In the multivariate analyses, we standardize the outcome variables to facilitate comparisons across outcomes.

Explanatory variables. The key explanatory variables are mother's health limitations and father's health limitations, binary indicators that the mother or father reports having a serious health problem that limits the amount or kind of work he or she can do, measured at the 9-year survey. About 11.9% of mothers and 13.6% of fathers report health limitations. These rates are higher than typically found in nationally representative surveys such as the Current Population Survey, which finds the percentages of work limitations hovering around 8% over time (Burkhauser, Houtenville, & Tennant, 2014). Because Fragile Families draws from a disproportionately disadvantaged sample, it is not surprising that we find a higher percentage of health limitations.

Mothers and fathers who answer affirmatively are then asked to report on the specific health problem, and these responses fall into the following eight categories: diabetes, asthma, high blood pressure, pain, seizures or epilepsy, heart disease, back problems, and other (with parents reporting other health problems being asked to specify further). The most common health limitations for mothers include back problems

(20% of mothers who report health limitations), asthma (17%), and pain (15%).

Additional covariates. We adjust for characteristics of both mothers and fathers. Covariates include mother's race and ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic other race), mother's and father's status as a mixed-race couple, mother's foreign-born status, mother's age, father's age, mother's family structure at age 15, mother's relationship to the father (married, cohabiting, nonresidential romantic, no relationship), mother's and father's reports of relationship quality, number of children in mother's household, mother's and father's educational attainment (less than high school, high school diploma or GED, some college, college degree), mother's and father's material hardship, mother's and father's poverty status, mother's and father's employment status, mother's and father's major depression (measured by the Composite International Diagnostic Interview-Short Form), mother's cognitive ability (measured by the Weschler Adult Intelligence Scale), child's gender, and child's temperament. Time-invariant controls (e.g., race and ethnicity) are measured at baseline (with the exception of mother's cognitive ability, which is only ascertained at the 3-year survey), and time-varying controls are measured at the 5-year survey (with the exception of child's temperament, which is only ascertained at the 1-year survey). This time ordering ensures that the control variables are all measured prior to the measurement of parental health limitations, minimizing endogeneity. Finally, given that stress, cooperation, and engagement with children may also shape parental health, we adjust for lagged dependent variables.

Analytic Strategy

We use propensity score matching to estimate parenting as a function of mothers' and fathers' health limitations. Propensity score matching, which is grounded in the counterfactual framework, approximates an experimental design by estimating differences between a treatment group and a control group (Morgan & Winship, 2007; Rosenbaum & Rubin, 1983). This is useful because we are able to directly compare matched cases. The treatment and control groups have a similar distribution of observed covariates,

varying only in the presence or absence of the treatment (in this case, health limitations), which helps account for the observed demographic and socioeconomic differences between parents with and without health limitations. These analyses proceed under the ignorability assumption (Rosenbaum & Rubin, 1983), the assumption that all predictors associated with the treatment are included in the propensity score models. Accordingly, these analyses do not adjust for unobserved characteristics and, instead, only adjust for characteristics that are available in the data. We return to this assumption later.

To begin, we match observations on mothers' health limitations, with the treatment group being mothers with health limitations and the control group being mothers without health limitations. First, a logistic regression model generates a propensity score, the probability of experiencing health limitations (ranging from 0 to 1), for each observation as a function of the covariates described earlier (Appendix A). The logistic regression model also includes the other parent's health limitations as a predictor, which means that the treatment and control groups are similar with respect to this characteristic. Second, we restrict the analyses to regions of common support (e.g., the area where the propensity scores of the treatment and control groups overlap) and ensure the averages of the covariates are statistically indistinguishable across the treatment and control groups (Appendix B). Third, we use kernel matching, which matches all treatment observations to control observations by weighting control observations by their distance from treatment observations (kernel = Epanechnikov; bandwidth = 0.06). We use ordinary least squares regression models, averaged across the five imputed data sets, to estimate our outcome variables as a function of the treatment. Because the treatment and control groups are matched on lagged dependent variables, the matched estimates examine change in the dependent variable between the 5- and 9-year surveys. Finally, because there may be small differences between the treatment and control groups after matching, we employ doubly robust propensity score analyses, which further adjust for all covariates after matching on the propensity score (Schafer & Kang, 2008).

We repeat these steps to match observations on father's health limitations. We also repeat

these steps to separately match mothers' and fathers' health limitations, respectively, among coresidential and nonresidential parents.

Sample Description

Table 1 presents descriptive statistics of the sample. Because there are few differences between the first and second analytic samples, we present descriptive statistics for the first analytic sample for parsimony. The majority of the sample includes racial and ethnic minorities. About one fifth (21.4%) of mothers are non-Hispanic White, one half (49.6%) are non-Hispanic Black, one quarter (25.4%) are Hispanic, and 3.6% are non-Hispanic other race. When children are about 5 years old, slightly more than half (52.6%) of the mothers and two fifths (40.5%) of the fathers have education beyond high school. About half (48.1%) of parents are in marital, cohabiting, or nonresidential romantic relationships with one another when their child is 5 years old.

