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ORIGINAL RESEARCH

Maternal Age at First Birth and Parental Support: Evidence From the UK Millennium Cohort Study

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Abstract

Using nationally representative data from the UK Millennium Cohort Study (n = 7396), we investigate whether the mother's age at first birth is associated with the level of support she receives from her parents around the time of birth. We apply latent class analysis to construct a summary measure of five dimensions of parental support (contact with the mother, contact with the father, childcare, monetary transfers and financial support for buying essentials). The results show that parental support is negatively associated with maternal age at first birth, with older mothers being less likely than younger mothers to receive parental support. Adjustment for maternal socio-demographic characteristics and parental age partially attenuates the association. Given that parental support is positively associated with adult children's well-being, labour force participation, and fertility the results suggest that integrating parental support into work investigating the causes and consequences of the timing of first births has the potential to enrich and expand our understanding of the costs and benefits of delaying childbearing towards older parental ages.

Keywords Maternal age at first birth · Childbearing postponement · Parental support · Latent class analysis · UK

Introduction

Over the past four decades, childbearing has been increasingly postponed towards older parental ages across all industrialized countries (Balbo et al., 2012). This accelerating trend has attracted the attention of demographers and social scientists, who have identified socioeconomic incentives as its main drivers (Mills et al., 2011). Particularly for women, the postponement of childbearing—defined here as a first birth delayed to age 30 or above (Pollock, 1996; Sobotka, 2004)—has been

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associated with spending more time in education and the labor market before having their first child (Billari et al., 2006; Mills et al., 2011; Ní Bhrolcháin & Beaujouan, 2012). This perspective is reflected in Sarah McLanahan's "diverging destinies" theory (McLanahan, 2004), which states that delays in childbearing (Pollock, 1996; Sobotka, 2004) are associated with an accumulation of economic and human capital resources through investments in education, employment in a professional occupation, and the formation of a stable marital relationship. Conversely, early childbearing might interrupt education and career investments, and increase the risk of union dissolution. The diverging destinies theory, and the demographic literature more generally, tend to present contemporary trends in increasing mean ages at first birth as being linked and even partially explained by rising educational and income levels (Ní Bhrolcháin & Beaujouan, 2012). As a consequence, older mothers are expected to be more resourced than younger mothers. Alongside this mainstream view focused on socio-economic incentives and resources, the existing literature has also identified the lack of parental support as a potential driver of delaying the transition to parenthood. Evidence shows that women with more (potential) support from their parents are more likely to transition to first births and that those who lack parental support are less likely to experience this transition (Okun & Stecklov, 2021; Rutigliano, 2020; Schaffnit & Sear, 2017b). However, the magnitude of these effects is unclear as well as whether they persist or diminish with increasing age. There is also evidence showing that with increasing age, the levels of contact with and support from the family of origin might decrease because the offspring acquire economic independence, and their needs for support diminish (Albertini et al., 2007). Since older mothers tend to be advantaged, they could receive lower levels of support than younger mothers who, on average, tend to be more disadvantaged. However, these arguments have not been tested empirically and it is unknown whether older mothers receive less parental support than younger mothers. Exploring this association is important for two main reasons. First, given the evidence that support from grandparents is positively associated with the well-being of parents and children (Colen, 2011; Colen et al., 2006b)[1], that it affects the labour force participation—of women especially—and subsequent fertility transitions of the adult children (Aassve et al., 2012; Arpino et al., 2014; Schaffnit & Sear, 2017a; Thomese & Liefbroer, 2013), knowing whether such support is available to older mothers is important as it could constitute a factor to be considered when analyzing the perceived and real costs and benefits of having children at older ages. Second, whilst, on average, older mothers tend to be more educated and advantaged, the proportion of women having children at older ages has been increasing across all socioeconomic groups (Berrington et al., 2015) and there is evidence that the costs and benefits of having children at older ages might vary across subpopulation groups. Children of disadvantaged (and) minority groups do not appear to benefit from being born to older mothers to

[1] The consequences of parental support are less straightforward if one focuses on the grandparents generation. See for example the work of Arpino and Bordone (2014). Does grandparenting pay off? The effect of child care on grandparents' cognitive functioning. *Journal of marriage and family*, *76*(2), 337–351.

the same extent as more advantaged children even when their mothers accumulate socioeconomic resources (Cohen, 2015). For example, research in the U.S. and the U.K. (Geronimus, 1996; Goisis & Sigle-Rushton, 2014) shows that the Black/White gaps in undesirable birth outcomes such as low birth weight widen with increasing maternal age at first birth and the lack of parental support with increasing age could be integral to this association. Indeed, Colen et al., (2006a) show that African American women having a co-residential mother in the household at the time of birth experienced significantly reduced odds of giving birth to a low birth weight child.[2]

Using data from the UK Millennium Cohort Study, where first births at older ages have increased sharply over the past two decades (ONS, 2011), this study makes three contributions. First, we investigate the association between the age of the mother at the first birth and the level of support she receives from her parents (i.e., the grandparents of the cohort member) a few months after the birth—an association which has not been directly examined before. Second, we analyze this association by creating an overall measure of parental support. Since different (emotional, practical and financial) forms of support may be interchangeable, and because support can occur in different and multifaceted ways, we use a latent class analysis technique that combines different markers of parental support. Third, we analyze whether, and if so how, the association between parental support and the age at first birth varies when we take account of maternal socio-demographic characteristics and grandparental age.

