

Paternal childcare and relationship quality: A longitudinal analysis of reciprocal
associations

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Abstract

This study explores reciprocal associations between paternal childcare involvement and relationship quality by following British couples from birth to school age of one child. It extends the literature by distinguishing between paternal engagement in absolute terms and relative to the mother and by considering relationship quality reports of mothers and fathers and family breakdown. The analysis was based on the British Millennium Cohort Study, a representative survey of children born in 2000 and 2001 and their parents (N=5,624 couples). I applied OLS regression analysis with lagged dependent variables and event history modeling. Fathers' relative childcare share was positively associated with mothers' relationship satisfaction, whereas fathers' absolute childcare frequency was positively related to their own perceived relationship quality for most periods. Fathers' relative and absolute childcare contributions were positively associated with relationship stability over preschool years. Greater perceived relationship quality of mothers, but not fathers, was associated with more frequent paternal engagement.

Keywords: Child care; Divorce; Father-child relations; Family roles; Parenthood;

Relationship quality

This study explores first how fathers' participation in childcare is associated with the quality of the relationship between mothers and fathers and with the risk of relationship breakdown of British couples from birth to school age of one of their children. Secondly, the analysis looks at the reverse association and investigates to what extent mothers' and fathers' reports of relationship quality in intact unions may facilitate or inhibit the participation of fathers in childcare. Over the past decade, the British divorce rate has been one of the highest across Europe. Among current marriage cohorts, 45 percent of British marriages were estimated to end in divorce (Wilson & Smallwood, 2008), which was similar to estimates from the US. Almost half of divorces in Britain have occurred in the first ten years of marriage, often involving children of preschool or school age. This study focuses on families with young children, as it is widely documented that marriages are most discordant during childrearing years (Cox, Paley, Payne, & Burchinal, 1999) and the association between parental separation and adverse child outcomes appears stronger when children experience their parents' separation at younger ages (Steele, Sigle-Rushton, & Kravdal, 2009). This research aims to provide new evidence to recurring debates regarding policy measures to stabilize modern families.

A large body of economic and sociological research examined under what conditions women's economic independence affects relationship stability (for a review see Amato, Booth, Johnson, & Rogers, 2007). Almost equally large is the sociological and psychological literature which investigated the associations of inequality in the division of housework or unfairness perceptions with marital quality or stability (e.g., Frisco & Williams, 2003; Kluwer, Heesink, & Vliert, 2002). Many of these studies applied a justice perspective and explored whether greater inequality in the division of housework is associated with unfairness perceptions and lower marital quality and stability. A central assumption of this perspective is

that women and men perceive housework as onerous and as something to be avoided. In contrast to housework, childcare is widely perceived as more rewarding due to the bonds parents can establish with the child and the possibility to spend (leisure) time as a family. To date, few studies have considered effects on relationship quality of childcare separately from housework. This is crucial, as the process may differ. Family systems theory (Broderick, 1993) has argued that parent-child relationships and marital relationships are interdependent. Frequent participation of fathers in childcare activities allows fathers to share the experience of parenting with their partners and to spend more time with the whole family. Both may enhance empathy and closeness of partners. The bonds between fathers and their children may also have an additional stabilizing effect on families, as very involved fathers may stay in a dissatisfying relationship longer because they want to avoid being separated from their children.

Most studies on the consequences of inequality or unfairness in the division of childcare for marital quality were based on small scale nonrepresentative psychological data (e.g., Belsky & Hsieh, 1998; Cowan & Cowan, 1992). These studies reported higher rates of breakdown among couples with unsupportive parenting interactions but usually could not control for many potential confounders. Existing large-scale longitudinal studies mostly explored the connection of parenting and relationship quality or associations with the risk of breakdown. The results were mixed. Carlson et al. (2011) found no significant effect of paternal engagement on relationship quality of American couples with young children. By contrast, Dutch studies reported a positive association of fathers' relative childcare share with mothers' relationship satisfaction (Kalmijn 1999) and of fathers' absolute childcare time with mothers' perceptions of fairness regarding the division of labor (Kluwer et al. 2002). None of these studies has explored systematically whether the process through which parenting influences relationship quality perceptions may differ between mothers and fathers.

For relationship breakdown as outcome, Kalmijn (1999) did not find support for a direct effect of fathers' relative childcare contributions on relationship stability, but he could not test the significance of fathers' absolute childcare frequency which is probably more important for bonding between father and child. Results for parents of children born in 1970 (Sigle-Rushton, 2010) as well as for recent cohorts of British couples (Author, 2010) showed a positive association between shared childcare and relationship stability but both studies did not test whether this was mediated by perceptions of relationship quality of mothers or fathers. My research extends these studies by considering how fathers' childcare involvement in absolute terms and relative to mothers' contribution are associated with perceptions of relationship quality of mothers and fathers, respectively. Furthermore, rather than focusing only on intact couples, I also explore whether fathers' childcare involvement is positively associated with relationship stability, and whether this association is direct or indirect, mediated by relationship quality.

Psychological family studies have long recognized the theoretical interdependence of partnership quality and parenting engagement of mothers and fathers. An extensive empirical literature has examined the influence of relationship quality on parenting or parent-child interaction and mostly found a positive association (for reviews see Erel & Burman, 1995; Krishnakumar & Buehler, 2000). Most existing longitudinal studies in this area, however, were based on small, nonrepresentative samples. They observed families during infancy (Belsky, Youngblade, Rovine, & Volling, 1991), or followed families for only two time points (Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004). With the exception of Carlson et al. (2011), few studies have been able to explore reciprocal associations of relationship quality and fathers' involvement with their children over longer periods of time.

These reciprocal pathways matter because they potentially create positive or negative reinforcing dynamics between marital subsystems and father-child relationships. Based on a large representative sample of children in the US, Carlson et al. (2011) identified a positive effect of a composite measure of both partners' relationship quality on parental engagement of mothers and fathers during infancy but not later on. I extend their work by considering separate associations with mothers' and fathers' perceptions of relationship quality over the early years. This seem crucial given increasing evidence that mothers may be important mediators of the relationship between fathers and children (Fagan & Barnett, 2003; Gaunt, 2008).