RESULTS

Consequences of Mothers' Health Limitations

Figure 1 presents the means of the mother- and father-reported outcome variables—parenting stress, cooperation in parenting, and engagement—by mothers' health limitations at the 9-year survey. Mothers with health limitations, when compared with their counterparts, reported more parenting stress (2.219 compared to 2.009, $p < .001$) and less cooperation from fathers (2.542 compared to 2.907, $p < .001$) but similar levels of engagement. In addition, when mothers had health limitations, when compared with when mothers do not, fathers reported similar levels of parenting stress, less cooperation from mothers (3.452 compared to 3.573, $p < .01$), and less engagement (2.761 compared to 3.028, $p < .001$).

These descriptive statistics suggest that mothers' health limitations have both individual and spillover consequences for mothers' and fathers' parenting. However, mothers with and without health limitations differ along a number of demographic and socioeconomic characteristics. In the tables, we use propensity score matching, matching mothers with health limitations to otherwise comparable mothers without health limitations, to account for these observed characteristics. Table 2 estimates the

Table 1. *Descriptive Statistics of All Variables Included in Analyses*

Variable	<i>M</i> or %	<i>SD</i>
Dependent variables		
Mother parenting stress (y9; range: 1–4)	2.034	0.684
Mother cooperation in parenting (y9; range: 1–4)	2.864	1.188
Mother engagement (y9; range: 1–5)	3.715	0.599
Father parenting stress (y9; range: 1–4)	1.883	0.689
Father cooperation in parenting (y9; range: 1–4)	3.561	0.657
Father engagement (y9; range: 1–5)	3.000	1.024
Explanatory variables		
Mother health limitations (y9)	11.9%	
Father health limitations (y9)	13.6%	
Control variables		
Mother race (b)		
Non-Hispanic White	21.4%	
Non-Hispanic Black	49.6%	
Hispanic	25.4%	
Non-Hispanic other race	3.6%	
Mother and father are mixed-race couple (b)	14.7%	
Mother foreign born (b)	14.4%	
Mother age (y5; range: 19–52)	30.291	6.023
Father age (y5; range: 20–72)	32.842	7.205
Mother lived with both biological parents at age 15 (b)	42.5%	
Mother and father relationship status (y5)		
Married	31.8%	
Cohabiting	12.8%	
Nonresidential romantic	3.5%	
Separated	51.8%	
Mother relationship quality (y5; range: 1–5)	2.955	1.463
Father relationship quality (y5; range: 1–5)	3.352	1.320
Mother number of children (y5; range: 1–10)	2.509	1.330
Mother educational attainment (y5)		
Less than high school	24.9%	
High school diploma or GED	22.5%	
Some college	38.9%	
College degree	13.7%	
Father educational attainment (y5)		
Less than high school	27.9%	
High school diploma or GED	31.6%	
Some college	29.0%	
College degree	11.5%	
Mother material hardship (y5; range: 0–13)	2.091	2.241
Father material hardship (y5; range: 0–13)	1.716	2.005
Mother employed (y5)	60.5%	
Father employed (y5)	76.7%	
Mother in poverty (y5)	38.3%	
Father in poverty (y5)	26.2%	
Mother cognitive ability (y3; range: 0–15)	6.809	2.665
Mother depression (y5)	17.4%	
Father depression (y5)	12.7%	
Child is male (b)	52.5%	

Table 1. *Continued*

Variable	<i>M</i> or %	<i>SD</i>
Child temperament (y1; range: 1–5)	3.407	0.760
Mother parenting stress, lagged (y5; range: 1–4)	2.175	0.681
Mother cooperation in parenting, lagged (y5; range: 1–4)	3.074	1.090
Mother engagement, lagged (y5; range: 0–7)	4.614	1.169
Father parenting stress, lagged (y5; range: 1–4)	2.040	0.697
Father cooperation in parenting, lagged (y5; range: 1–4)	3.647	0.584
Father engagement, lagged (y5; range: 0–7)	2.929	2.051
<i>N</i>		3,376

Note. *b* = measured at the baseline survey, y1 = measured at the 1-year survey, y3 = measured at the 3-year survey, y5 = measured at the 5-year survey, y9 = measured at the 9-year survey. *ns* for father's reports of parenting is smaller ($N = 2,201$) because fathers were less likely than mothers to participate in the 9-year survey.

relationship between mothers' health limitations and mother- and father-reported parenting. The unmatched estimates, those that compare the differences between the treatment and control groups before matching, show results consistent with those presented in Figure 1. Mothers' health limitations were associated with more mother-reported parenting stress ($b = 0.304, p < .001$), less mother-reported cooperation from fathers ($b = -0.306, p < .001$), less father-reported cooperation from mothers ($b = -0.245, p < .01$), and less father-reported engagement ($b = -0.244, p < .01$). Mothers' health limitations were not associated with mother-reported engagement ($b = -0.026$, nonsignificant) or father-reported parenting stress ($b = 0.015$, nonsignificant).