Background

The association between maternal age at birth and parental support has rarely been directly explored in the existing literature. An exception is the study by Vandell et al. (2003) who indirectly documented this association by including maternal age at birth in a model predicting the childcare help received from the maternal grandmother. The results showed that, on average, younger mothers were more likely to receive childcare help from the grandparents. The evidence this analysis provided is limited because it ignored other forms of (e.g., emotional and financial) support, and it estimated the association while controlling for a range of characteristics of the offspring and the grandparents. Thus, the analysis did not show evidence on the crude or unadjusted association between maternal age at birth and parental support. The relationship between maternal age at birth and parental support could go both ways: lack of parental support could result in delaying childbearing to older ages but equally delaying childbearing (because of structural factors such as investments into education and career or because of the lack of the right conditions to experience this transition earlier) might lead to lower levels of parental support. Teasing out the causality goes beyond the scope of the paper, but the results of this study will be relevant to those interested in

[2] In contrast, amongst White mothers the ones with higher income levels experienced reduced odds of low birth weight.

this aspect or who are examining either side of the association. In what follows, we review existing evidence and theories that relate to both aspects.

Regarding the first aspect, the literature on the impact of grandparental support on the fertility of adult children shows that, on average, grandparental support increases the likelihood of transitioning to parenthood or that the lack of grandparental support results in a delay of childbearing (Okun & Stecklov, 2021; Rutigliano, 2020; Schaffnit & Sear, 2017a, 2017b). The anticipation of parental support or pre-birth parental support could influence the timing of childbearing. Whilst on one side this evidence could support the hypothesis that older mothers receive less support than younger mothers as there is continuity in pre and post-birth levels of support (Schaffnit & Sear, 2017b), on the other side it does not provide systematic and direct evidence that this is the case. First, existing studies have not explicitly explored whether the effects of grandparental support on the transition to first birth continue with increasing age or diminish after a certain age threshold. Second, it is difficult to assess the magnitude of the effects—it could be that lack of parental support plays a rather minor role compared to more structural factors such as the incentives to invest in education and employment before the transition to parenthood (McLanahan, 2004). Differences could therefore be small. Third, the literature shows that emotional support is associated with earlier first births, but the association with other kinds of support is more mixed making it difficult to draw conclusions (Schaffnit & Sear, 2017b). Although based on existing evidence one would expect older mothers to receive less support than younger mothers, the magnitude of the association or whether these differences are meaningful is less clear.

Regarding the second aspect, there are potentially multiple mechanisms involved which we discuss via theories of intergenerational exchange that are used to explain the relationship between the offspring's age (i.e., not the parental age at birth) and parental support (Hartnett et al., 2013). The relationship between parental support and maternal age at first birth could be explained by the child's needs, by the child's phase in the transition to adult social roles, and by the ability of the parents to help. First, theories have suggested that intergenerational relationships are governed by altruism, and respond to the adult child's *needs* (Becker, 1991; Frankenberg et al., 2002). With increasing age, levels of contact with and support from the family of origin might decrease because the offspring acquire economic independence, and their needs for support diminish (Albertini et al., 2007; Grundy & Shelton, 2001b; Tomassini et al., 2004). For example, prior studies have shown that students receive more support from parents than non-students (Cooney & Uhlenberg, 1992), and that the income level of a child is inversely related to the probability of receiving a financial transfer from a parent (Hochguertel & Ohlsson, 2009). Existing evidence also shows that more educated individuals have less frequent contact with their parents, in part because they tend to live further away from them (Kalmijn, 2006). In the UK, older first-time mothers tend to be more advantaged than younger mothers (Hawkes & Joshi, 2012). Thus, based on these theoretical arguments and the empirical evidence regarding intergenerational relationships, we hypothesize that older mothers are less likely than younger mothers to receive parental support.

Second, several theories have suggested that intergenerational relationships are governed by life course transitions that can be associated with *adult social roles* (Elder, 1994). For example, entering cohabitation or marriage could mark the transition to an adult social role (Bucx et al., 2008), which would result in the weakening of ties with the family of origin. Indeed, there is evidence showing that unpartnered adult children tend to receive more help from their parents than their married counterparts (Bucx et al., 2008; Suitor et al., 2006), and that older mothers are more likely than younger mothers to be partnered (Hawkes & Joshi, 2012). Moreover, proponents of the life course theory (Neugarten et al., 1965; Settersten & Hagestad, 1996) have argued that there are age expectations that underlie adult life, and that influence the timing of demographic behaviors. In the context of intergenerational relationships, age norms could affect intergenerational exchanges. Previous research has found that age is, on average, a robust predictor of support from parents to young adults (Hartnett et al., 2013), and that there is a negative association between the offspring's age and parental support. Therefore, based on these theories and findings on life course transitions, we expect to observe that parental support declines with increasing maternal age at first birth.

Third, levels of intergenerational exchanges could also depend on the *ability* of parents to provide support and to maintain contact (Henretta et al., 2002b). Prior research has indicated that with increasing age, adult children are less likely to receive support because they are more likely to live far away from their parents, and—possibly as a consequence—to feel less emotionally close to them (Silverstein & Bengtson, 1997). There is evidence of generational continuity in maternal age, which has been attributed to both continuities in socioeconomic status and the genetic inheritance of traits (Mills & Tropf, 2015). Thus, older mothers are themselves more likely to be the children of older mothers (Murphy & Wang, 2001). If older mothers have older parents, the ability of the parents to provide help and support to their adult children may be limited. On the one hand, older parents might be more able or willing than younger parents to provide support because they have retired (Lumsdaine & Vermeer, 2015). On the other hand, older parents may be less likely to provide help because they are in poor health due to their advancing age (Hank & Buber, 2007; Rutigliano, 2020; Schmidt et al., 2012). According to the exchange theory, at some point in the life course, there is a reversal in the flow of support exchanged (Kalmijn, 2019). In other words, older mothers could be members of the so-called sandwich generation, who are responsible for caring for both their young children and their older parents (Henretta et al., 2002a). Therefore, based on theories regarding the ability of parents to provide support and contact, we hypothesize that there is a negative association between an older age at first birth and parental support.

