

Child care and child births: the role of grandparents in The Netherlands

Abstract

This paper explores the involvement of grandparents in the care for young children and its effects on subsequent child births in dual-earner families, using data on 1,036 Dutch men and women aged 18-49 from the Netherlands' Kinship Panel Study. Three theoretical explanations were tested. Rational choice explanations focus on needs and opportunities; norm-based explanations stress preferences of the parents for family child care; evolutionary theory focuses on the effectiveness of grandparental investments in enhancing fitness. Findings showed that needs and opportunities informed involvement of grandparents. The level of involvement depended on the parents' preferences for care from relatives, and there was a maternal tilt as evolutionary theory predicted. Involvement of both maternal and paternal grandparents in turn increased the likelihood of additional childbirths. The most likely explanation for this effect on births was the evolutionary kin influence hypothesis, which stresses the effort kin put in enabling additional childbirths.

Key words:

Child care arrangements, evolutionary theory, fertility, grandparents, intergenerational transfers, work family balance

Grandparents are important resources for facilitating the combination of work and family life. In Europe, 58 percent of the grandmothers and 49 percent of the grandfathers took care of at least one of their grandchildren in the preceding year (Hank & Buber, 2009). In the United States, 28 percent of employed women relied on their parents or in-laws to provide child care for their young children (Guzman, 2004). This reliance is increasing, as both women's labor market participation and the potential availability of grandparents continues to grow (Koslowski, 2009). Not all grandparents are able or willing to take care of their grandchildren structurally, e. g. because they are still employed (Gray, 2005). Yet the involvement of grandparents in child care has increased over the past decade (Tsai, Motamed, Elia, & Rougemond, 2011). Thus, grandparental support may enable mothers to continue working while raising a family. Lack of sufficient child care support may be a key factor in the low birth rates in the developed world (Mills, Rindfuss, McDonald, & Te Velde, 2011; OECD, 2011). Yet surprisingly little research focuses on the actual effects of grandparental child care on working parents' family formation. Some research shows that grandparents can have a positive impact on mothers' employment (Dimova & Wolff, 2011). But research on fertility effects only focuses on formal care and family policies (e.g., Andersson, Duvander, & Hank, 2004; Brewster & Rindfuss, 2000). Although interest in the subject is rising, suitable data have long been sparse.

An important exception is the study of Hank and Kreyenfeld (2003) that found a positive effect of proximity of grandparents on women's fertility in Western Germany. The availability of formal care had no effect. Subsequently, Hank, Kreyenfeld, and Spiess (2003) showed that this "grandmother effect" did not occur in former East Germany, where the greater availability of formal care arrangements appeared to be of relevance for first

childbirths. They concluded that the impact of grandparental care partly depends on the institutional context. Their data did not allow looking into the actual use of formal and informal child care, and they did not take into account the mothers' employment. Moreover, grandparental child care was indicated by the geographic proximity of a grandparent. This still leaves open the question how the different forms of child care actually enable (continued) childbearing in the face of work commitments. Kaptijn, Thomese, Liefbroer, and Van Tilburg (2010) found a positive effect of frequent grandparental child care on subsequent fertility in The Netherlands, but they did not control for the use of other care arrangements and the labor market situation of the parents.

Our study will further explore the role of grandparents in the child care arrangements of families with working mothers, using prospective Dutch data on additional childbirths that include information on the parents' employment situation and on a variety of child care arrangements. Two questions will be addressed: to what extent and under what conditions are grandparents involved in child care for their grandchildren? And does grandparental involvement in child care contribute to subsequent childbearing? We will focus on families with at least one child, as this allows us to directly measure the impact of existing child care from grandparents on subsequent child births. An effect of grandparents on first births would necessarily be indirect, for example through care given to siblings' children (Kaptijn et al., 2010) or through other forms of support. This is beyond the scope of this article. We will draw on three major theoretical perspectives on grandparental involvement and its effects (Coall & Hertwig, 2011): a rational choice perspective focusing on needs and opportunities, a norm-based perspective focusing on socially and culturally based preferences for specific care types, and an evolutionary perspective focusing on grandparental contributions to fitness. The first two are commonly used in the literature on combining work and motherhood (e.g., DiPrete, Morgan, Engelhardt, & Pacalova, 2003; Saraceno, 2008). The evolutionary

perspective has independently developed a strong literature on preferences for and effects of grandparental investments (Coall, & Hertwig, 2010). It clarifies preferences for the involvement of specific grandparents and the way grandparental child care affects subsequent child births. These theories provide a broad, albeit not exhausting, overview of possible mechanisms involved in grandparental child care and its effects. Our hypotheses are aimed at maximizing the contrast between the three perspectives.