Theoretical framework

I conceptualize fathers' absolute levels of childcare involvement as the frequency with which fathers participate in physical care and socialization activities with the cohort child. A related but somewhat different concept refers to how various childcare activities are divided up between father and mother – this is termed fathers' relative childcare share. Unfortunately I do not have information about fathers' engagement with siblings in families with multiple children. Ideally I would like to apply a more detailed conceptualization distinguishing parents' availability, sole responsibility of one parent, and involvement in different types of activities over time, but data limitations do not allow this. Perceived relationship quality of each partner in a couple is understood to include one's happiness with the relationship as well as feelings of emotional closeness, being listened to and loneliness in the relationship. The terms relationship breakdown or separation refer to the reported end of the heterosexual couple relationship.

Family scholars have long suggested that greater empathy and companionship among partners with symmetrical roles in market work and household labor may enhance relationship

satisfaction (Scanzoni, 1978; Simpson & England, 1981). According to the family systems perspective (Broderick, 1993), when fathers and mothers both spend time with their children and experience successful parenting interactions, this could strengthen their dyadic relationship quality, for instance, through enhanced empathy and closeness of partners. By contrast, a lack of parental engagement from fathers and diverging roles in breadwinning and caregiving during the early years of parenthood may reduce empathy and the time mothers and fathers spend together, and may increase conflict and dissatisfaction with the relationship. Qualitative studies (Henwood & Procter, 2003) found that mothers are often placed at the centre stage of caring for children and fathers feel excluded from family life during the early childrearing years. Fathers probably feel more included when they frequently participate in childcare activities and share the experience of parenting with their partners. I therefore predict that *more frequent paternal childcare participation will be positively associated with an increase in perceived relationship quality of fathers (Hypothesis 1)*.

There may also be positive crossover effects of paternal childcare engagement to mothers' perceptions of the relationship but these may follow a different reasoning. For British couples with children born in 1970, Sigle-Rushton (2010) found that fathers' childcare participation was associated with more stable relationships irrespective of mothers' employment status. As employment rates of British mothers with young children have risen significantly over the past decades, the group of mothers who identify less with traditional images of motherhood may expect more active childcare involvement from their partners may have increased further. A number of scholars however have suggested that increased paternal childcare involvement may violate some wives' maternal identity and these mothers may be reluctant to share control over the only domain in which they traditionally have had power (Fagan & Barnett, 2003; Gaunt, 2008). The relationship may therefore depend on men's and women's identities

regarding their roles as mothers or fathers which constitute the standards for the division of childcare (Stets & Burke, 2000; West & Zimmerman, 1987). Discrepancies between these standards and the actual practice are expected to increase stress and frustration with the partner and to lower mothers' perceived relationship quality. In absence of direct measures of multidimensional gender identities, mothers' employment status and gender ideologies are used as proxies of mothers' identities as workers and carers. For British mothers with young children, their employment status has been found to be a good predictor of their worker identities (Houston & Marks, 2005) and a more important moderating factor than gender ideology for the association of childcare inequality with the risk of relationship breakdown (Author, 2010). I predict that *greater childcare contributions of fathers relative to mothers will be generally positively associated with changes in relationship quality of mothers. The association is likely to be less positive among mothers who agree with relatively traditional gender ideologies or mothers who have interrupted their employment to care for their children fulltime (Hypothesis 2).*

The level of childcare involvement of fathers in absolute terms and relative to the mother is expected to impact on the risk of separation through the predicted associations with relationship quality of mothers and fathers, as outlined above (Hypothesis 3). In addition, fathers' investment in the relationship with their children may have a direct positive effect on relationship stability. Relationship breakdown is emotionally more costly for fathers and mothers who have invested a lot in less transferable relationship specific skills, which are usually involved in caring for children (England & Kilbourne, 1990). As over 90 per cent of divorced mothers have custody of their children after divorce in the UK (Department for Work and Pensions, 2008), most couples will expect the mother to be the resident parent on separation and fathers to have less time with their children after couples split. Fathers who

previously spent more time and established closer bonds with the children will want to avoid being separated from them more than fathers who did not play an important part in their children's lives. I expect that *even after controlling for the association with relationship quality, more frequent involvement of fathers in childcare activities will be positively associated with parental relationship stability (Hypothesis 4).*

According to family systems theory, the relationship between mother and father impacts on each parent's interaction with the child (Aldous, 1996; Belsky et al., 1991). This is supported by a large body of empirical evidence (for reviews see Erel & Burman, 1995; Krishnakumar & Buehler, 2000). I differentiate two pathways of how parents' relationship quality may affect fathers' participation in childcare. In the psychological literature, these have been termed the spillover and the crossover effects of couple's relationship quality on parent-child interactions. Firstly, fathers who are more satisfied with their relationship and feel close to the mother will want to spend more time with and be involved in the family. Positive emotional interactions with the partner have been found to make fathers more responsive to their children (Cummings & Davies, 1994). By contrast, marital conflict and dissatisfaction may lead fathers to distance themselves from their partners as well as their children (Gottman, 1994), resulting in lower participation in childcare (Volling & Belsky, 1991). I predict that *fathers who are more satisfied with their relationship and feel a closer emotional bond with their partners will be more frequently involved in childcare (Hypothesis 5).* The expected association of fathers' and mothers' reports of relationship quality with fathers' relative childcare share is less clear. All or part of the increase in paternal childcare frequency may happen through joint family time with the mother and may not result in a higher relative childcare contribution of the father.

Secondly, mothers are important mediators of father-child interactions. Mothers who are satisfied with their relationship may promote father-child interaction because they think it is important to foster the relationship between fathers and children. Conversely, mothers who are unhappy in their relationship may act as gatekeepers by setting unachievable standards, criticizing and doubting fathers' childcare competences (Fagan & Barnett, 2003; Gaunt, 2008). I expect that *greater perceived relationship quality of mothers will be positively associated with fathers' absolute childcare participation (Hypothesis 6)*.