To sum up, the theories and the existing evidence on the role of parental support on fertility and those on the association between the adult child's age (on average; not the parental age at birth) and parental support generally predict that parental support decreases with increasing maternal age at first birth. However, we need more systematic evidence on whether this is the case and, if so, on the magnitude of the differences in levels of parental support between younger and older mothers. The transition to the first birth is a peculiar and critical point in time during

which parents could be particularly supportive of their offspring, and may therefore increase their level of support regardless of their pre-birth propensity to help and adult child's age and needs. The convoy model in gerontology and the Multidimensional Intergenerational Support Model argue that people have networks they can rely on in times of crises as well as to respond to a broader array of needs (Antonucci & Akiyama, 1987; Fingerman et al., 2013). In other words, in times when there are specific needs and problems, such as around the transition to parenthood, the family could be mobilized for support. Chan and Ermisch (2011) indeed report that in the U.K., although intergenerational support is not extensive, parents and adult children are supportive of each other at critical moments of life transitions such as the birth of a child. Similarly, work testing the solidarity model shows that older parents and children report more positive and less negative relationships than younger ones report (Fingerman et al., 2013) which could suggest that the intergenerational stake improves with increasing age. Moreover, due to differences in the social characteristics and needs of younger and older mothers, their patterns of drawing on parental support could be qualitatively different. For example, whereas younger mothers may receive more financial support than older mothers (Vandell et al., 2003), younger and older mothers might receive similar levels of emotional and childcare support since, in times when there are specific needs and problems such as around the transition to parenthood, the family could be mobilized for support (Hogan & Eggebeen, 1995). Parental support can be provided in multifaceted ways and because of differences in the social status and needs of younger and older mothers, different dimensions of parental support may be combined and substituted in different ways by younger than by older mothers. In addition, even if the average association between maternal age at first birth and parental support is indeed negative, it is unclear whether this pattern holds to the same extent for less advantaged mothers. Although older first-time mothers tend to be advantaged, the mean age at first birth has been increasing for all educational groups (Berrington et al., 2015). Therefore, the category of older mothers includes both more and less advantaged women. The socioeconomic status of mothers is correlated with the levels of parental support they receive. There is, for example, evidence that disadvantaged mothers are more likely to rely on their family for practical support, and are less likely to use formal childcare arrangements, in part because they are less likely to be able to rely on the support of a partner (Schaffnit & Sear, 2017a). For these reasons, we consider different dimensions of parental support and how they are combined, and we investigate both the average association between maternal age at first birth and parental support, and whether it varies by the mother's socioeconomic status.

Methods

The UK Millennium Cohort Study

For our analyses, we use data from the Millennium Cohort Study (MCS), a UK national cohort study tracking 19,244 children who were born between September 2000 and January 2002. The first wave was collected when the children were

nine months old, and subsequent waves were collected when the cohort members were around three, five, seven, 11, and 14 years old. Selected areas were disproportionately sampled to overrepresent areas of high child poverty, concentrations of ethnic minorities, and the three smaller countries of the UK (Scotland, Wales, and Northern Ireland). For this reason, the analyses are weighted in order to rebalance the survey, and to account for its complex structure. In the great majority of cases (99%), the mother was interviewed as the main caregiver, and, when present, her co-resident partner was also interviewed (who may or may not be the biological father of the cohort child).

The analyses focus on cohort members for whom their mother was the main interviewee (99% of first births). This is done not only in order to obtain information about the mother's age at first birth and her socioeconomic characteristics (which may be related to the likelihood of receiving parental support), but also because the literature has documented that it is the mother, and not the father, who tends to be the main recipient of kin contact and support (Grundy & Shelton, 2001a; Hawkes & Joshi, 2007; Mitchell & Green, 2002). The study focuses on Sweep 1 of the MCS; i.e., on the sweep that was conducted the closest to the birth of the cohort child (around nine months), as it is during this period that we expect the mother to need the most support. Moreover, it is difficult to compare levels of childcare support across the sweeps, both because the information was collected differently across the sweeps, and because a family's childcare needs change as children grow older. In this study, we focus on first births, while excluding data on higher order births, for two reasons. First, the focus of this study is motivated by the need to better understand the costs and benefits of the recent trend of delayed first births. Second, examining all parity births would be complicated by the likelihood that parental support varies by parity (Coall & Hertwig, 2010), and that the decision to have a second or a third child depends in part on the availability of parental support (Schaffnit & Sear, 2017a). The analytical subsample includes 7,396 respondents. The analytical sample includes first births (n = 7829, or 41% of the overall MCS sample), and excludes respondents whose parents are reported dead (n = 125), and cases with missing values on any of the variables used in the analyses (on average 3%).