Before proceeding to our theoretical framework, we describe some specifics of the Dutch context that may be relevant to the interpretation of results. Dutch women are often employed part time: around the time of our survey 97% of the 68% women aged 18-54 in the labor force worked part-time, compared to 93% (of 72%) in the US (OECD, 2006). Whereas the proportion of Dutch females that is active on the labor market hovers around the average of OECD countries, the Dutch part-time employment rate is among the highest. About 66% of mothers with children under 6 were in paid work. As in most other countries, men working part time are a small minority, as are female breadwinners. Birth rates have been around or above 1.6 per woman since the late 1970s (Fokkema, De Valk, De Beer, & Van Duin, 2008), making the Netherlands slightly more fertile than most other developed countries. A minority of Dutch families with working mothers use paid child care (Portegijs, Cloin, Ooms, & Eggink, 2006): 20% of families with children below 4 years of age, and 6% of families with older children. Paid care mostly consisted of care provided by professional organizations, either private or run by municipalities, and to a lesser extent paid babysitters. The use of informal care in both family types is 44% and 34%, respectively, and 13% and 6% use both formal and informal care. Grandparents are by far the most mentioned source of informal child care. During the course of our study, the Dutch child care system counted as moderately accessible (Saraceno, 2011). In particular, day care for children under 4 was difficult to get by. There were waiting lists in many urban areas, and opening hours were often limited to

office hours. After school care was more available. Rates were around 6 Euros (about 4.50 US dollars) per hour. During the period of our study various changes occurred in the height and the source of compensation of the costs parents made.

When do grandparents provide child care?

The parents' needs may play an important role in the mobilization of grandparents. Most grandparents help out in families with employed mothers and preschool children (Hank & Buber, 2009). Moreover, comparative studies by Hank et al. (2003) and Hank and Buber (2009) suggest that the availability of formal child care conditions the involvement of grandparents: where the provision of formal child care is better developed, grandparents' role in child care is smaller. A Dutch study (Portegijs et al., 2006) showed that grandparents often function as a safety net to help out when formal care is unavailable. On a more detailed level, the costs and actual availability of formal child care – like opening hours, waiting lists - may also play a role (Andersson et al., 2004; DiPrete et al., 2003). These findings suggest that grandparental and formal child care are complementary in fulfilling the parents' need for child care.

Hypothesis 1: grandparental involvement and rational choice

Given the grandparents' opportunities to do so, grandparents provide more child care when parents have fewer opportunities for formal care.

Albeit important, instrumental and cost related reasons do not fully explain the involvement of grandparents. It has been suggested that cultural and personal preferences also shape the reliance on grandparents (Hakim, 2000; Saraceno, 2008). In some western cultures,

parents may be more inclined to use formal child care, whereas others favor care by close relatives. Parents in welfare states with a strong tradition in providing collective care, such as the Nordic welfare states and former communist countries, may be less prone to use informal child care. On the other hand, in traditional familistic and conservative welfare state regimes, as considered characteristic of southern European countries and Germany and the Netherlands, parents may be more inclined to prefer grandparental care rather than formal care (*e.g.*, Esping-Andersen 1990; Reher, 1998). Hakim's preference theory (2000) offers an explanation of why women differ in their decisions on the combination of work and family. It suggests that most welfare states offer parents a great extent of choice, allowing women to express individual preferences for prioritizing either paid employment or family obligations. Even if this individual choice is in part shaped by internal and external constraints, preferences for work-family combinations and child care obligations vary across and within developed nations (Saraceno, 2011). Hakim focused on women's choices for work hours and use of formal child care. We can extend this reasoning to the preferred involvement of grandparents in the care for young children. Parents may not only differ in their preferences for the mother's work involvement and the concomitant need for child care, but also in their preference for the source of child care (Van Dijk & Siegers, 1996). Net of the actual child care involvement of grandparents, such preferences have been shown to affect mothers' labor market behavior (Debacker, 2008; Streiber & Haas, 2009).

Hypothesis 2: grandparental involvement and normative preferences

Grandparents provide more child care when parents have a stronger preference for the provision of child care by relatives.

Norms may also inform differential investments from grandparents. In particular, dominant gender roles view women, in particular grandmothers, as kin keepers with a responsibility to maintain family relationships (Hagestad, 1986). This pattern is most obvious in western cultures and in cultures where inheritance follows the maternal line (Friedman, Hechter, & Kreager, 2008; Sear & Mace, 2007). The kin-keeper hypothesis predominantly addresses grandmothers' investment, stating that grandmothers will invest more than grandfathers. Gender preferences for grandparental involvement from both grandparents and from parents are predicted by evolutionary theory, especially the paternity certainty hypothesis (Danielsbacka, Tanskanen, Jokela, & Rotkirch, 2011; Smith, 1988). Humans have evolved a strong dependence on others, in particular relatives, in caring for their offspring (Hrdy, 2009; Sear & Mace, 2007). Shared child care increased inclusive fitness, that is the total fitness that results from one's own offspring and supporting the reproduction of relatives. The evolutionary advantage of investing in others' reproduction is greatest for genetically close relatives. The evolutionary paternity certainty states that grandparental care is strongest in the maternal line, as mothers and daughters offer the highest certainty that grandparents are investing in their biological offspring.

Hypothesis 3a: grandparental involvement and paternity certainty

Grandmothers are more likely to provide child care than grandfathers.

The above hypothesis is similar to the kin-keeper hypothesis. If the paternity certainty hypothesis is true, it would also follow that grandparents prefer to care for their daughters' children, which is less obvious in the kin keeper-hypothesis. This leads to the following hypothesis.

Hypothesis 3b: grandparental involvement and paternity certainty

Grandparents are more likely to provide care to daughters' children than to sons'.

Does grandparental child care lead to more births?