In the matched estimates, those that compare the differences between the treatment and control groups after matching, the associations between parental health limitations and parenting decreased in magnitude. Mothers' health limitations were significantly associated with greater mother-reported parenting stress ($b = 0.164, p < .01$) and less mother-reported cooperation from fathers ($b = -0.128, p < .05$). The association between mothers' health limitations and father-reported cooperation from mothers and father-reported engagement fell from statistical significance.

The doubly robust matched estimates, the most conservative models that further adjust for all covariates, produce results similar to the matched estimates. Mothers with health limitations reported parenting stress that was about one sixth of a standard deviation higher than those without health limitations ($b = 0.156, p < .01$) and cooperation from fathers that was one

tenth of a standard deviation lower ($b = -0.093, p < .05$).

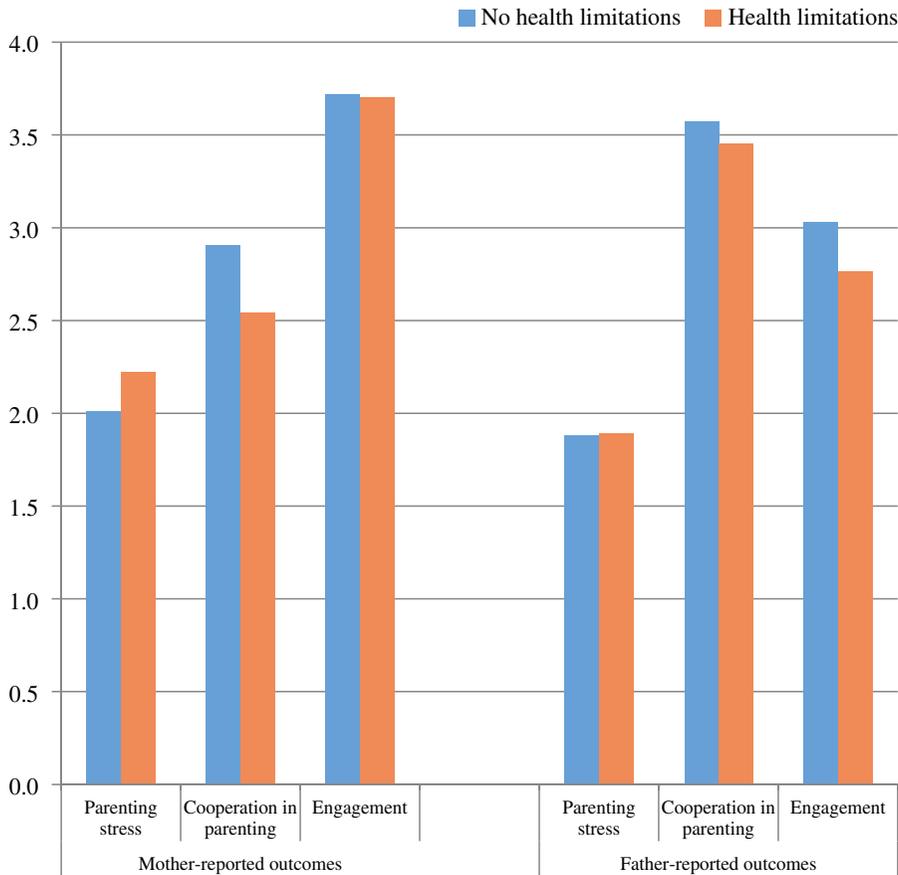
Consequences of Fathers' Health Limitations

Figure 2 presents means of the outcome variables by fathers' health limitations at the 9-year survey. Fathers with health limitations reported more parenting stress (2.085 compared to 1.855, $p < .001$), less cooperation from mothers (3.422 compared to 3.580, $p < .001$), and less engagement (2.824 compared to 3.025, $p < .01$). In addition, when fathers had health limitations, mothers reported less cooperation from fathers (2.625 compared to 2.903, $p < .001$) and similar levels of parenting stress and engagement.

Table 3 estimates the relationship between fathers' health limitations and mother- and father-reported parenting. We found that although the unmatched estimates showed an association between fathers' health limitations and mother-reported cooperation from fathers ($b = -0.187, p < .05$), the matched and doubly robust matched models showed no association between fathers' health limitations and mother-reported parenting. These associations were small and statistically nonsignificant in the most conservative models (parenting stress: $b = -0.009$, nonsignificant; cooperation from fathers: $b = 0.001$, nonsignificant; engagement: $b = -0.053$, nonsignificant).

In contrast, we found that fathers' health limitations were associated with father-reported parenting stress and father-reported cooperation from mothers. These associations existed in the unmatched models, the matched models, and the doubly robust matched models. In the most conservative models, the doubly robust matched

FIGURE 1. MEANS OF MOTHER- AND FATHER-REPORTED OUTCOMES, BY MOTHERS' HEALTH LIMITATIONS.



Note. For the mother-reported outcomes, 400 mothers have health limitations and 2,976 mothers do not have health limitations. For the father-reported outcomes, 234 mothers have health limitations and 1,967 mothers do not have health limitations.

models, fathers with health limitations reported one fourth of a standard deviation higher parenting stress than those without health limitations ($b = 0.245, p < .01$) and one sixth of a standard deviation lower cooperation from mothers ($b = -0.173, p < .05$).