Variables

In order to measure parental support, we use five binary variables collected at Sweep 1, when the cohort children were around nine months old. Specifically, we measure whether the respondent has daily/weekly contact with her mother/father (telephone, email, or other forms of contact are not measured in the questionnaire), receives grandparental childcare on a regular basis[3], receives financial help from her parents to buy essentials (for the child and/or for to cover household costs), and receives

[3] The question on childcare was posed differently to the main respondents who were working ("Who looks after *cohort member name* for most of the time while you are at work?") and to the main respondents who were not working ("Who else looks after *cohort member name* regularly?") at the time of the interview.

monetary transfers from her parents. Here, the term "grandparental childcare" refers to the childcare help the respondent receives from both the maternal and paternal grandparents, although she is more likely to receive support from the former than from the latter.[4] Respondents who co-reside with their mother and/or father (n = 727, 11% of the analytical subsample) have been coded as having daily/weekly contact with their mother and/or father, and based on their responses for the other indicators of support. Throughout the analyses and discussion, the term "parental support" refers to the support the cohort child's mother receives from her parents (i.e., the cohort child's grandparents). However, the term "childcare help" can refer to help the mother receives from either set of grandparents.

In the models, maternal age at birth is measured continuously. In the descriptive table, we have, for ease of exposition, divided maternal age into five categories (< 20, 20–24, 25–29, 30–34 and 35 +), and income and area of residence into binary categories. The first objective of this study is to investigate maternal age gradients in levels of parental support. The second objective involves testing whether the association varies, and if so how, on adjustment for the mother's socio-demographic characteristics and (grand)parental age. Previous research has shown that the timing of the first birth, as well as the levels of parental support the mother receives, are socially patterned. Therefore, in the second step of the analyses, we adjust for socio-demographic indicators that may be associated with the maternal age at first birth (Martin, 2004; McLanahan, 2004), and with the mother's need for parental support and with the parental ability to support (Albertini et al., 2007; Rutigliano, 2020; Tomassini et al., 2004). The variables included in the analyses are as follows: partnership status (married, cohabiting, or single), whether the mother holds a degree-level qualification (versus having a lower educational level), household income quintile (based on an OECD measure of income adjusted for family size), whether the family owns their house (versus renting or living in social housing), and the level of deprivation of the respondent's area of residence based on deciles of the Index of Multiple Deprivation. The covariates are measured at Sweep 1.[5] We have adjusted for maternal employment at Sweep 1 and the results do not change with its inclusion; we have therefore decided to exclude this variable from the main models given its potentially endogenous association with parental support (see sensitivity analysis section). In addition to individual characteristics, we include in the model an indicator of the characteristics of the area of residence, as it might be associated with the availability of formal childcare facilities, and, thus, with the mother's need for parental support. We also adjust for grandmaternal age at around Sweep 1 interview. The variable is collected (for the first time) at Sweep 3 and we can construct

[4] For example, of the mothers who were working and for whom the cohort member was the first birth, 15% reported that their mother was the main source of childcare, while 5% reported that their partner's mother was the main source of childcare. Outside of working hours, 16% of these mothers reported that their mother was the main source of help, while 5% reported that their partner's mother was the main source of help.

[5] Because the number of mothers whose marital status changed between the time of birth and the Sweep 1 interview was very small, the results would be virtually identical if we used marital status at birth instead of at Sweep 1.

a measure of parental age at Sweep 1 using the months and years of interview. If maternal age is missing, we use paternal age as the two measures are correlated. Due to attrition between Sweep 1 and 3, the number of observations with a value on parental age is lower than for the rest of the analyses and for this reason we adjust for this variable in a subsequent model. The MCS data does not provide other (e.g. distance, health, employment, pre-birth level of support) information on the parental generation, yet parental age around the time of birth can serve as a proxy of health and grandparental availability to supply care. The third objective involves testing whether maternal age gradients in parental support vary depending on whether the mother is more or less advantaged. To perform this test, the models are stratified by whether the mother holds a degree or is less educated (a fully interacted model produced the same results).

Method

Descriptive analyses show, through simple cross-tabulations, how parental support, measured through the five indicators described in the data section, varies with increasing maternal age at first birth. While the descriptive analysis is informative overall, looking at the five variables separately does not enable us to identify the patterns of parental support of any particular woman, since these are single indicator averages. Support can be provided in different ways. For example, monetary transfers from the parents may compensate for their lack of childcare help, or emotional support from the parents might compensate for their lack of financial support. Looking at each indicator of support separately prevents us from identifying how the different dimensions of support are combined, and crucially, given the aim of this study, whether these dimensions are combined differently by younger and older mothers. This is particularly important given that different dimensions of support can be differentially associated with fertility (Schaffnit & Sear, 2017a). To address these issues, we rely on latent class analysis (LCA), a formal statistical model that we use to divide the respondents into classes that potentially reflect different combinations of parental support dimensions. In the LCA, the five indicators are treated as reflecting an underlying, or latent, structure of parental support. Individuals belong to different classes, but who belongs to what class is unknown a priori, and must be determined by the available data (Amato et al., 2008). This method has already been used to measure intergenerational solidarity in at least two other studies (Chan, 2007; Silverstein & Bengtson, 1997).

To determine the optimal number of classes that summarizes the data well, different statistics are used to guide the model selection in the LCA. In addition to BIC, AIC, and log likelihood, we examine individual residuals that compare the observed and the expected frequencies for pairs of parental support indicators. As a rule of thumb, residuals greater than four are considered a poor fit, and when less than 10% of the residuals are above four, they are considered a reasonable fit. Based on model fit statistics, we establish the number of classes that summarizes the data well. Then, we compute for each respondent the probability of belonging to each of the classes, conditional on her pattern of responses for the five indicators of parental support.