Is grandparental support any different from other forms of relief from employed parents' predicament when it comes to having another child? The two studies by Hank and colleagues (2003) suggest it is not, as the effect of available formal and informal child care on childbirths depended on the specific East or West German context. Only in former West Germany, where mothers could not rely as readily on formal care as was the case in former East Germany, did the proximity of grandparents have a positive effect on reproduction. This is in line with common rational choice explanations focusing on the needs and opportunities that shape decisions (DiPrete et al., 2003): any form of child care that makes the combination of work and family easier will facilitate additional childbirths, independent of the source of care.

Hypothesis 4: childbirths and rational choice

Both formal child care and grandparental child care have a stronger effect on subsequent childbirths when parents have no alternative form of child care.

The norm-based and evolutionary perspectives each lead to different predictions. If preferences are important in choosing specific types of child care, subsequent childbearing becomes more likely if the parents have access to the type of child care that they prefer (Ajzen, 1991). Alternatively, if parents have a preference for formal child care, access to grandparental child care is not likely to support possible plans for future childbearing. Thus:

Hypothesis 5: childbirths and normative preferences

Grandparental child care only has a positive effect on subsequent childbirths when the parents have a preference for informal child care.

Whereas both previous explanations predict a conditional effect of grandparental child care on fertility, evolutionary theory would lead to expect an unconditional effect. The so-called ‘kin influence hypothesis’ suggests that social interaction between kin is more likely to encourage behaviors that enhance inclusive fitness (Newson, Postmes, Lea, & Webley, 2005). Assuming that close relatives have an evolutionary stake in each other’s reproduction, the kin influence hypothesis states that close relatives will not only help each other in practical terms, but will also encourage their relatives to have (more) children, most notably through various communication patterns. Kin will direct their communication and advice more towards continued reproduction than nonkin would. Such an influence on decision making is not to be expected in the case of formal child care. The grandparents may play a particularly prominent role in this process (Bühler & Philipov, 2005). We therefore expect that:

Hypothesis 6: childbirths and kin influence

Grandparental child care has a positive effect on subsequent childbearing.

We have no reason to assume differences between maternal and paternal grandparents. Paternity certainty may play a role in the decision to invest in grandchildren, but is not so relevant to the outcomes of such investments in terms of fertility: once the choice for grandparental child care has been made by the parents and grandparents, we expect both maternal and paternal grandparents to show an equal interest in having additional grandchildren.

A variety of factors may obscure the determinants and childbearing consequences of grandparental child care. The grandparents' involvement in child care partly depends on their age-related opportunities and capacities, such as paid work, health, and the availability of a partner. Because of a lack of additional suitable measures, we only controlled for grandparental age. Grandparental age is also relevant to additional births, as the timing of children is transmitted across generations (Rijken & Liefbroer, 2009). We also controlled for the availability of grandparents by counting the number of living grandparents. The number of children of the grandparent indicates time constraints on the availability of grandparents to care for specific grandchildren. Family size is also transmitted across generations (Rijken & Liefbroer, 2009). The travel distance between grandparents and parents affects the probability of caring for a grandchild. We also controlled for financial support from the grandparents to get a better understanding of the specific determinants and consequences of child care by the grandparents. At the parents' level, we controlled for parents' and grandchildren's ages and the number of grandchildren. Unmeasured class and cultural differences were accounted for by the highest education level attained in the parental couple.

Method

Respondents. Data came from the Netherlands' Kinship Panel Study (NKPS; Dykstra, Kalmijn, Knijn, Komter, Liefbroer, & Mulder, 2005). Wave 1 was conducted in 2002 - 2004, Wave 2 in 2006 - 2007. In wave 1, face-to-face interviews were conducted with 8,161 respondents. The sample was a cross-section of individuals residing in private homes in the Netherlands, and who were at least 18 and at most 79 years old at the time of the initial wave. As the national share of nonwestern ethnic minorities was about 11% at the time of our

survey, respondents were predominantly indigenous white residents. The sample frame was a national address sample. The response rate was 42.2%. In the second wave, 6,026 respondents were re-interviewed in a face-to-face interview. Interviewers received a four-day training and were intensively monitored during the fieldwork. Given our interest in child care support among families with working mothers, we selected respondents who were aged 18 to 49 years, had a steady partner, at least one child, at least one living grandparent, and participated in both waves. In addition, the female partner had to be employed. In all, 1,036 respondents fulfilled these inclusion criteria.

Measures. Indicators of child care arrangements, the parents' employment and family situation, their child care preferences, and the grandparents' situation were derived from wave 1. Information on the birth of children after wave 1 was derived from wave 2.

Additional births. In wave 2, respondents were asked "Did you have any children with your (ex-)partner since the last interview?". The answer *yes* was scored as an additional birth.

Child care arrangements. Support with child care from the respondent's mother, father, and one, randomly chosen, parent-in-law was indicated through the question: "In the last three months, did you receive help from {name, description} with taking care of the children, such as babysitting, care, bringing and fetching?" Answer categories were *none* (1), *once or twice* (2), or *several times* (3). From this, three measures of grandparental child care were constructed. First, we determined whether there was any involvement of grandparents in child care or not. We used this measure as a first assessment of grandparental involvement in all hypotheses except hypothesis 3a and 3b (which distinguish between grandparents). If any of the three questions on child care help from grandparents was answered with a score of 3 (*several times*), care from grandparents was scored as 1. If not, the score was 0. This variable ignored occasional babysitting.