To reduce the risk that other characteristics jointly determine paternal childcare participation and relationship quality of couples, I control for a number of factors which have been found to correlate with these outcomes. Relationship quality or stability and fathers' childcare involvement have been found to be higher and the risk of relationship breakdown lower in married couples, in younger couples with shorter relationship durations, in couples where the child is male, and in households with more children and without stepchildren (for reviews of divorce risk factors, fathering, and families with young children see Aldous, Mulligan, & Bjarnason, 1998; Amato, 2010; Demo & Cox, 2000). Educational attainment has also been found to correlate positively with relationship quality, stability and father involvement in childcare (Kalmijn, 1999). Previous studies also suggested that fathers may be more involved in childcare and relationships may be less stable when women are older and more educated than their partners (e.g., Ott, 1992; Steele et al., 2009). The labor market status of mothers, unemployment spells of fathers, overall household income and financial dependency between partners may impact on childcare arrangements and relationship quality (e.g., Cooke & Gash, 2010; Rogers, 2004). Untypical work hours of the mother have also been found to increase paternal childcare and disrupt family life (Presser, 1994). Other correlates include differences

in mothers' and fathers' gender ideologies (Sanchez, Manning, & Smock, 1998), domestic violence and difficult child temperament (Demo & Cox, 2000).

Method

The data were drawn from the first 4 waves of couple responses in the Millennium Cohort Study (MCS). The MCS was based on a probability sample of babies born between September 2000 and January 2002 in households across the UK. Mothers and their partners were interviewed when the children were aged approximately 9 months (T1), 3 years (T2), 5 years (T3) and 7 years (T4). In addition to histories of respondents' relationships, births, and employment, the MCS has asked questions on relationship quality and childcare at each of the four time points (T1 - T4) of the survey.

I used regression analyses and structural equation modeling (SEM) to explore reciprocal associations between paternal childcare and relationship quality from when the cohort child was 9 months to 7 years of age. The first three waves (T1 - T3) of the survey contained multiple measures of relationship quality and absolute or relative contributions of fathers to the care of one cohort child, respectively. At T4, multiple childcare measures were available but only one question on relationship satisfaction was asked. Most of the questions on childcare focused on the cohort child and on childcare activities specific to the child's age, resulting in different questions at each wave. This is likely to reduce measurement error as opposed to more general questions but it limited the possibilities to apply statistical methods which control for fixed unobserved heterogeneity. I constructed a longitudinal measurement model of relationship quality and paternal childcare based on ordinal observed indicators using Lisrel 8.8. This required fixing thresholds for each ordinal variable and holding the thresholds and factor loadings for repeated measures constant over time (for details on structural equation modeling with ordinal variables see Jöreskog, 2005). As this method

cannot be combined with a large number of control variables in Lisrel, I used the factor loadings from the measurement model to construct composite measures of relationship quality and childcare and used these in OLS regression analyses. Control variables were crucial in this study, as the division of childcare and relationship quality of couples may be jointly determined by other factors. I compared the OLS regression results with a SEM without controls for T2 and T3. I found the same statistically significant relationships with both methods (details of the SEM without controls are available on request). Correlated errors in the responses to relationship quality and childcare questions measures therefore did not seem to bias the OLS results significantly.

To reduce endogeneity issues, all explanatory and control variables were measured at the previous wave or earlier. To reduce the risk of stable unobserved characteristics, such as personality traits, that might influence relationship quality and paternal childcare involvement, I focused on (approximate) change since the previous survey wave. If possible, I included lagged dependent variables, and otherwise proxies for these in all models. I also accounted for the partner's reports of relationship quality at the previous wave to control for other fixed unobserved factors in the relationship, such as styles of communication. By examining reciprocal associations of paternal childcare and relationship quality, I also explored the risk of reverse causality and joint determination. Despite these precautions and the large number of controls included, I cannot completely eliminate the risk that other unobserved characteristics may influence the division of childcare and couples' reports of relationship quality.

For the analysis of relationship breakdown, I applied Cox proportional hazard models, as the duration dependency of the baseline hazard was not the focus of this paper. As the measure of

childcare differs at each interview, I could not use a time varying childcare covariate in a model of separation risk from birth until the child is 7 years old. To be able to include the most recent measure of paternal childcare at the previous wave, I modeled the risk of relationship breakdown from (a) T1 to T2, (b) T2 to T3, and (c) T3 to T4. The proportional hazard assumption was tested for all models.

I observed 12,544 couples who lived together at the time of the birth of the cohort child and where both partners gave an interview at the first observation when the child was approximately 9 months old. For 10,480 of these, at least the mother was interviewed again two years later. I observed 566 parental separations between T1 and T2, 461 between T2 and T3, and 450 between T3 and T4. I carried out separate analyses of the associations between paternal childcare and relationship quality or stability for subgroups by marital status and birth parities but found no significant variations. Attrition reduced the sample sizes to 8,517 (T2), 6,997 (T3) and 5,753 couples (T4). To account for attrition bias, I applied combined sample design and nonresponse weights at each respective time period to adjust for the stratified clustered sample design and for systematic unit nonresponse. 38 percent (T2), 40 percent (T3) and 33 percent (T4) of couples had incomplete responses to some of the questions. The sample sizes after item nonresponse were 5,268 (T2), 4,146 (T3), and 3,871 (T4). I compared results using multiple imputations through chained equations to test the risk of sample bias because of item nonresponse. However, as the results were not substantively different, models using the sample with complete responses are reported (the imputation results are available on request).

Measures and descriptive statistics

To measure relationship quality at T1 to T3, I used responses of mothers and fathers to questions measured on a 5-point Likert scale: (a) if the partner is sensitive and aware of their

needs, (b) if the partner listens, (c) if they ever feel lonely in presence of the partner, and (d) if they suspect that the relationship is on the brink of separation. A fifth question asked respondents how happy they are with the relationship on a 7-point scale. At T4, only the question about happiness with the relationship was available. This question may be subject to social desirability bias and less suitable to detecting change over time and therefore lead to underestimation of the associations with fathers' relative and absolute childcare contributions. α of above 0.8 indicated that the five items can be combined into one measure with reasonably high internal consistency. I used the factor loadings from a longitudinal measurement model for ordinal variables from T1 to T3 to create one relationship quality indicator for women and one for men. The same thresholds and factor loadings are applied across the three time periods. Higher values represent greater perceived relationship quality. I rescaled the composite measures to a 10-point scale. I also tested all the models with a composite relationship quality variable excluding the 'on brink of separation' item and the results did not vary qualitatively. Based on Table 1, relationship quality has been relatively stable over time. However, these mean values included couples who separated between T1 and T3 and probably had lower relationship quality already before the relationship breakdown. Among couples which remain intact from T1 to T3, relationship quality declined slightly by 0.25 and 0.3 points (10-point scale) for mothers and fathers, respectively.