Table 1 Parental support, by maternal age at first birth

	< 23	20–24	25–29	30–34	35 +	Average
Daily/weekly contact with mother	83.7%	77.4%	67.8%	56.4%	43.4%	67.0%
Daily/weekly contact with father	55.5%	57.0%	52.6%	42.4%	29.7%	49.2%
Grandparental childcare	42.6%	49.5%	48.1%	37.6%	29.7%	43.1%
Financial help from parents: buying essential	53.6%	42.1%	34.9%	25.6%	22.3%	35.7%
Financial help from parents: money transfer	41.2%	26.2%	14.7%	8.9%	7.5%	19.0%
% births	15.5%	20.5%	29.3%	25.0%	9.7%	
N	7396					

Results are weighted by survey and design weights

Each respondent is assigned to the latent class to which she has the highest probability of belonging. After assigning the individual respondents to classes, we investigate the association between class membership and maternal age at first birth, before and after the inclusion of the socio-demographic variables. The LCA is performed using version 6 of Mplus and R 2.13 software, while the subsequent analyses are conducted using version 17 of Stata.

Results

Descriptive Analyses

Table 1 shows the distribution of the indicators of parental support across the age categories. We find that all sources of parental support decrease with increasing maternal age at first birth, and that the decline is particularly pronounced for financial help.

Latent Class Analysis

We use LCA to identify common patterns of parental support or combinations of different dimensions of parental support. The first step involves establishing the number of classes that summarizes the data well. The results of model fit analyses (Appendix Table 4) reveal that a three-class model performs considerably better than a two-class model. BIC, AIC, and log likelihood decrease, and the percentage of residuals above four drops from 15 to 0%. A four-class model fits slightly better than a three-class model for the overall model statistics. In practice, however, the differences in model fit between a three- and a four-class model are very small. A three-class model is chosen as it is more parsimonious.

Figure 1 reports the item response probabilities across the three classes: i.e., the probability that each indicator of parental support takes the value of one given the respondent's membership in a certain class. The respondents in class 1 receive medium–high levels of support on all dimensions of parental support; those in class 2 have medium–high levels of contact with their parents and childcare help, but

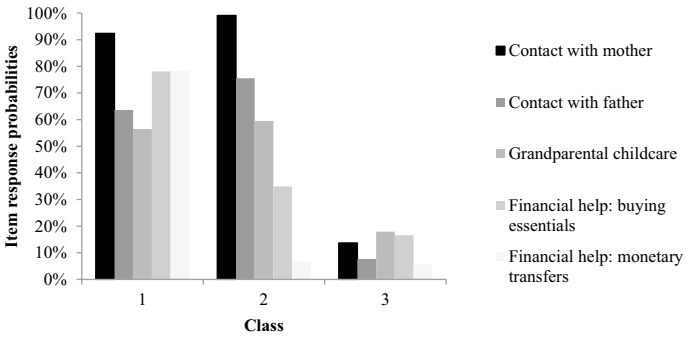

Fig. 1 Item response probabilities of parental support indicators by classes

low(er) levels of financial support; and those in class 3 have low levels of parental support across all of the indicators.

Respondents are assigned to the class to which they have the highest conditional probability of belonging, and Table 2 reports the respondents' membership in classes by maternal age categories. Table 2 shows the distribution of respondents across classes based on maternal age at first birth and socio-demographic characteristics. The results show an age gradient in the distribution of respondents across the three classes. With increasing maternal age at first birth, the distribution shifts away from class 1 and class 2, and toward class 3; i.e., from higher to lower levels of support. The results also reveal that more advantaged mothers are more likely to belong to class 2 or class 3 (and hence to receive less parental support) than less advantaged mothers. The same pattern is found for married and cohabiting mothers. Mean grandparental age is lowest in class 1 (50) and highest in class 3 (57). The results show that there is a social gradient for membership in the three classes.

Model Results

We present results from multinomial logistic models to investigate whether there is an age gradient in membership in these classes, and, if so, whether it is attenuated after adjustment for the mothers' characteristics. The model results are presented in Table 3. Model (1) is the baseline model. Model (2) adds controls for the mother's partnership status, level of education, household income, area of residence, and house ownership at Sweep 1. Model (3) adjusts for grandparental age. To facilitate interpretation of the age gradients, Figs. 2, 3, 4 show the predicted probabilities of membership in classes by maternal age at first birth obtained from Model (1) and Model (2) and Model (3), which we rely on to interpret the results (the 95% confidence intervals are provided in Appendix Table 9).

Looking at Figs. 2, 3, 4, the results from Model (1)– which is the baseline or unadjusted model—show that membership in class 1 (which reflects medium/high levels for all indicators of parental support) decreases monotonically with maternal age at first birth. Membership in class 2 (which reflects medium/high levels of parental contact and grandparental childcare and low levels of parental financial

Table 2 Distribution across classes, by maternal age at first birth and socio-demographic characteristics

Class				
	1	2	3	Total
Maternal age at first birth				
< 20	39.1%	39.3%	21.6%	100.0%
20–24	23.7%	48.4%	28.0%	100.0%
25–29	12.4%	51.5%	36.0%	100.0%
30–34	7.3%	44.0%	48.7%	100.0%
35 +	6.3%	32.4%	61.4%	100.0%
Educational level				
Less than degree level education	22.5%	48.5%	29.0%	100.0%
Degree level education	7.7%	39.7%	52.7%	100.0%
Partnership status at interview				
Married	8.4%	45.3%	46.3%	100.0%
Cohabiting	22.7%	45.3%	32.0%	100.0%
Non partnered	33.9%	45.1%	21.0%	100.0%
Household income				
High (quintiles 4–5)	7.6%	45.7%	46.8%	100.0%
Low (quintiles 1–3)	25.6%	44.9%	29.5%	100.0%
House ownership				
No	29.0%	39.5%	31.5%	100.0%
Yes	9.8%	48.7%	41.5%	100.0%
Area of residence				
Less advantaged area	29.0%	39.5%	31.5%	100.0%
More advantaged area	10.7%	44.6%	44.7%	100.0%
Mean parental age	50.1	54.0	57.4	54.7
Total	17.0%	45.3%	37.8%	100.0%
Number of observations	7396			