A second indicator assessed the extent of grandparental involvement by distinguishing whether parents received child care support from both sets of grandparents or not. We used this to test all hypotheses except hypothesis 3a and 3b. Three categories were distinguished: those respondents who received no regular child care support from their parents or the selected parent-in-law, those who received regular child care from one set of parents, and those who received regular child care support from both their parents and the selected parent-in-law. A limitation of this approach was that NKPS only contained information on one of the parents-in-law. This led to an underestimation of the child care support provided by grandparents-in-law. This underestimation is expected to have only limited relevance for two reasons. First, if one of the grandparents had already died, our measure reflected the correct level of child care support by grandparents-in-law. This was true in 29% of the cases. Second, in many instances support was provided jointly by both parents or by neither of them, so asking about just one of them provided a good approximation of the child care support provided by both of them. If both parents of the respondent were alive, child care was provided by only one of them in just 16% of the cases

To test hypothesis 3, we focused on couples who had one or more living maternal parent and one or more living paternal parent. This was true for 898 couples. For these couples, one parent of the male partner and one parent of the female partner was randomly selected. For each of these parents, it was ascertained whether they were regularly involved in child care or not. Based on that information, we constructed a variable ‘involvement by a maternal parent’ (1 = yes) and a variable ‘involvement by a paternal parent’(1 = yes).

In order to evaluate the use of grandparental child care in relation to other sources of child care we used the question: “Do you use paid child care?”. Respondents could answer *yes* or *no*.

Needs and opportunities. For the analysis of grandparental involvement, the number of additional children in the household was used. To account for nonlinearity, we categorized the variable into 1, 2, or 3+ children. Given the greater need for support with preschool children, we also included the age of the youngest child. Furthermore, the availability of grandparents was indicated through the number of grandparents still alive, the travel distance to the grandparent living closest to the respondent, and the age of the youngest grandparent. We also included the number of siblings.

The number of hours that men and women were in paid employment were calculated from direct questions on the weekly number of hours they spent on their work, including travelling time.

To assess the provision of material support by grandparents, we used the question “In the last 12 months, did you receive valuable objects or a substantial amount of money from {name, description}? Please include any monthly transfers.”, for financial help from mother, father, and parents-in-law. Answers could be *yes* or *no*. Respondents who received any support from either their parents or their parents-in-law were compared to respondents who did not receive any support from parents or parents-in-law at all.

Norms and preferences: Two questions asked whether families or the government should be primarily responsible for child care to preschool and school aged children respectively. Respondents could indicate on a five-point scale to what extent the responsibility was for government or family. Because the Dutch government subsidizes formal paid child care, these questions tap the preference for family care as opposed to paid child care. Pearson’s correlation between the two items was .75. If respondents indicated that the responsibility was slightly or strongly more for the family, a point was scored on the new variable “preference for family care” that ranged between 0 (no preference for family care) to 2 (preference for family care on both items). Because the question was answered by parents of

young children, we interpret this variable as tapping personal preferences as intended by Hakim's preference theory rather than their view on what they would deem desirable for society in general (Streiber & Haas, 2009).

Gender preferences: We took the actual caregiving by paternal or maternal grandparents, and grandmothers or grandfathers, respectively, as indicators for the preference for care in the maternal or the paternal line.

Control variables: The age of the respondent, the age of the youngest child, and the number of children were used to control for completed families in the analysis of additional childbirths. To control for class differences, the highest educational status of the parental couple was used. A ten-point scale ranged from incomplete elementary school to completed postgraduate education. We also included the time interval between the two waves (in weeks).

Analysis. The first two hypotheses were tested using binary logistic regression. It was first examined which factors influenced (a) any involvement of grandparents in child care versus no involvement, and (b) the involvement of both sets of grandparents versus only one set of grandparents. We tested hypothesis 3 in three steps. First (hypothesis 3a), we selected all couples who had at least one living maternal and paternal grandparent, and crosstabulated the percentage of maternal and paternal grandparents involved in child care. Next, an additional binary logistic regression analysis allowed comparison of the predictors of paternal and maternal involvement. For hypothesis 3b we tested the effects of respondents' sex in each of the four regression analyses.

For hypotheses 4, 5, and 6, we conducted a binary logistic regression analysis with the occurrence of any childbirth between both waves as the dependent variable. Two models were tested. In both models we entered the control variables, plus the variables indicating needs, paid child care, financial help from grandparents, and norms. In the first model, any involvement of grandparents was used as indicator of grandparental child care. In the second

model, it was examined whether it made a difference whether support was received from both sets of grandparents or not. In this way, we could contrast any grandparental involvement with no involvement at all (first model) and more intense involvement with less involvement (second model). For hypothesis 4, we added interactions between grandparental child care on the one hand and mother's employment and paid child care on the other hand. The test of hypothesis 5 consisted of an interaction between grandparental child care and preference for family care.

Results

Table 1 provides descriptive information about the sample, and allows for a first impression of associations with grandparental involvement and additional child births. Overall, 46% of the respondents received help from grandparents in caring for their children. Grandmothers provided such support almost twice as often as grandfathers did. The sample contained a high percentage of women (70%). This is mainly due to the selection of respondents with a partner in this sample. Of the families, 40% made use of paid child care. Respondents who received grandparental child care (columns 2 and 3) were on average younger than those who did not receive grandparental support in child care. They also had younger and smaller families, had a father who worked more hours per week, and received more paid child care. The parents who received grandparental child care had a larger number of grandparents, grandparents who were younger and living closer, and had fewer siblings than the parents who did not receive grandparental support in child care. Parents who received and parents who did not receive grandparental support in child care did not differ in the likelihood of grandparents providing material help or in their preference for family care.