Relationships were recorded as ending in separation when the main respondent (usually the mother) indicated that the relationship with the partner who she was living with at the last wave has ended. The timing of separation was calculated as the reported month when the partner left the shared household. One limitation of this measure is that relationship breakdown may have occurred some time before one partner physically moved out. Unfortunately a more accurate date of separation was not available in the data.

<Table 1 about here>

To construct composite measures of fathers' absolute childcare involvement, I used multiple items at each interview from T1 to T4 asking about the frequency with which the father performed age specific childcare tasks with the cohort child. The items covered the following tasks: sole childcare, changing diapers, feeding at T1; reading, putting the child to bed, and playing at T2; story telling, reading, playing music, painting, games, outdoor activities, walks, sole childcare, and putting the child to bed at T3; story telling, playing music, painting, games, outdoor activities, walks, sole childcare, putting the child to bed at T4. In families with twins or triplets in this cohort, I used the answers given for the first cohort child, as fathers' childcare involvement was very similar among twins or triplets. Fathers were given six different answer options ranging from every day to never. To reduce the number of zero cells in frequency tables which are problematic for the ordinal measurement model, I combined the categories 'less than once a week' and 'never'. I treated them as ordinal variables as the categories do not refer to equal distances in frequencies. α ranged from 0.6 for T2 to 0.75 for T3 and about 0.8 for T1 and T4, respectively. Spearman's rank correlation coefficients showed high correlations of all the variables at each time point. I therefore combined them into a composite measure of paternal childcare frequency.

A second variable was constructed to capture fathers' childcare contribution relative to mothers'. Mothers were asked who was mostly responsible for childcare overall and for specific tasks at T1 and T2, respectively. Two questions at T1 and T2 asked how childcare for all children in the household was divided up (childcare overall and looking after ill children), whereas 2 items at T1 and 1 item at T2 focused only on childcare tasks relating to the cohort child (changing diapers and feeding at T1, and reading at T2). Mothers were given the answer

options ‘mostly the mother’, ‘mostly the father’, ‘both share equally’, or ‘mostly someone else’. The latter were excluded and as very few people answered ‘mostly the father’, I created a combined category of couples where the father shared equally or performed more childcare than the mother. The Kuder-Richardson Coefficients – the equivalent of α for binary variables – was 0.8 for T1 and 0.6 for T2. One caveat of these relative childcare measures at T1 and T2 was that mothers who are unhappy with the relationship may be less willing to acknowledge their partners’ caregiving contributions. For T3 and T4, I calculated how often the father performed various childcare tasks relative to the mother (each respondent reported only her own frequency). The items covered the following tasks: reading, story telling, music, painting, indoor games, outdoor activities, and going for walks at T3; story telling, music, painting, indoor games, outdoor activities, and going for walks at T4. I distinguished couples where fathers performed an activity more frequently than mothers, parents who shared equally, fathers who provided some help with childcare, and couples where mothers did all of that task (α was above 0.7 and spearman ranks showed highly significant correlations). The responses for all the items were multiplied by the factor loadings and summed up in each period. I rescaled the composite measures of paternal childcare frequency and fathers’ relative childcare share to a 10-point scale.

To illustrate the means of paternal childcare frequency and fathers’ childcare share shown in Table 1, I looked at some of the underlying manifest variables. Fathers on average changed diapers and fed their 9 month olds several times a week. They played with their 3 year olds once and day and put them to bed and read to them several times a week. At T3 and T4, fathers participated in about half of the activities, such as playing indoors and outdoors, several times a week. They were less frequently involved in going for walks, playing music, storytelling and painting. In couples with average relative childcare shares of fathers, mothers

were mostly responsible for all the tasks at T1 and T2 except for reading to the child. At T3 and T4, fathers engaged in outdoor activities with children more often than mothers. Playing games, reading, storytelling and going for walks were on average shared by couples, whereas painting and playing music with children remained more the responsibility of the mother.

I constructed interaction terms of fathers' childcare share with mothers' labor market status and gender ideologies. I differentiated between not working for pay, parttime and fulltime employment. Mothers' gender ideology was only measured at T1. I summed two attitude statements asking respondents whether they agree or disagree (strongly) with (a) children suffer if the mother work fulltime (reversed scale), and (b) the woman and the family are happier when she works. I tested interaction terms with a continuous variable as well as with a categorical measure differentiating women with relatively traditional, moderate and egalitarian gender ideologies.

Control variables in all models included unemployment spells of fathers, mothers' hourly wage rates relative to the sum of both partners' wages (below 40 percent, between 40 and 60 percent, and above 60 percent) and the log of the sum of both partners' monthly earnings. A dummy variable indicated whether the mother worked on weekends at least once a month. I also controlled for women's employment status during pregnancy as a proxy for their work orientation and labor market attachment and the difference in gender ideologies between partners. Moreover, I included a measure of the woman's attitudes towards divorce. A dummy variable indicating whether the father was present at the birth of the cohort child was included as a proxy for his interest in having a family and being involved with the child.

In all models, I controlled for the couple's marital status at the birth of the child, time since the couple started living together, mothers' ages, the age difference between partners, the gender of the cohort child, the number of children, the number of stepsiblings in the same household, whether the couple had another birth since the last wave, and the ethnicity of both parents. I also considered the age when the respondent left fulltime education and the difference in years of fulltime education between the mother and the father to control for the level of education and mating heterogamy. Binary indicators for whether the child was born through caesarean section or had low birth weight were considered to account for difficult recovery periods for the family following the birth. To differentiate the effect of paternal childcare participation from fathers' contributions to housework, I also tested a composite measure of the division of housework at T1. Unfortunately these housework questions were not available in later years. For the analysis of relationship quality and paternal childcare at T3 and T4, I tested two measures of difficult child temperament collected at T2. I also considered whether the partner had ever used force on the mother and differences in parenting attitudes between mothers and fathers (five questions). Neither the division of housework, child temperament, nor domestic violence or partner differences in parenting attitudes reached statistical significance in any of the models. They were therefore excluded in the final models.

Results

More involved fathers, happier relationships?