The results are weighed using survey weights

support) increases and then decreases with maternal age at first birth. Finally, membership in class 3 (which reflects low levels for all indicators of parental support) increases monotonically with maternal age at first birth. The age gradient for membership in class 2 is less pronounced compared to that for membership in classes 1 and 3. A potential explanation for this finding is that class 2 reflects a pattern of intergenerational support that is driven more by emotional closeness than by financial transfers, or that it indicates that the parents are unable to support their child financially, regardless of her needs. However, while the age gradient is less pronounced at younger ages, membership in this class decreases with age from the

mid-thirties onward.[6] For example, Appendix Table 9 shows that Model (1) predicts that, on average, 40% of the 18-year-old mothers will belong to class 1, 40% will belong to class 2, and 20% will belong to class 3. In contrast, the model also predicts that, on average, 57% of the 35-year-old mothers will belong to class 3, 37% will belong to class 2, and 6% will belong to class 1. Based on the unadjusted models, the results show that an older maternal age at first birth is negatively associated with parental support around the time of the first birth.

Model (2) includes adjustments for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership. Looking at Figs. 2, 3, 4 and compared to the results of Model (1), those of Model (2) show some changes to membership in classes, but only at young maternal ages. For younger mothers, membership in class 1 (medium/high levels for all indicators of parental support) is attenuated, and membership in class 2 (medium/high levels of parental contact and grandparental childcare and low levels of parental financial support) and in class 3 (low levels for all indicators of parental support) is higher. These results suggest that the higher levels of support received by younger than by older mothers are partially explained by the socio-demographic characteristics of the former group. The mother's level of education, partnership status, family income level, and house ownership are shown to be statistically significant in Model (2). However, the lower levels of parental support for older mothers persist when controlling for maternal socio-demographic characteristics. For example, Appendix Table 9 shows that Model (2) predicts that, on average, 21% of the 18-year-old mothers will belong to class 1, 50% will belong to class 2, and 29% will belong to class 3. In contrast, the model predicts that, on average, 53% of the 35-year-old mothers will belong to class 3, 38% will belong to class 2, and 9% will belong to class 1.[7] To more formally examine whether and to what extent the age patterns are attenuated on adjustment for individual socio-demographic characteristics, following Mize et al. (2019) we jointly estimate and compare the predicted probabilities of class membership obtained by running these nested multinomial logit models. In Appendix Figure 10 we plot the difference in the predicted probabilities obtained by running Model (1) and Model (2) respectively. The results show that for Class 1 the attenuation is large and statistically significant at younger ages, whilst differences are statistically significant but small at older ages. For class 2 there is evidence of attenuation at younger ages, but no evidence of substantively and statistically relevant differences at older ages. For Class 3, there is evidence of a statistically significant attenuation at younger and older ages, but differences are quite small. Taken together, the results suggest that the association between maternal age at first birth and parental support is partially explained by the adult children's characteristics, which could reflect, according to the theoretical arguments discussed earlier

[6] A Wald test on the joint significance of the age coefficients in Model (1) reveals that with increasing maternal age at first birth, mothers are significantly more likely (at the 1% level) to belong to class 3 or 2 than to class 1.

[7] A Wald test on the joint significance of the age coefficients in Model (2) reveals that with increasing maternal age, respondents are significantly more likely (at the 1% level) to belong to class 3 or 2 than to class 1.

in the paper, their needs and their phases in the transition to adult roles. Yet, except for membership to class 1 at younger ages, the overall age patterns are robust to the inclusion of individual characteristics.

Finally, in Model (3) we adjust for grandmaternal age at Sweep 1 interview and the age gradients are attenuated for membership to class 2 and 3 (Figs. 2, 3, 4), whilst they remain unchanged for class 1 compared to Model (1). For membership to class 2, the age gradient is almost entirely attenuated with younger and older mothers showing a similar probability (around 40%) to belong to class 2. Membership to class 3 shows an attenuated age gradient compared to Model (2), yet there are still noticeable differences. For example, mothers aged 25 at the time of birth have a probability of 34% to belong to this class vs. 46% of mothers aged 35 (Appendix Table 9). These results suggest that the association between maternal age at first birth and parental support is also partially but not entirely explained by the grandparents' age. In Appendix Figure 11 the direct comparison of the predicted probabilities obtained from Model (1) and Model (3) fully support this interpretation as the results show large and statistically significant differences in the predictions at older ages for both class 2 and 3.