Table 1 here

Additional child births (columns 4 and 5) were more likely to occur when grandparents provided child care, when use was made of paid child care, when more grandparents provided financial support, when fathers worked more hours per week, and in families with higher education levels. Grandparents in these families were more often younger and had fewer children. No differences were found with respect to distance of the closest grandparent and normative preferences.

Subsequently, hypotheses on the factors influencing grandparental involvement in child care were tested. The results of logistic regression analyses on grandparental involvement are presented in Table 2. Table 2 shows that, in line with hypothesis 1, need and opportunity variables indeed facilitated grandparental child care. As far as needs were concerned, among all respondents, the probability that grandparents provided child care support was higher if the parent had young children and if there were two grandchildren in the parents' family, as opposed to one. Paid child care and the parents' working hours had no effect on grandparental involvement. This goes against hypothesis 1. As far as opportunity was concerned, grandparental child care support was more likely the smaller the geographical distance to the grandparents living closest was, and the fewer siblings a parent had. Grandparents' availability, age and financial support had no effect. With the exception of the age of the youngest grandchild and the number of rivaling siblings, the needs and opportunity variables did not affect the probability that grandparents from one or both sides were involved. The availability of paid child care had no effect either.

Table 2 here

Preferences for family care had no effect on any involvement of the grandparents, but they did increase the probability that grandparents from both sides were involved in child care, suggesting some support for hypothesis 2.

Next, we examined to what extent respondents got support from parents of the male partner and from parents from the female partner. Among couples who had at least one living parent on both sides, the involvement paternal and maternal grandparents was cross-tabulated. No support at all was provided to 54% of the couples, support from a maternal grandparent was provided to 25% of the couples, support from a paternal grandparent was provided to 10% of the couples, and support from both sets of grandparents was provided to 12% of the couples ($\chi^2=29.98$, $p < .001$). Thus, in line with hypothesis 3a, maternal grandparents were more likely to be involved in grandparental child care than paternal grandparents. In addition, Table 3 shows that on both sides, grandmothers were the most likely to provide the child care. Most predictors were similar for the involvement of either paternal or maternal grandparents, with one notable exception: a preference for family care had no significant effect on the involvement of maternal grandparents, but positively affected the involvement of paternal grandparents. Further note that child care from the other partner's parents is positively associated with the involvement of either set of grandparents, and that the use of formal care has no effect.

Table 3 here

Turning to hypothesis 3b, Table 2 shows that female respondents reported grandparental child care more often than men did, but that men and women were equally likely to report care from one or both sets of grandparents.

The effect of grandparental involvement on the likelihood of additional childbirths within three years after the initial interview was examined to test hypotheses 4, 5, and 6. Results from logistic regression analyses with having an additional birth as the dependent variable are presented in Table 4. We found that grandparental child care affected additional child births. The question whether grandparents were involved at all, however, was not relevant to additional child births (model 1). But turning to the extent of grandparental involvement (model 2), we observed that involvement of both the maternal and paternal grandparents had a positive effect on additional child births, compared to no involvement of grandparents ($OR = 1.83$). This offers support for hypothesis 6, which predicted an unconditional effect of grandparental child care. Paid child care had no effect on additional child births in either model.

In order to test hypotheses 4 and 5, on the effects that paid child care and normative expectations, respectively, have on additional childbirths, interactions between grandparental support on the one hand and the use of paid child care and preferences for family support on the other were tested. None of the interactions were statistically significant (results not shown). Thus, no support for hypotheses 4 and 5 was found.

In addition, the results in Table 4 show that the likelihood of an additional childbirth was lower if respondents had more than one child, when the youngest child was relatively old, and when fewer grandparents were alive. An additional childbirth was more likely if parents were better educated, had more siblings, and when the father worked longer hours.

Table 4 here

Discussion

This study among dual-earner Dutch families with at least one child revealed that grandparents may be called upon to help, either as an addition to or an alternative for paid child care. Typically, the mother's parents are mobilized, but often both sets of grandparents are involved. We found only weak support for an effect of needs and opportunities on the extent of involvement of the grandparents. The use of paid child care had no effect once other factors were taken into account, suggesting that the decision to call upon grandparents may depend on the need for child care and the availability of grandparents, but is not dependent on the availability of alternative sources. Alternatively, it could be that we found little variation in the use of formal care because most Dutch families with working mothers need additional help to fill in gaps in the formal care system. The Dutch formal child care arrangements at the time of our survey had some serious flaws that we discussed in the introduction (Saraceno, 2011). In either case, other mechanisms may account for the variation in grandparental involvement.