Supplemental Analyses

We conducted two sets of supplemental analyses. First, as it is possible health limitations existed prior to the 9-year survey (and, thus, prior to the measurement of our treatment variable), we estimated mothers' and fathers' health limitations that emerged between the 5- and 9-year surveys (with the treatment being individuals who did not report health limitations at the 5-year survey but did report

health limitations at the 9-year survey). Indeed, there was both stability and change in health limitations across survey waves, as 4.5% of mothers and 4.3% of fathers reported health limitations at only the 5-year survey, 6.6% of mothers and 8.0% of fathers reported health limitations at only the 9-year survey, and 5.2% of mothers and 5.7% of fathers reported health limitations at both the 5- and 9-year surveys. The estimates that considered emerging health limitations (those only present at the 9-year survey) produced similar results as those presented. For example, in doubly robust matching models, the emergence of health limitations among mothers was associated with greater mother-reported parenting stress and less mother-reported cooperation from fathers.

Table 2. Propensity Score Matching Models Estimating Parenting Outcomes as a Function of Mother’s Health Limitations

Outcome variable	Unmatched		Matched		Matched, doubly robust	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Panel A. Mother-reported outcomes						
Parenting stress	0.304	0.053***	0.164	0.061**	0.156	0.053**
Cooperation in parenting	-0.306	0.053***	-0.128	0.060*	-0.093	0.047*
Engagement	-0.026	0.053	-0.045	0.061	-0.041	0.059
<i>n</i>	3,376		3,369–3,376		3,369–3,376	
Panel B. Father-reported outcomes						
Parenting stress	0.015	0.072	-0.052	0.080	-0.052	0.076
Cooperation in parenting	-0.245	0.087**	-0.099	0.098	-0.084	0.091
Engagement	-0.244	0.073**	-0.130	0.084	-0.131	0.081
<i>n</i>	2,201		2,197–2,201		2,197–2,201	

Note. Each row represents a separate outcome variable. All outcome variables are standardized ($M = 1, SD = 0$). Unmatched estimates compare the treatment group (mothers with health limitations) and control group (mothers without health limitations) prior to matching on the propensity score. Matched estimates compare the treatment group and control group after matching based on the covariates from Table 1. The doubly robust matched estimates further adjust for all covariates. The treatment group *n* varies across multiply imputed data sets.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. Propensity Score Matching Models Estimating Parenting Outcomes as a Function of Father’s Health Limitations

Outcome variable	Unmatched		Matched		Matched, doubly robust	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Panel A. Mother-reported outcomes						
Parenting stress	0.049	0.055	-0.006	0.063	-0.009	0.055
Cooperation in parenting	-0.187	0.076*	-0.007	0.073	-0.001	0.060
Engagement	0.051	0.053	-0.050	0.057	-0.053	0.053
<i>n</i>	3,376		3,360–3,376		3,360–3,376	
Panel B. Father-reported outcomes						
Parenting stress	0.335	0.064***	0.262	0.081**	0.245	0.076**
Cooperation in parenting	-0.243	0.065***	-0.198	0.082*	-0.173	0.071*
Engagement	-0.196	0.065**	-0.079	0.080	-0.044	0.072
<i>n</i>	2,201		2,198–2,201		2,198–2,201	

Note. Each row represents a separate outcome variable. All outcome variables are standardized ($M = 1, SD = 0$). Unmatched estimates compare the treatment group (fathers with health limitations) and control group (fathers without health limitations) prior to matching on the propensity score. Matched estimates compare the treatment group and control group after matching based on the covariates from Table 1. The doubly robust matched estimates further adjust for all covariates. The treatment group *n* varies across multiply imputed data sets.

* $p < .05$, ** $p < .01$, *** $p < .001$.