To assess whether similar age gradients in parental support differ by level of education, Model (1) and Model (3) are estimated separately for mothers with and without degree-level education. The results are presented in Figs. 5, 6, 7, the full model results in Appendix Table 7 and the predicted probabilities (with 95% Confidence Intervals) in Appendix Table 10. Figures 5, 6, 7 show that compared to the better educated mothers, the less educated mothers are, on average, more likely to belong to class 1 and 2, and are less likely to belong to class 3 (except before age 23). At any maternal age, levels of parental support are found to be higher for less educated than for better educated mothers, and the educational differences (in membership in classes 2 and 3) become more pronounced with increasing maternal age at first birth. For example, on average, the model predicts that at age 30, 6% of the mothers with degree-level education will belong to class 1, 41% will belong to class 2, and 53% will belong to class 3 (Appendix Table 10). In contrast, the model predicts that at age 30, on average, 11% of mothers without degree-level education will belong to class 1, 54% will belong to class 2, and 35% will belong to class 3.[8] As Figs. 5, 6, 7 show, adjustment for socio-demographic characteristics and parental age result in the age gradients to change in a similar way compared to the main model results. The gradients are flatter, adjustment for individual socio-demographic characteristics attenuated the gradients at younger ages and adjustment for parental age attenuated the gradients at older ages. These findings could indicate that for more advantaged mothers, an older age at first birth is associated (as predicted by the diverging destinies theory) with an accumulation of resources and wealth, which could serve as a substitute for the financial and childcare support younger mothers often receive from their parents. By contrast, less advantaged mothers are more likely to rely on

[8] In a fully interacted model in which the reference category is membership in class 1, the interaction terms between high education and maternal age at birth are jointly statistically significant at the 5% level for class 2 (p-value = 0.03), and at the 1% level for class 3 (p-value < 0.000).

Table 3 Multinomial logistic models predicting membership in classes

Class (class 1 reference category)	Model (1): unadjusted		Model (2): adjusted for socio-demographic characteristics		Model (3): adjusted for socio-demographic characteristics and parental age	
	2	3	2	3	2	3
	RRR	RRR	RRR	RRR	RRR	RRR
Maternal age at birth	1.50***	1.31***	1.17**	1.02	1.12	0.96
Maternal age at birth^2	0.99***	1.00	1.00*	1.00	1	1
Degree level education (*reference: less than degree level*)			1.03	1.93***	1	1.90***
Cohabiting (*reference: married*)			0.64***	0.51***	0.67***	0.59***
Single			0.92	0.34***	0.91	0.37***
Household income: bottom quintile (*reference: top quintile*)			0.27***	0.29***	0.27***	0.28***
Household income: second quintile			0.43***	0.38***	0.42***	0.37***
Household income: third quintile			0.62***	0.39***	0.64**	0.41***
Household income: fourth quintile			0.70*	0.43***	0.70*	0.42***
Area of residence: bottom IMD decile (*reference: top IMD decile)*			0.84	0.87	0.79	0.83
Area of residence: second IMD decile			0.83	0.87	0.82	0.89
Area of residence: third IMD decile			0.74	0.73	0.74	0.72
Area of residence: fourth IMD decile			0.81	0.72	0.8	0.74
Area of residence: fifth IMD decile			1.15	0.78	1.24	0.84
Area of residence: sixth IMD decile			1.15	0.91	1.05	0.81
Area of residence: seventh IMD decile			0.85	0.71	0.86	0.73
Area of residence: eight IMD decile			0.98	0.95	1.03	1
Area of residence: ninth IMD decile			0.81	0.78	0.79	0.77
Owning a house (*reference: not owning)*			1.42***	0.74**	1.40***	0.71**
Grandparental age at interview					0.98**	1.02**
Constant			0.49	2.19	1.49	1.86
Number of observations	7,396		7,396		5,584	

The number of observations in Model (3) is smaller because parental age is collected at Sweep 1 and there is attrition between Sweep 1 and Sweep 3

***p < 0.01, **p < 0.05, *p < 0.1

their parents for financial and childcare support. Nonetheless, despite these differences, with increasing maternal age at first birth, both for the advantaged and the disadvantaged groups parental support is lower at older compared to younger parental ages. In line with the previous set of results, parental support is found to be negatively associated with maternal age at birth, regardless of the mother's circumstances.

Sensitivity Analyses

We conducted a series of sensitivity analyses, which are presented in the appendix. First, we explored the moderating role of family income (top two income quintiles vs. bottom three income quintiles), and the results reveal the same patterns, and are virtually identical to the outcomes we observed when analyzing the role of maternal education (Appendix Table 6). Second, we explored whether the results would change if the models included adjustments for the mother's employment, nativity, and ethnicity (Appendix Table 5). The results remained unchanged (compared to the main model results presented in Model (2), Appendix Table 4) following the inclusion of these variables. These additional findings suggest that the respondents' ethnicity cannot explain the observed association between maternal age at first birth and parental support/contact. Whether the association between maternal age at first birth and parental support/contact varies across ethnic groups is a different question, and addressing it would require us to stratify the analyses by respondents' ethnic groups. Our small sample size of first-time ethnic minority mothers does not allow us to investigate whether this association varies across ethnic groups. Third, we investigate whether Model (1) results would change if we used the analytical sample used to run Model (3) which is smaller due to grandparental age being measured the first time in Sweep 3 and attrition between Sweep 1 and 3. The results are virtually identical (Appendix Table 8).

We also explored the association between maternal age at first birth and parental support by looking at each indicator of support separately (Appendix Figure 8). The results of the analyses show a negative age gradient for all indicators of parental support, which is particularly pronounced for financial help with buying essentials. As we discussed in the methods section, the LCA adds value to the analyses that do not identify patterns of parental support for any particular woman or groups of women because these are single indicator averages, and different groups of younger and older mothers may experience different forms or combinations of parental support.