Normative preferences proved relevant for the extent of involvement: in particular paternal grandparents are more often called upon when parents feel that child care should be a family responsibility rather than a responsibility of the government. We do not see any effect of paid child care on the involvement of one versus both sets of grandparents, casting doubt on the hypothesis that the involvement of grandparents in child care mainly results from the lack of available formal child care. These findings suggest that formal and informal childcare should not only be seen as substituting for one another, but also as complementary forms of support that parents draw upon in order to achieve a balance between the joint challenges of dual-earnings and responsible parenthood. A more detailed comparison of different child

care arrangements and preferences may reveal more complicated associations than we were able to demonstrate here. Our suggestion would be that extensive grandparental involvement may be governed more by familial circumstances than by needs and opportunities, whereas formal child care use may be driven more by the latter. The family solidarity framework (Bengtson & Roberts, 1991) is a good starting point to unravel these familial circumstances, as it distinguishes several material, emotional and normative dimensions of family connections over time, and the way they may inform current behaviors.

The divergent gender patterns in grandparental involvement that we found also lend support to an evolutionary interpretation. There is a clear preference for the female lineage: maternal grandparents are the most likely to engage in child care, as are the grandmothers on both sides. This finding is in line with the notion that paternity certainty is guiding intergenerational investments (Danielsbacka et al., 2009; Pollet, Nelissen, & Nettle, 2009). Other than the more common kin keeper hypothesis used in research on intergenerational relations, which predicts greater investment of grandmothers than of grandfathers, the paternity certainty hypothesis specifically predicts that the female preference works both ways. At the same time, the paternal certainty hypothesis may neglect cultural patterns that may also explain this matrilineal tilt in our Dutch sample. Comparisons between maternally focused cultures and patrifocal cultures are scarce, but preliminary results from a Dutch-Chinese comparison do not lend support to the paternity certainty hypothesis in the Chinese context, which is dominantly patrifocal, but do lend support to that hypothesis in the matrifocal Dutch situation (author information). This suggests that cultural contexts play a major role in intergenerational relationships. It can be worthwhile to further explore the interplay between biologically evolved predispositions to intergenerational relationships on the one hand, and cultural patterns that shape and direct the way these dispositions play out on the other hand.

Cultural differences are also reflected in the variation in availability and use of paid child care across different welfare states (Pfau-Effinger, & Geissler, 2005; Saraceno, 2011). The Netherlands stands out for its high rate of part time female employment. This probably results in a lower demand for child care compared to countries where women are mostly full time employed. Comparative research will have to reveal how parents arrange the care for their children in other welfare state types, such as Scandinavia, where both paid work by women and child care provisions are at a higher level, or Southern Europe where working mothers are more often employed full time than in The Netherlands and child care provision is low. We already know that grandparents in Southern European countries often provide daily care, if they are involved, whereas in countries in northern Europe grandparents more often appear to provide supplementary child care (Hank & Buber, 2009). Again, this calls for a cross-national analysis of patterns of formal and informal paid care.

Grandparental involvement in child care is associated with additional births if it is extensive, that is, if both paternal and maternal grandparents provide substantial care. Although this could support a rational choice explanation based on needs and opportunities, we found no support for the corresponding hypothesis. Grandparental support in child care does not seem to alleviate restrictions on additional child births caused by a lack of paid child care. We also found that paid child care does not facilitate additional child births. This is at odds with recent results indicating that fertility is rising in developed countries as a consequence of improved child care facilities (Myrskylä, Kohler, & Billari, 2009). It is possible that the association observed by Myrskylä and colleagues (2009) at the aggregate level cannot be explained by the micro level mechanisms that we studied. For example, we did not study entry into parenthood. It could be that the decision to have children at all may be more heavily affected by the availability of formal child care than the decision to have another child (Rindfuss, Guilkey, Morgan, Kravdal, & Guzzo, 2007). At the same time, we may have

underestimated the importance of paid child care for fertility decisions, as we were not able to include information on the number of hours of paid child care that parents had, nor on its availability or price. As a result, we may have been more successful in capturing the informal than the formal pieces of the child care puzzle that many parents face.

We also hypothesized that preferences for keeping child care in the family could explain the effects of grandparental child care on fertility. This hypothesis was not supported either. We did find, however, that parents who view child mostly as a family responsibility are more likely to have both paternal and maternal grandparents providing frequent child care. This involvement of both sets of grandparents in turn does affect subsequent child births. So there may be an indirect effect of normative preferences on additional child births. It could be that our findings are typical of the Dutch situation, where preferences for family care are generally strong (Portegijs et al., 2006) and variation in preferences may be low. International comparisons could reveal more variation in normative preferences, possibly resulting in a stronger (direct) effect.

We found clear support for our final hypothesis, based on the kin influence hypothesis: stronger involvement of grandparents in child care has an unconditional, direct effect on subsequent childbirths. This finding corroborates the assumption that grandparents, being close kin, will not only increase the likelihood that parents have another child by helping them out practically, but that they also invest in subsequent children through other means, most notably communication of norms and expectations. Although we have not directly measured the communication between grandparents and parents, we know that kin can play an important role in fertility decisions (Bühler & Philipov, 2005; Rijken & Liefbroer, 2009). Our interpretation in favor of the kin influence hypothesis is further supported by the analysis performed by Sear and Coall (2011) on grandparental involvement and fertility rates in ten European countries. They found that *any* involvement of grandparents was positively

correlated with fertility rates: countries with a higher percentage of grandparents involved in child care at all, such as The Netherlands, France and Denmark, had a higher total fertility rate than countries where the prevalence of any involvement was low, such as most Southern European countries. The correlation became negative when looking at grandparental involvement in daily child care: the countries with a higher percentage of grandparents providing daily child care had lower fertility rates. The authors suggest that grandparents in these countries could not alleviate the needs created by the virtual absence of formal care, whereas grandparents providing complementary or additional care in countries with higher levels of formal child care apparently did influence parental fertility decisions.