The results of OLS models of relationship quality of fathers and mothers are reported in Table 2. From T1 to T3, all models include a lagged dependent variable and they can therefore be interpreted as the change in relationship quality since the last wave. Due to variations in the childcare measures over time, however, I can only observe associations with childcare levels. At T4, the dependent variable is happiness with the relationship and is not equivalent to the measures of relationship quality of earlier periods. In the first modeling step to test

Hypotheses 1 and 2, I included measures of paternal childcare frequency and fathers' relative childcare contribution in models of fathers' and mothers' relationship quality for each time period. I compared the model result when the childcare variables were included separately or jointly. As there were no substantive differences, I included both variables in the same models. Variance inflation factors also did not indicate multicollinearity issues. In a second step, interaction terms between fathers' relative childcare share and mothers' labor market status and gender ideology, respectively, were tested at each point in time. Due to space limitations, detailed regression results were reported only for the variables which were central to the research questions and showed some statistically significant results.

As shown in Model 1 in Table 2, I found no significant association of father's absolute involvement in childcare at T1 with the change in their own reported relationship quality from T1 to T2. Fathers who were more frequently involved in childcare at T2 and T3, however, reported smaller declines in relationship quality from T2 to T3 and greater happiness with the relationship at T4 (only marginally significant). An increase in fathers' involvement in childcare by one standard deviation was associated with higher perceived relationship quality by 0.06 from T2 to T3. If fathers were to increase their involvement in all activities from less than weekly to every day, this would be associated with an improvement in relationship quality by about 0.5 on a ten point scale. These modest associations provided some support for Hypothesis 1.

<Table 2 about here>

In line with Hypothesis 2, a more equal division of childcare in T1 was positively associated with the change in mothers' perceived relationship quality from T1 to T2 and from T2 to T3 (Table 2, Model 2). A one standard deviation increase in fathers' childcare share was associated with a rise in the reported relationship quality of mothers by 0.07 on a ten point

scale at T2 and T3, respectively. The strength of these associations was modest but equivalent to one third of the decline in relationship quality of mothers from T1 to T3. The division of childcare was not significantly associated with mothers' happiness with the relationship at T4. In contrast to Hypothesis 2 which also predicted a more negative association among nonemployed mothers, I found a slightly stronger positive association among mothers who did not work for pay compared to mothers who worked fulltime. The interaction term however was only statistically significant at T3 (models available from the author). The interaction terms with mothers' gender ideologies did not reach statistical significance in any of the models (models not shown). Hypothesis 2 was therefore only partially supported. Comparisons between adjusted R^2 of baseline models of relationship quality of mothers and fathers with just controls (not shown) and models which included fathers' relative and absolute childcare participation showed slightly increased explanatory power.

More involved fathers, more stable relationships?

An increase in fathers' childcare share by one standard deviation at T1 was associated with a 20 percent lower risk of separation from T1 to T2 (see Table 3, Model 4). The size of this association was equivalent to the difference between married and cohabiting couples or to three additional years of fulltime education for women. A one standard deviation increase in the frequency of childcare involvement of fathers at T2 was associated with a reduced risk of separation by 14 percent from T2 to T3. In this model, the strength of this association was equivalent to two additional years of fulltime education for women. At T4 fathers' childcare share or paternal childcare frequency was not significantly associated with family instability. Similar to the results for relationship quality, I found no significant interaction effects with mothers' labor market status and gender ideologies (models not shown).

As a next step, I tested Hypothesis 3 against Hypothesis 4. The former expected relationship quality to have a mediating role, whereas the latter predicted an additional direct positive association of paternal childcare involvement with relationship stability. I included lagged reports of relationship quality of mothers and fathers in separate modeling steps. In Table 3, only the models which eliminated the significant association with childcare are reported. Fathers' childcare share ceased to be significant for the risk of breakdown from T1 to T2 after including mothers' assessments of relationship quality but not when fathers' reports were included (Model 5). For the risk of separation between T2 and T3, controlling for fathers' relationship quality reports reduced the association with paternal childcare frequency to nonsignificance. In line with Hypothesis 3, these results suggested that relationship quality mediated the association of fathers' absolute and relative childcare participation with relationship stability from T1 to T3. I did not find any support for a direct association, as predicted by Hypothesis 4.

<Table 3 about here>

Happier relationships, more involved fathers?

Table 4 shows OLS regressions exploring the association of mothers' and fathers' reports of relationship quality with fathers' absolute childcare frequency and their relative childcare share, respectively. Father's relative or absolute involvement in caring for the cohort child at the last wave was included to control for some stable unobserved characteristics associated with childcare arrangements over time. However, one should note that the childcare measures were not comparable over time. Both partners' reports of their relationship quality in the previous period were included in each model. Variance inflation factors did not indicate multicollinearity problems.

Fathers' perceptions of relationship quality were not significantly associated with childcare arrangements in all the models after mothers' reports were accounted for (Table 4, Model 6). Hypothesis 5 regarding fathers' greater willingness to contribute to childcare when they are happier with the relationship therefore had to be rejected. Mothers' reports of greater relationship quality were positively associated with changes in fathers' absolute and relative contribution to childcare of the cohort child from T1 to T2. For the two later periods, mothers' relationship quality was positively associated with paternal childcare frequency but not with their relative childcare share. This provided some support for Hypothesis 6, suggesting that mothers' satisfaction with the partnership may be an important influence on frequent involvement of fathers with children. An increase by one standard deviation in the assessments of relationship quality of mothers was associated with a rise in paternal childcare involvement by 0.1 from T1 to T2 and by about 0.05 from T2 to T3 and from T3 to T4. On a ten point scale these associations were very modest. However, they were of a similar size as associations with the child's gender, which was the only other consistently significant predictor. Fathers of sons were more frequently involved in childcare activities than those of daughters across all three observation periods. Figure 1 gives a graphical representation of all statistically significant associations based on the chains of OLS regressions.