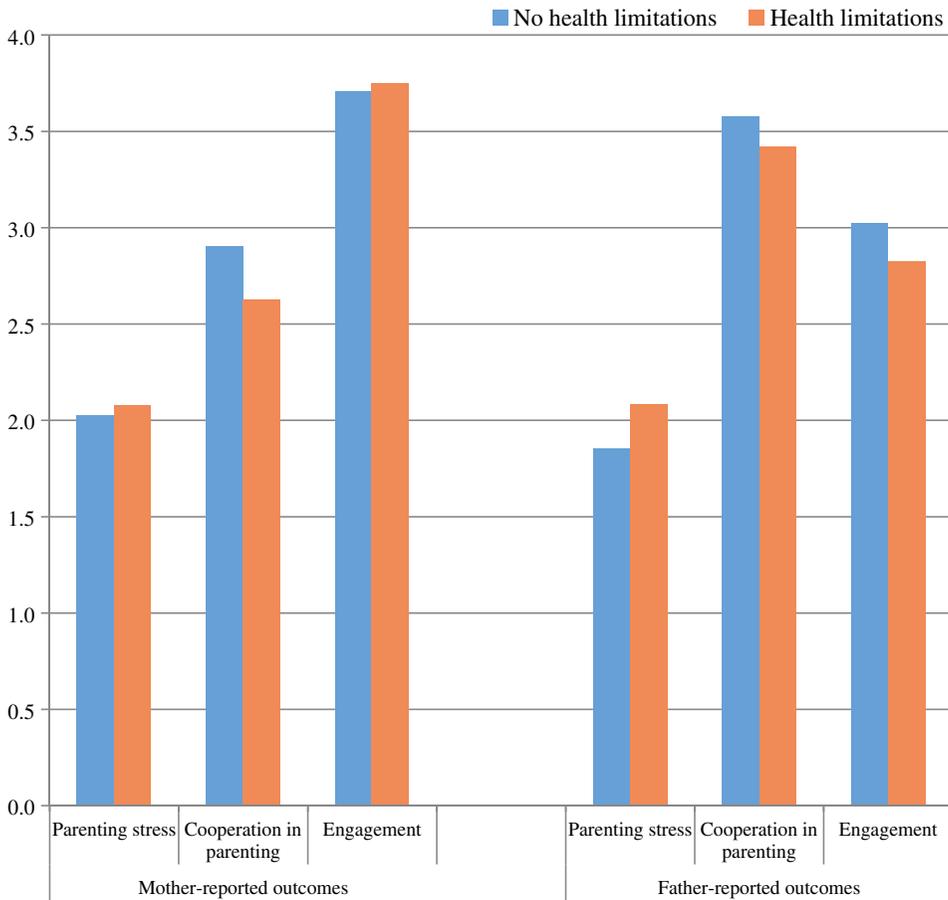
Second, it is possible that parental mental health limitations influenced the association between health limitations and parenting. To consider this possibility, we substituted our measure of health limitations with an alternative measure that considered parents to have no health limitations if they reported their health problem was “mental health,” allowing for an examination of the relationship between physical health limitations and parenting. These

estimates also produced similar results. For example, the doubly robust matching models showed that mothers’ physical health limitations were associated with greater mother-reported parenting stress and less mother-reported cooperation from fathers.

Considering Coresidence

Finally, in Table 4, we consider differences in the relationship between parental health

FIGURE 2. MEANS OF MOTHER- AND FATHER-REPORTED OUTCOMES, BY FATHERS' HEALTH LIMITATIONS.



Note. For the mother-reported outcomes, 454 fathers have health limitations and 2,922 fathers do not have health limitations. For the father-reported outcomes, 273 fathers have health limitations and 1,928 fathers do not have health limitations.

limitations and parenting by coresidence at the 9-year survey. As discussed earlier, we expected both maternal and paternal health limitations to have a stronger association with mothers' parenting when parents did not reside together when compared with when they did live together. Conversely, we expected both maternal and paternal health limitations to have a weaker association with fathers' parenting when the parents did not reside together when compared with when they did. We did not find strong support for these predictions. Among coresidential parents, mothers' health limitations were not associated with mother-reported parenting stress, cooperation from fathers, or engagement. Among nonresidential parents, mothers' health limitations were associated with greater

mother-reported parenting stress ($b = 0.201$, $p < .01$) and less mother-reported cooperation from fathers ($b = -0.102$, $p < .05$), but were not associated with mother-reported engagement. This supported our expectation; however, tests for differences across coefficients (Paternoster, Brame, Mazerolle, & Piquero, 1998) showed that the association between mothers' health limitations and father-reported outcomes did not vary by parents' coresidential status. In addition, the relationship between fathers' health limitations and mother- and father-reported outcomes suggested that the relationship did not vary by parents' coresidential status. In supplemental analyses, we considered variation by coresidence with any partner and variation by coresidence with a parent, but found no

Table 4. Propensity Score Matching Models Estimating Parenting Outcomes as a Function of Mother’s and Father’s Health Limitations, by Residential Status

Outcome variable	Mother’s health limitations					Father’s health limitations				
	Coresidential		Nonresidential		z	Coresidential		Nonresidential		z
	b	SE	b	SE		b	SE	b	SE	
Panel A. Mother-reported outcomes										
Parenting stress	0.026	0.108	0.201	0.067**	-1.38	-0.066	0.085	0.028	0.059	-0.91
Cooperation in parenting	-0.032	0.040	-0.102	0.061^	0.96	0.005	0.039	-0.064	0.055	1.02
Engagement	-0.101	0.087	-0.005	0.074	-0.84	0.023	0.082	-0.056	0.063	0.76
n	1,342		2,034			1,342		2,034		
Panel B. Father-reported outcomes										
Parenting stress	0.002	0.117	-0.100	0.107	0.64	0.280	0.102**	0.280	0.106**	0.00
Cooperation in parenting	0.011	0.062	-0.014	0.120	0.19	-0.095	0.048^	-0.212	0.114^	0.95
Engagement	-0.019	0.085	-0.125	0.115	0.74	-0.043	0.080	-0.119	0.107^	0.57
n	1,133		1,068			1,133		1,068		

Note. Doubly robust estimates presented. Each row represents a separate outcome variable. All outcome variables are standardized ($M = 1, SD = 0$). All covariates from Table 1 are included in the matching equation. The treatment group n varies across multiply imputed data sets. z indicates z -score comparing coresidential and nonresidential couples.

^ $p < .10$, ** $p < .01$.

statistically significant subgroup differences in the relationship between health limitations and parenting.