This outcome also supports our interpretation that grandparental child care is not only dependent on parents' needs. We suggested that the biologically legitimated paternity certainty hypothesis may unduly neglect cultural variation. The kin influence hypothesis on the other hand includes a cultural evolutionary perspective, and allows for investigating the interplay between biological and social mechanisms that probably underly a grandparent effect. Further analysis should reveal how grandparents – either purposive or unintended - influence their adult children in their childbearing decisions. The frameworks of the family solidarity perspective and the theory of planned behavior can inform this analysis. Adopting an evolutionary perspectives enables integration of social scientific theories with biological and genetic theories. This is important for understanding the many interdisciplinary issues surrounding fertility.

The data we used are unique in their availability of extensive information on the parents' situation, the use of different types of formal and informal child care support, and the prospective data on additional child births. Nevertheless, some limitations need to be noted. The most important one is that we do not know how much care was used from each source. Second, information on the respondents' partner was limited. We do not know to what extent

the partner was involved in child care, and we had only limited information on the type of employment of the partner. This foreclosed more detailed analysis of the needs and opportunities of the household. Also, the reasons for involvement of one or both sets of grandparents' are unknown. Finally, we used a crude measurement of family care preferences. Given its relevance for the extensive involvement of (paternal) grandparents, follow-up studies should disentangle the mechanisms involved. The theory of planned behavior (Ajzen, 1991) provides a good starting point.

In spite of these shortcomings, this study offers a fresh perspective on the role of formal and informal child care in reconciling work and family life. We showed the importance of grandparental support in understanding modern fertility patterns. Our findings also point to the need for international and cross-cultural comparisons to disentangle effects of needs, norms, and evolutionary mechanisms in specific cultural and policy contexts.

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Table 1

Descriptive Statistics of Additional Child Births, Grandparental Child Care, and Independent Variables

	All (<i>N</i> = 1,036)		Grandparental child care			Additional child birth		
	<i>M</i> or %	<i>SD</i>	No (<i>n</i> = 558)	Yes (<i>n</i> = 478)	<i>p</i>	No (<i>n</i> = 827)	Yes (<i>n</i> = 209)	<i>p</i>
% Additional birth	20%		-	-		-	-	
% Receiving grandparental care	46%		-	-		42%	64%	**
# Grandparents providing child care (0-3)	0.75	0.95	0.00	1.63	**	0.64	1.17	**
% Receiving child care from (grand)mother	33%		0%	72%	**	29%	51%	**
% Receiving child care from (grand)father	18%		0%	39%	**	15%	30%	**
% Receiving child care from parents-in-law	24%		0%	52%	**	21%	36%	**
Age female partner (20-49)	37.41	5.66	39.32	35.18	**	38.78	31.99	**
Educational level (1-10)	6.72	1.88	6.63	6.83	ns	6.62	7.11	**
# Children (1-7)	2.05	0.88	2.15	1.92	**	2.21	1.39	**
Age youngest child (0-12)	4.96	3.63	6.22	3.45	**	5.69	2.00	**
# Working hours mother (2-70)	22.30	9.54	22.66	21.87	ns	22,19	22,71	ns
# Working hours father (0-90)	40.71	12.71	39.80	41.77	*	40,24	42,56	*
% Paid child care	40%		37%	43%	*	37%	53%	**
# Grandparents deceased (0-3)	0.86	0.91	1.06	0.62	**	0.98	0.40	**
Closest grandparent (0-260 km)	19.40	41.53	29.71	7.38	**	20.28	15.92	ns
Age youngest grandparent (40-87)	63.27	8.44	65.90	60.43	**	64.87	57.48	**
# Siblings (0-21)	5.18	3.08	5.87	4.38	**	5.33	4.59	**
# Grandparents providing financial support (0-3)	0.37	0.65	0.34	0.41	ns	0.32	0.57	**
Preference family care (0-2)	1.28	0.89	1.26	1.29	ns	1.29	1.22	ns
% Women	70%		65%	76%	**	68%	78%	**
Time interval (131-234 weeks)	180.54	16.94	180.17	180.98	ns	180.23	181.78	ns

p* < .05. *p* < .01.

Table 2
*Results of Logistic Regression Analyses for Variables Predicting Involvement in Child Care
 for Any Grandparents (n = 1,036) or Both Sets of Grandparents (n = 478)*