<Table 4 about here>

<Figure 1 about here>

Discussion

This research contributed to the literature by proposing a more detailed specification of how the relative and absolute involvement of fathers in childcare may impact on relationship quality in British couples and reversely. I presented evidence suggesting that the process of how paternal childcare relates to relationship quality differs between mothers and fathers. I also found variations depending on the age of the child. During preschool years, mothers

whose partners contributed relatively more to childcare were more satisfied with the relationship and these couples had a lower risk of relationship breakdown. Fathers' frequent participation in activities with the cohort child was positively associated with increases in their own relationship satisfaction only from age 3 of the cohort child. It was associated with a lower risk of breakdown only until school age. When mothers were happier with the relationship, this was associated with more frequent childcare participation of fathers throughout the observation period but it was correlated with a higher relative childcare share of fathers only in the early years. Fathers' own perceptions of relationship quality were not significantly associated with their childcare involvement.

In contrast to a recent US study by Carlson et al. (2011), the results of this research suggest some significant associations of paternal childcare engagement with parents' relationship quality. The differences may be due to the fact that Carlson et al. (2011) did not differentiate between relative and absolute childcare involvement of fathers. They also used a combined measure of parents' relationship quality and excluded couples who split up during the preschool years of the child. Their research design may have masked differences in the effects on mothers and fathers and may have resulted in underestimation of the association of paternal childcare with relationship quality. Alternatively, the effect sizes they found may have been smaller because they applied a (continuous) structural equation model with control variables or the differences may reflect crossnational variations between the US and Britain. Possibly, fathers' involvement in childcare may be more central to evaluations of the couple relationship among British mothers and fathers than among parents in the US. Contextual differences in expected and actual paternal childcare frequency may be influenced by the somewhat shorter work hours, the greater availability of paternity leave and other family friendly arrangements for fathers in the UK compared to the US (Hook, 2006).

The finding that mothers reported greater relationship quality and seemed to face a lower risk of dissolution when they shared caring for the cohort child with the father during preschool years is in line with previous results from the Netherlands and the UK (Kalmijn, 1999; Kluwer et al., 2002; Sigle-Rushton, 2010). Mothers' employment or gender ideologies did not moderate the association of fathers' childcare share with mothers' satisfaction with the relationship or family stability. This contrasts with several studies on housework inequality in the US and on the division of childcare in the UK (Author, 2010; Pina & Bengtson, 1993; Wilkie, Ferree, & Ratcliff, 1998), but conforms with Sigle-Rushton (2010). This may suggest that either mothers' identities are less important for the influence of childcare on relationship quality than for housework or that the available employment and gender ideology measures are less adequate to measure identities relating to childcare and parenting. One may speculate that the nonsignificant association of fathers' childcare share with mothers' happiness with the relationship at T4 may be explained by the decreasing childcare intensity when children reach school age, which makes fathers' frequent help less crucial. Furthermore, many couples where fathers took over less childcare than mothers' wished may have separated by T3 resulting in less variation among the remaining couples.

Fathers who were more frequently involved in childcare were happier with the relationship from age 3 to 7 of the cohort child but not during the early years. This provides some support for the argument that greater father involvement in childcare makes fathers feel closer to their partners and more included in family life. The nonsignificance of this association before age 3 could be linked to fathers perceiving the care for infants as more exhausting and less leisurely, especially as infant care limits parents' autonomy more than looking after older children. Alternatively, couples where fathers frequently take care of their 9 months old may be a more

select group in terms of unobserved pressures on the mother or the family, which may reduce any positive influences of shared childcare.

In line with other UK studies (Sigle-Rushton, 2010; Author, 2010), a greater relative childcare share of fathers at T1 and more frequent paternal childcare at T2 were associated with a lower risk of relationship breakdown. Consonant with Kalmijn (1999), I found support for a mediating role of relationship quality and no evidence of a direct association of paternal childcare with the risk of breakdown after controlling for relationship quality. To improve our understanding of the underlying mechanisms for how relationships benefit from the experience of shared parenting responsibility or from spending more time together as a family, future research should consider potential mediating factors, such as how couples negotiate parenting decisions and how much leisure time is spent as a family and use more suitable measures of identities relating to gender and parenting. Another promising extension would be to distinguish different subgroups of couples depending on the patterns of change in relationship quality and in the division of childcare over time.

Greater relationship satisfaction of mothers was consistently associated with more frequent subsequent participation of fathers in childcare activities, whereas it was associated with a larger childcare share of fathers only in the early years. This may suggest that greater satisfaction of mothers lowers their own contribution to childcare only when they are most pressed for time, such as during infancy. Possibly when children are older and need somewhat less care, a larger percentage of the childcare time is spent as family time with both partners and therefore greater participation from fathers does not decrease mothers' childcare contribution. Alternatively, fathers' greater participation in childcare with the cohort child may have been small compared to the total amount of childcare performed by mothers,

especially when there are younger siblings to care for. The stronger association with the satisfaction with the relationship reported by mothers than by fathers is consistent with a previous study (Harris & Morgan, 1991), whereas other US research found significant associations with both parents' reports (Belsky et al., 1991; Volling & Belsky, 1991). The results are only partly consonant with Carlson et al (2011), who found a positive effect of parents' relationship quality on paternal engagement with children only during the early years. Again this variation may be due to differences in the measurements or method. They used a structural equation model with a combined relationship quality measure for couples which may attenuate the associations more than separate OLS models of mothers' and fathers' relationship satisfaction. Greater relationship satisfaction of fathers was not significantly associated with more frequent subsequent childcare participation of fathers after controlling for mothers' evaluations of the couple relationship. Mothers' reports of relationship quality may be more important than fathers' because in many families mothers are mainly responsible for organizing their children's time, juggling different types of childcare and planning family activities. Possibly more satisfied mothers feel more comfortable to leave infants in fathers' care. They may also plan more frequent family activities and encourage fathers to take part in leisure activities with children. Differentiating between the effects of mothers' and fathers' relationship perceptions seems important for future research to further explore potential underlying mechanisms.

An important limitation of this study was that the childcare measures for the most part focused on one cohort child. In families with children of different ages, fathers may be more likely to care for older children or less likely to care for newborn siblings. These relationships could not be detected by this analysis. One should also note that the associations identified in the regression analysis and event history models cannot be interpreted as causal. Suitable

instrumental variables were not available. Due to the variations in the available childcare measures over time, I was also unable to apply statistical methods to control for selection due to stable unobserved influences affecting paternal childcare and relationship quality. By exploring reciprocal effects, I attempted to better understand the risk of reverse causality or joint determination of both processes. As fathers' relationship quality was not significantly associated with their childcare involvement after controlling for mothers' relationship quality reports, one may infer that reverse causality or correlated measurement errors were unlikely to be driving factors of the positive association of paternal childcare frequency with fathers' relationship quality.