DISCUSSION

The stress process perspective draws attention to the cascading consequences of stressors on role strain in multiple domains (Pearlin, 1989; Pearlin et al., 1981). Extensions to this perspective suggest that stressors can have implications for family life both for individuals experiencing stress and for members of their families (Milkie, 2010; Pearlin et al., 2005). The current article builds on this theoretical perspective by considering how one type of stressor, parental health limitations (defined as health conditions that limit the amount or type of work one can do), can have cascading consequences for the following three indicators of mothers’ and fathers’ parenting: (a) parenting stress, which measures how well parents cope with the parental role; (b) cooperation in parenting, which measures the extent to which parents collectively parent their shared child; and (c) engagement, which measures the time parents spend with their child. Together these indicators provide a comprehensive summary of parenting experiences.

Results from the Fragile Families and Child Wellbeing Study, a cohort of children born to mostly unmarried parents in urban areas, suggest

three conclusions. To begin, we provided the first evidence linking parental health limitations to one’s own reports of parenting stress. We found that, after accounting for preexisting characteristics that were associated with health limitations, mothers’ health limitations were associated with greater mother-reported parenting stress, and fathers’ health limitations were associated with greater father-reported parenting stress. The link between health limitations and parenting stress is consistent with previous research showing that maternal depression is associated with parenting (e.g., Goodman, 2007) but extends this research by considering a broader measure of parental health (as well as a supplemental measure of parental physical health limitations) and by considering the consequences for both mothers and fathers. The individual consequences of health limitations are limited to parenting stress, as matched estimates showed that mothers’ health limitations were not associated with fathers’ reports of her cooperation, fathers’ health limitations were not associated with mothers’ reports of his cooperation, and mothers’ and fathers’ health limitations were not associated with their respective reports of engagement. This finding, in conjunction with the results from the unmatched estimates, suggests that preexisting characteristics (e.g., relationship status, poverty) explain existing statistically significant unmatched associations.

Health status and economic factors are deeply intertwined, and thus our matched models are necessary for identifying spurious associations explained by observed demographic and socioeconomic factors. Also, the lack of association between mothers' and fathers' health limitations and their respective reports of engagement may result from offsetting mechanisms: decreased ability and energy to spend time with children and increased time to spend with children resulting from more limited employment. Future research, potentially using qualitative data, should unpack these processes.

Second, we provide evidence of spillover associations. Specifically, we found that mothers' health limitations were associated with less cooperation from fathers (as reported by mothers) and that fathers' health limitations were associated with less cooperation from mothers (as reported by fathers). We did not find associations between parental health limitations and other parents' stress or engagement in the matched models. In the case of cooperation, it is not clear if this association results from one parent's actual behavior in response to her or his coparent's health limitations or from perceptions of the parent with health limitations. More research could examine cooperative parenting self-reports in addition to reports by the other parent. Regardless, by demonstrating that maternal and paternal health limitations have implication for the parenting experiences of coparents, these findings expand on prior research suggesting that paternal health has spillover associations for mothers' parenting practices (Hogan et al., 2007).

Third, we elaborate on our findings by examining paternal coresidential status in the association between parental health limitations and parenting. Prior research suggests conflicting conclusions, finding either that parental health problems are more consequential in two-parent families (Hogan et al., 2007) or single-parent families (Sitnick et al., 2016). We found that although some associations were larger among nonresidential parents, there were no statistically significant differences in the association between parental health limitations and parenting by coresidential status. Supplemental analyses that considered other types of household structure, such as living with any partner (including the child's biological father or a new partner) and living with a parent, also showed no statistically significant differences

across groups. These findings suggest that the process by which stressors proliferate and spill over from another domain (e.g., health) into family life is not conditioned on family and household structure.

These findings have implications for the stress process perspective. First, our findings support the contention that a previously unexamined source of stress—parental health limitations—exacerbates role strain. This is evidenced by the positive association between health limitations and parenting stress. Second, as proposed by Milkie (2010), we find some support for the contention that stress proliferation occurs within families when a new stressor is introduced. According to this theory, stress proliferation may occur by reconstituting family members' roles, by changing the quality of interpersonal relationships, or by the emotional reactions of other family members to the individual's experience of stress. We find that parental health limitations are associated with less cooperation by the other parent, suggesting that stress proliferation may occur most acutely by reconstituting family roles and changing (perhaps harming) the quality of interpersonal relationships. Although previous research has found that families in which wives experience serious illness or in which children have disabilities are more likely to divorce (Glantz et al., 2009; Stabile & Allin, 2012), our findings shed light on how health limitations proliferate into family processes in addition to marital dissolution. Finally, our findings expand on the family stress process perspective by examining differences in household composition. Our findings suggest that both the individual's experience of role strain and the presence of spillover stress does not depend on fathers' coresidential status.