	Any involvement of grandparents (versus no involvement)			Involvement of both sets of grandparents (versus involvement of one set)		
	<i>B</i>	<i>SE B</i>	<i>OR</i>	<i>B</i>	<i>SE B</i>	<i>OR</i>
<i>Control variables</i>						
Age female partner	-0.02	0.02	0.98	-0.06	0.03	0.95
Educational level	0.04	0.05	1.05	0.17	0.10	1.19
<i>Needs & opportunities</i>						
Number of children ^a						
2	0.53**	0.19	1.70	-0.03	0.26	0.97
3+	0.32	0.23	1.38	-0.42	0.38	0.66
Age youngest child	-	0.03	0.82	-0.12*	0.06	0.89
# Working hours mother	0.00	0.01	1.00	-0.02	0.01	0.98
# Working hours father	0.01	0.01	1.01	0.01	0.01	1.01
Paid child care	-0.12	0.18	0.89	-0.04	0.26	0.96
# Grandparents deceased	-0.17	0.10	0.84	-0.24	0.18	0.78
Closest grandparent	-	0.00	0.97	-0.01	0.01	0.99
Age youngest grandparent	-0.02	0.02	0.98	0.03	0.03	1.03
# Siblings	-	0.03	0.89	-0.13*	0.05	0.88
Financial support (grand)parents	0.00	0.16	1.00	-0.02	0.24	0.98
<i>Normative preference</i>						
Preference family care	0.06	0.09	1.06	0.29*	0.13	1.33
<i>Gender</i>						
Female respondent	0.59**	0.17	1.80	0.19	0.27	1.32
Constant	2.16**	0.88		-1.36	1.47	
χ^2		323.56			49.58	
df		15			15	

Note: OR = Odds Ratio.

* $p < .05$. ** $p < .01$.

^areference category: 1 child.

Table 3

Results of Logistic Regression Analyses for Variables Predicting Involvement of a Maternal Parent in Child Care (n = 898) and Involvement of Paternal Grandparent (n = 898)^a

	Involvement of a parent of the mother			Involvement of a parent of the father		
	<i>B</i>	<i>SE B</i>	<i>OR</i>	<i>B</i>	<i>SE B</i>	<i>OR</i>
<i>Control variables</i>						
Age female partner	0.02	0.02	1.02	-0.03	0.03	0.97
Female respondent	0.26	0.18	1.30	0.17	0.21	1.19
Educational level	0.08	0.06	1.08	0.15*	0.07	1.16
<i>Needs & opportunities</i>						
Number of children ^b						
2	0.52**	0.20	1.69	0.25	0.22	1.29
3+	0.18	0.26	1.19	0.26	0.29	1.30
Age youngest child	-			-		
	0.15**	0.03	0.86	0.13**	0.04	0.88
# Working hours mother	-0.00	0.01	1.00	-0.00	0.01	1.00
# Working hours father	0.02**	0.01	1.02	0.00	0.01	1.00
Paid child care	-0.13	0.19	0.88	0.37	0.21	1.44
Distance to selected grandparent	-			-		
	0.01**	0.00	0.99	0.02**	0.00	0.98
Age of selected grandparent	-0.03*	0.01	0.97	-0.04*	0.02	0.96
# Children of selected grandparent	-			-		
	0.40**	0.07	0.67	-0.16*	0.06	0.85
Financial support from selected grandparent	0.54*	0.22	1.72	0.02	0.25	1.02
Selected grandparent is male	-			-		
	0.94**	0.17	0.39	0.66**	0.20	0.52
<i>Normative preference</i>						
Preference family care	-0.16	0.10	1.00	0.32**	0.11	1.38
Child care support provided by the parents of the other partner	0.71**	0.20	2.04	0.54**	0.19	1.71
Constant	1.25	0.96		-1.36	1.47	
χ^2		269.27			201.16	
df		16			15	

Note: *OR* = Odds Ratio.

* $p < .05$. ** $p < .01$.

^a These analyses are conditional on at least one grandparent of the other partner being alive

^b reference category: 1 child

Table 4

Results of Logistic Regression Analysis for Variables Predicting an Additional Childbirth (n = 1,036).

	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	<i>OR</i>	<i>B</i>	<i>SE B</i>	<i>OR</i>
<i>Control variables</i>						
Female respondent	0.27	0.24	1.31	0.26	0.24	1.30
Age female partner	-0.07**	0.03	0.93	-0.07**	0.03	0.93
Educational level	0.22*	0.09	1.25	0.21*	0.09	1.23
Number of children ^a						
2	-1.94**	0.22	0.14	-1.94**	0.22	0.14
3+	-2.97**	0.40	0.05	-2.95**	0.40	0.05
Age youngest child	-0.31**	0.05	0.74	-0.30**	0.05	0.74
# Grandparents deceased	-0.39*	0.16	0.68	-0.38*	0.16	0.69
Distance to closest grandparent	0.00	0.00	1.00	0.00	0.00	1.00
Age youngest grandparent	-0.02	0.02	0.98	-0.02	0.02	0.98
# Siblings	0.12**	0.04	1.12	0.12**	0.04	1.13
Financial support grandparents	0.32	0.22	1.37	0.33	0.22	1.40
<i>Independent variables</i>						
# Working hours mother	-0.01	0.01	0.99	-0.01	0.01	0.99
# Working hours father	0.02**	0.01	1.02	0.02*	0.01	1.02
Paid child care	0.13	0.23	1.14	0.14	0.23	1.15
Grandparental care	0.19	0.23	1.21			
Care from one set of grandparents				0.02	0.24	1.02
Care from both sets of grandparents				0.61*	0.31	1.83
<i>Normative preference</i>						
Preference family care	0.04	0.12	1.04	0.01	0.12	1.01
Constant	1.51	1.33		1.58	1.33	
χ^2		417.22			421.46	
df		16			17	
% with additional childbirth		20.2			20.2	

Note: OR = Odds Ratio.

* $p < .05$. ** $p < .01$.

^areference category: 1 child