Identifying the positive association of paternal childcare with relationship quality and stability matters, in particular in modern societies with increasingly gender egalitarian ideals and high rates of family breakdown. Unhappy and unstable parental relationships usually result in significant economic and emotional costs for parents and children in these families as well as social costs of protecting individuals, usually mothers and children, against poverty following family splits. By considering associations of paternal engagement in absolute terms and relative to the mother with relationship quality reports of mothers and fathers and family breakdown, this research provides the first more detailed evidence of how these processes may operate differently for mothers and fathers and vary as children get older. The results also suggest that mothers may have a key role in promoting fathers' involvement in childcare during the early years. Overall, the findings point to strong interdependence of relationships between fathers and children and between mothers and fathers. Policy interventions to strengthen family relationships may need to aim at improving men's availability and capacity to care for their children as well as the capacity of couples to form and maintain satisfying relationships, in particular after they have children.

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Table 1: Descriptive Statistics (T2: N=5,268, T3: N=4,146, T4: N=3,871)

	T1		T2		T3		T4	
	Mean/ Perc.	SD	Mean/ Perc.	SD	Mean/ Perc.	SD	Mean/ Perc.	SD
Relationship quality of mothers ^a	7.91	1.63	7.89	1.71	7.8	1.74		
Mothers' happiness with relationship ^b							4.81	1.36
Relationship quality of fathers ^a	7.97	1.48	8.22	1.52	8.05	1.63		
Fathers' happiness with relationship ^b							4.95	1.31
Fathers' childcare share ^c	3.25	3.54	3.87	3.48	4.11	1.31	4.36	1.56
Fathers' childcare frequency ^c	6.85	2.13	7.21	1.44	6.30	1.30	6.01	1.35
Marital status at birth	72.69							
Years living together	6.69	3.93						
Age of mother	33.55	5.14						
Years mother older than father	-2.43	4.50						
Cohort child is male	50.86							
No. children	1.89	0.97						
No. stepsiblings	0.09	0.29						
New birth since last wave	28.34							
Both White origin	88.89							
Both Indian, Pakistani or Bengali	5.43							
Both Black, other or mixed origin	4.68							
Gender egalitarianism of mother	3.03	0.81						
Egalitarianism of mother - father	0.13	0.88						
Liberalism in divorce attitudes of mother	3.05	0.96						
Father present at birth	93.93							
Age mother left full-time education	17.99	2.54						
Age father left full-time education	17.73	2.73						
Mother works full-time	14.59							
Mother works part-time	37.37							
Mother not working for pay	48.04							
Father not working for pay	8.49							
Mother earns less than father	56.92							
Equal earners	32.02							
Mother earns more than father	11.03							
Log of household income	7.43	1.14						
Mother worked on weekends	7.65							
Mother worked during pregnancy	73.37							
Birth by Caesarean section	23.05							
Baby had low birth weight	9.29							

Note: T1=cohort child approx. age 9 months, T2=age 3 years, T3=age 5 years, T4=age 7 years. ^apositive values indicate greater relationship quality, scale: 1 - 10; ^bpositive values indicate greater happiness with the relationship, scale 1 - 7. ^cScales for fathers' childcare share and frequency range from 1 - 10.

Table 2: OLS Regression Analysis of Relationship Quality at T2 (N=5,268) and T3 (N=4,146), and Happiness with the Relationship at T4 (N=3,871) of Fathers and Mothers

(A) Fathers	<i>M1 - Relationship quality^a</i>		<i>M1 - Relationship quality^a</i>		<i>M1 - Happiness w. relationship^b</i>	
	T2 ^c		T3 ^c		T4 ^c	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Fathers' childcare share	-0.01	0.01	-0.00	0.01	-0.01	0.02
Fathers' childcare frequency	-0.01	0.02	0.04*	0.02	0.03†	0.02
Mothers' relationship quality	0.10***	0.01	0.10***	0.02	0.06***	0.01
Fathers' relationship quality	0.50***	0.02	0.58***	0.02	0.33***	0.02
<i>Adj. R²</i>	0.26		0.32		0.21	
(B) Mothers	<i>M2 - Relationship quality^a</i>		<i>M2 - Relationship quality^a</i>		<i>M2 - Happiness w. relationship^b</i>	
	T2 ^c		T3 ^c		T4 ^c	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Fathers' childcare share	0.02*	0.01	0.02*	0.01	-0.02	0.02
Fathers' childcare frequency	0.01	0.01	0.02	0.02	0.01	0.02
Mother works full-time	-0.09	0.11	-0.20*	0.10	0.03	0.08
Mother works part-time	0.03	0.09	-0.07	0.07	-0.00	0.05
Mother not in paid work - omitted						
Mothers' relationship quality	0.55***	0.02	0.57***	0.02	0.26***	0.01
Fathers' relationship quality	0.09***	0.02	0.10***	0.02	0.08***	0.01
<i>Adj. R²</i>	0.30		0.35		0.21	

Note: T1 = cohort child approx. age 9 months, T2 = age 3 years, T3 = age 5 years, T4 = age 7 years. All explanatory variables were lagged by one wave (approximately 2 years). All models included controls for marital status at birth, relationship duration, age of the mother, age difference between partners, cohort child's gender, number of children and stepsiblings, new sibling, ethnicity, mothers' gender ideologies, difference in attitudes between partners, mothers' divorce attitudes, whether father was present at birth, age when the mother left fulltime education, educational differences between partners, mothers' employment status, unemployment of father, mothers' relative earnings, log of household income, whether mothers work on weekends, employment status during pregnancy, type of delivery, and low birth weight of the baby.

^apositive values indicated greater relationship quality, scale: 1 - 10; ^bpositive values indicated greater happiness with the relationship, scale 1 - 7.