Limitations

There are several limitations of the present study. First, we cannot speak to causality or specify the pathways through which health limitations are associated with mothers' and fathers' parenting. Propensity score models do not avoid the possibility that unobservables may skew the results. Although we include a large number of predictors in our models predicting health, we may have missed important factors. Alternative modeling strategies, such as ordinary least squares regression, would also not address this concern. Fixed effects regression

would account for time-stable unobserved characteristics of individuals but is limited because it cannot account for reverse causality, an important concern when disentangling the association between parental health and parenting. Relatedly, health limitations are only measured at two survey waves, limiting the ability to look at multiple between-wave changes. Furthermore, it is possible this association operates directly, with health limitations directly increasing parenting stress and reducing cooperation, or indirectly through a decline in economic or other resources. Uncovering the mechanisms through which parental health limitations are linked to parenting is beyond the scope of these analyses, but is an important avenue for future research. Second, it is possible that parental health limitations began prior to our measurement of them. If health limitations existed prior to the measurement of our control variables, we may be overcontrolling for factors that result from poor health (e.g., material hardship) and thus underestimating the association between health limitations and parenting. Supplemental analyses suggest that the findings are robust to considering health limitations that emerge between the 5- and 9-year surveys, but this may not fully account for confounding associations.

Additional limitations relate to the Fragile Families sample. The sample, particularly fathers in the sample, includes a nonnegligible amount of attrition. Fathers who attrited differ in statistically significant—although small in magnitude—ways from those who remained in the sample, and on average these fathers are more disadvantaged. Although we adjust for these factors, it remains possible that the association between parental health limitations and parenting is different for those not in the sample and, therefore, attrition remains an important concern. Relatedly, the Fragile Families data are an urban sample of mostly unmarried parents. These parents, when compared with a nationally representative sample of parents, are at greater risk of having health problems and have fewer resources with which to cope with the health problems they do encounter, exacerbating the risk of stress spillover. Indeed, the comparisons of our sample to nationally representative data on work limitations indicate that our sample members experience a higher rate of health limitations (Burkhauser et al., 2014). At the same time, these families live in urban areas, enhancing their proximity to social support

and resources that families in more rural areas may lack. Thus, although these families are not a nationally representative sample, their experiences with health are instructive for our understanding of how many families deal with health and suffer from the consequences of stress spillover.

Conclusions

This article contributes to a large literature that addresses the relationship between health and family life (e.g., Garbarski, 2014; Garbarski & Witt, 2013; Hardie & Landale, 2013; Hardie & Turney, 2017; Sitnick et al., 2016; Thomeer et al., 2013; Turney, 2011a, 2011b) and on the stress process and stress proliferation perspectives (Milkie, 2010; Pearlin et al., 1981). It builds on this literature by providing the first estimates of the association between parental health limitations and the following three aspects of mothers' and fathers' parenting: parenting stress, cooperation from the other parent, and engagement. Taken together, our findings suggest that mothers' and fathers' health limitations are associated with their own parenting stress and their reports of their coparents' cooperation. Given the substantial race/ethnic and socioeconomic variation in health limitations, with health limitations disproportionately concentrated among minorities and the poor (Blackwell et al., 2015) and the importance of health as a resource (Grossman, 1972), parental health limitations may be one way inequality between families is created and sustained.

NOTE

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APPENDIX

Appendix A. Logistic Regression Models Estimating Mother's Health Limitations and Father's Health Limitations (for Estimates of Parenting Stress)

Variable	Mother's health limitations		Father's health limitations	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Health limitations of other parent	0.370	0.154*	0.528	0.212*
Mother race (reference = non-Hispanic White)				
Non-Hispanic Black	−0.170	0.170	0.197	0.216
Hispanic	−0.302	0.196	−0.056	0.255
Non-Hispanic other race	0.041	0.354	−0.760	0.587
Mother and father are mixed-race couple	0.085	0.174	0.078	0.246
Mother foreign born	−0.507	0.221*	0.038	0.291
Mother age	0.047	0.014**	0.062	0.018**
Father age	−0.002	0.011	−0.006	0.015
Mother lived with both biological parents at age 15	−0.149	0.127	−0.189	0.168
Mother and father relationship status (reference = married)				
Cohabiting	−0.264	0.215	−0.430	0.265
Nonresidential romantic	−0.733	0.374*	−0.915	0.476
Separated	0.013	0.188	0.034	0.233
Mother relationship quality	−0.022	0.055	−0.053	0.070
Father relationship quality	−0.082	0.054	0.030	0.074
Mother number of children	−0.002	0.042	−0.016	0.055
Mother educational attainment (reference = less than high school)				
High school diploma or GED	−0.217	0.162	−0.274	0.220
Some college	−0.261	0.153	−0.415	0.210*
College degree	−1.110	0.303***	−1.444	0.382***
Father educational attainment (reference = less than high school)				
High school diploma or GED	−0.075	0.146	0.019	0.203
Some college	−0.251	0.164	0.068	0.217
College degree	−0.200	0.277	0.150	0.343
Mother material hardship	0.080	0.026**	0.079	0.036*
Father material hardship	−0.082	0.032**	−0.037	0.042
Mother employed	−0.795	0.121***	−0.978	0.161***
Father employed	0.194	0.143	−0.205	2.000
Mother in poverty	0.313	0.138*	0.409	0.188*

Appendix A. Continued

Variable	Mother's health limitations		Father's health limitations	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Father in poverty	0.164	0.136	0.247	0.193
Mother cognitive ability	0.022	0.024	0.121	0.032***
Mother depression	0.903	0.133***	1.139	0.176***
Father depression	-0.331	0.184	-0.578	0.272*
Child male	-0.004	0.114	0.039	0.145
Child temperament	-0.154	0.076*	-0.161	0.080*
Parenting stress (lagged)	0.020	-0.057	-0.060	-0.113
Intercept		-2.210		-4.075
Log likelihood		-1,084		-626
<i>n</i>		3,376		2,201

p* < .05, *p* < .01, ****p* < .001 (two-tailed tests).