† $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3: Cox Proportional Hazard Models of the Risk of Relationship Breakdown from T1 to T2 (N=5,624), T2 to T3 (N=4,338), and from T3 to T4 (N=4,123)

Variable	M4 - Risk of relationship breakdown						M5 - Risk of relationship breakdown					
	T2		T3		T4		T2		T3		T4	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Fathers' childcare share	-0.06*	0.02	-0.01	0.03	-0.07	0.07	0.00	0.02	0.01	0.03	-0.08	0.07
Fathers' childcare frequency	0.03	0.03	-0.10*	0.05	0.09	0.09	0.04	0.06	-0.04	0.07	0.18	0.09
Mothers' relationship quality ^a							-0.41***	0.04				
Fathers' relationship quality ^a									-0.31***	0.03	-0.39***	0.05
<i>n</i> separations	356		242		252		356		242		252	

Note: T1 = cohort child approx. age 9 months, T2 = age 3 years, T3 = age 5 years, T4 = age 7 years. All explanatory variables were lagged by one wave. All models included controls for marital status at birth, relationship duration, age of the mother, age difference between partners, cohort child's gender, number of children and stepsiblings, new sibling, ethnicity, mothers' gender ideologies, difference in gender ideologies between partners, mothers' divorce attitudes, whether father was present at birth, age when the mother left fulltime education, educational differences between partners, mothers' employment status, unemployment of father, mothers' relative earnings, log of household income, whether mothers work on weekends, employment status during pregnancy, type of delivery, and low birth weight of the baby.

^apositive values indicated greater relationship quality, scale 1 - 10

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

Table 4: OLS Regression Analysis of Fathers' Childcare Share and Fathers' Childcare Frequency at T2 (N=5,268), T3 (N=4,146), and T4 (N=3,871)

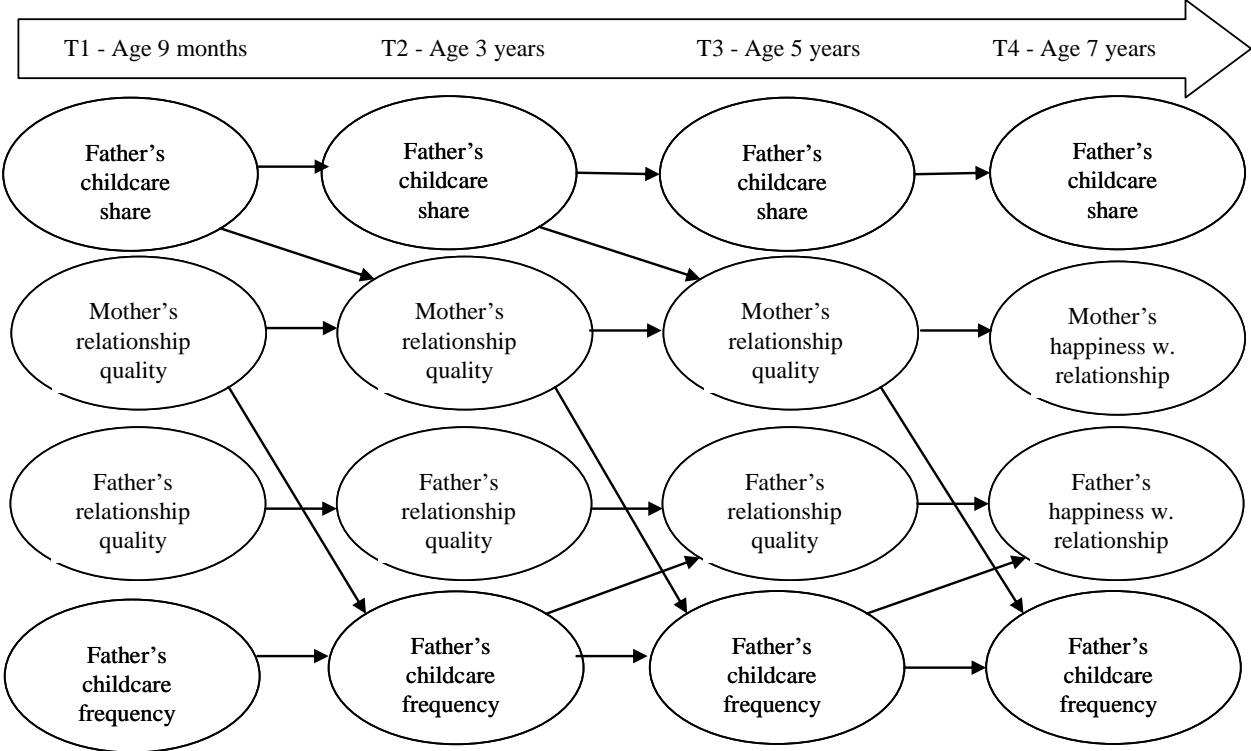
Variable	M5 - Fathers' childcare share						M6 - Fathers' childcare frequency					
	T2		T3		T4		T2		T3		T4	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Mothers' relationship quality ^a	0.08**	0.03	-0.01	0.01	0.00	0.01	0.05***	0.01	0.03**	0.01	0.02*	0.01
Fathers' relationship quality ^a	-0.02	0.03	0.01	0.01	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Fathers' childcare share	0.42***	0.01	0.08***	0.01	0.52***	0.02						
Fathers' childcare frequency							0.19***	0.01	0.43***	0.02	0.66***	0.02
<i>Adj. R</i> ²	0.28		0.15		0.21		0.14		0.30		0.43	

Note: T1 = cohort child approx. age 9 months, T2 = age 3 years, T3 = age 5 years, T4 = age 7 years. All explanatory variables were lagged by one wave (approximately 2 years). All models included controls for marital status at birth, relationship duration, age of the mother, age difference between partners, cohort child's gender, number of children and stepsiblings, new sibling, ethnicity, mothers' gender ideologies, difference in gender ideologies between partners, mothers' divorce attitudes, whether father was present at birth, age when the mother left fulltime education, educational differences between partners, mothers' employment status, unemployment of father, mothers' relative earnings, log of household income, whether mothers work on weekends, employment status during pregnancy, type of delivery, and low birth weight of the baby.

^apositive values indicated greater relationship quality, scale 1 - 10

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

Figure 1: Summary of Statistically Significant Associations of Relative and Absolute Paternal Childcare and Relationship Quality of Mothers and Fathers



Note: Controls were included in each model. Black arrows mark statistically significant and positive associations. Larger values of fathers' childcare share and fathers' childcare frequency represent greater relative and absolute childcare contributions from fathers. Larger values of relationship quality represent more positive assessments of relationship quality as reported by mothers and fathers, respectively.