Appendix B. Covariate Balance After Matching on the Propensity Score

Variable	Mother's health limitations				Father's health limitations			
	Adjusted mean				Adjusted mean			
	Treatment	Control	% bias	<i>p</i>	Treatment	Control	% bias	<i>p</i>
Health limitations of other parent	0.198	0.195	0.8	0.917	0.196	0.196	-0.1	0.995
Mother race								
Non-Hispanic White	0.213	0.209	1.0	0.883	0.226	0.227	-0.2	0.980
Non-Hispanic Black	0.544	0.547	-0.5	0.940	0.552	0.551	0.2	0.979
Hispanic	0.211	0.213	-0.5	0.945	0.204	0.203	0.3	0.977
Non-Hispanic other race	0.033	0.032	0.2	0.974	0.017	0.019	-0.8	0.918
Mother and father are mixed-race couple	0.158	0.155	0.8	0.906	0.126	0.124	0.5	0.953
Mother foreign born	0.098	0.106	-2.6	0.693	0.100	0.109	-2.7	0.757
Mother age	30.754	30.660	1.5	0.834	31.500	31.421	1.3	0.896
Father age	33.351	33.276	1.0	0.890	34.243	34.057	2.5	0.796
Mother lived with both biological parents at age 15	0.343	0.359	-3.1	0.652	0.361	0.380	-4.0	0.664
Mother and father relationship status								
Married	0.246	0.250	-1.0	0.889	0.330	0.345	-3.1	0.740
Cohabiting	0.100	0.101	-0.3	0.962	0.117	0.114	1.0	0.908
Nonresidential romantic	0.025	0.026	-0.6	0.929	0.026	0.026	-0.2	0.984
Separated	0.629	0.623	1.3	0.854	0.526	0.515	2.3	0.805
Mother relationship quality	2.625	2.646	-1.4	0.837	2.996	3.006	-0.8	0.937
Father relationship quality	3.086	3.104	-1.3	0.852	3.369	3.393	-1.9	0.840
Mother number of children	2.647	2.640	0.5	0.942	2.683	2.696	-0.9	0.927
Mother educational attainment								
Less than high school	0.326	0.321	1.1	0.885	0.309	0.304	1.1	0.913
High school diploma or GED	0.241	0.250	-2.3	0.754	0.226	0.233	-1.5	0.870
Some college	0.378	0.365	2.8	0.687	0.400	0.388	2.4	0.800
College degree	0.055	0.064	-3.0	0.592	0.065	0.075	-3.1	0.680

Appendix B. *Continued*

Variable	Mother's health limitations				Father's health limitations			
	Adjusted mean		% bias	<i>p</i>	Adjusted mean		% bias	<i>p</i>
	Treatment	Control			Treatment	Control		
Father educational attainment								
Less than high school	0.328	0.322	1.3	0.859	0.274	0.277	-0.7	0.938
High school diploma or GED	0.361	0.357	0.9	0.906	0.348	0.342	1.3	0.888
Some college	0.241	0.246	-1.2	0.865	0.287	0.283	0.9	0.923
College degree	0.090	0.075	-1.6	0.796	0.091	0.098	-2.2	0.796
Mother material hardship	2.875	2.863	0.5	0.946	2.710	2.717	-0.3	0.975
Father material hardship	1.741	1.719	1.1	0.872	1.737	1.723	0.8	0.934
Mother employed	0.396	0.411	3.2	0.657	0.374	0.396	-4.5	0.631
Father employed	0.734	0.738	-0.9	0.903	0.748	0.746	0.5	0.963
Mother in poverty	0.559	0.547	2.4	0.742	0.522	0.497	5.0	0.606
Father in poverty	0.331	0.327	0.8	0.912	0.304	0.299	1.3	0.899
Mother cognitive ability	6.725	6.726	0.0	0.995	7.245	7.300	0.6	0.952
Mother depression	0.371	0.359	2.7	0.736	0.378	0.354	5.8	0.587
Father depression	0.115	0.109	1.8	0.791	0.091	0.091	0.3	0.977
Child male	0.521	0.521	0.1	0.985	0.513	0.504	1.7	0.852
Child temperament	3.266	3.286	-2.6	0.716	3.270	3.760	-1.5	0.885
Parenting stress (lagged)	2.307	2.305	0.3	0.964	2.039	2.033	0.8	0.931

Note. Postmatch estimates based on kernel matching, which matches all treatment observations to control observations by weighting control observations by their distance from treatment observations (kernel = Epanechnikov; bandwidth = 0.06).