Conclusion

The demographic literature has generally presented childbearing postponement as linked to and partially explained by changes in education and income, which tend to increase with parental age at birth (Bhrolcháin & Beaujouan, 2012). Describing this process, and, implicitly, its consequences for family and child well-being, mainly based on socioeconomic variables and their accumulation with age is potentially limiting. As identified by existing studies, other important aspects of the family context may change with increasing age at first birth such as parental support. However, we lack evidence of whether, and if so to what extent, younger and older mothers receive different levels of parental support. Guided by this overarching insight, using data from the UK Millennium Cohort Study, we analyzed maternal age gradients in the levels of parental support mothers received around the time of birth. We constructed an indicator of parental support through a latent class analysis, a formal statistical model that we used to uncover common patterns in the combinations of different indicators of parental support. Consistent with existing theories

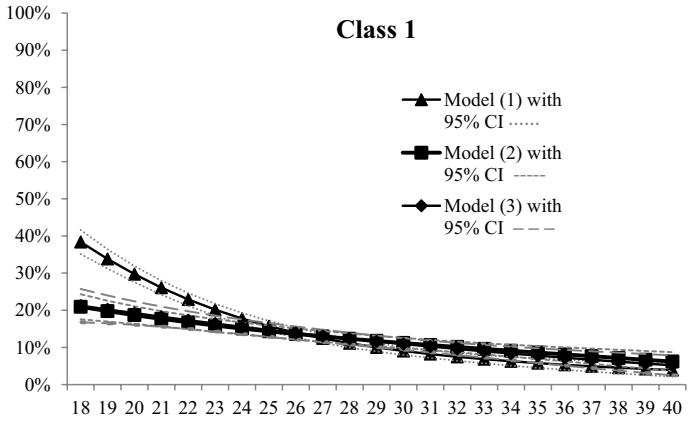

Fig. 2 Predicted probability of membership in class 1 by maternal age at first birth from Model (1) and Model (2). Model (1): unadjusted; Model (2): adjustment for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership; Model (3): adjustment for Model (2) covariates and grandparental age at time of interview. Except for maternal age and maternal age squared, all variables are held constant to the mean. Values and 95% Confidence intervals are presented in Appendix Table 9

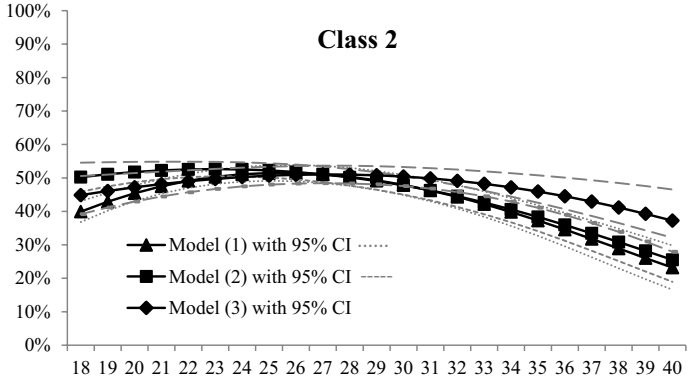

Fig. 3 Predicted probability of membership in class 2 by maternal age at first birth from Model (1), (2) and (3). Model (1): unadjusted; Model (2): adjustment for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership; Model (3): adjustment for Model (2) covariates and grandparental age at time of interview. Except for maternal age and maternal age squared, all variables are held constant to the mean. Values and 95% Confidence intervals are presented in Appendix Table 9

and empirical evidence, our results showed that for mothers, their age at first birth was negatively associated with receiving support from their parents—that is, that older mothers received consistently less support than younger mothers. A declining pattern was observed for membership in all parental support classes that combined different dimensions of (emotional, financial, and practical) support. Following the adjustment for maternal and family socio-demographic characteristics, the

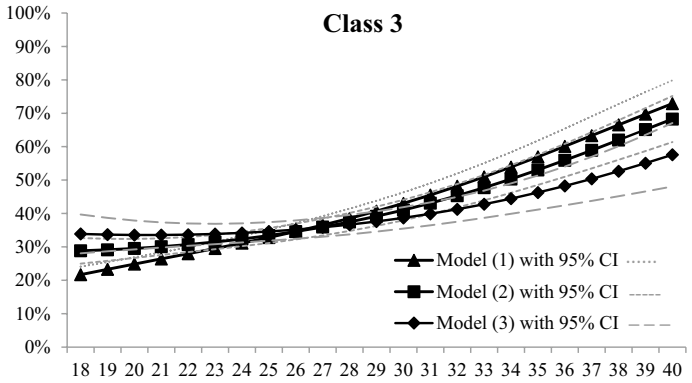

Fig. 4 Predicted probability of membership in class 3 by maternal age at first birth from Model (1), (2) and (3). Model (1): unadjusted; Model (2): adjustment for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership; Model (3): adjustment for Model (2) covariates and grandparental age at time of interview. Except for maternal age and maternal age squared, all variables are held constant to the mean. Values and 95% Confidence intervals are presented in Appendix Table 9

age gradient was found to be attenuated for the younger mothers whilst the gradient at older ages was found to be attenuated on adjustment for grandparental age. Similarly, the analyses stratified by the mother's level of education showed that, albeit to different degrees, parental support decreased with increasing maternal age at first birth for both more and less educated mothers.

The results showed that the higher level of support received by younger mothers could be partially explained by their relatively disadvantaged socio-demographic profiles. A young maternal age at the time of birth could be a proxy for the mother's need for support and help from her parents, possibly due to a lack of financial resources and a stable relationship (Hobcraft & Kiernan, 2001). This resonates with the evidence of high levels of teenage parenthood in the UK, which is associated with social and economic disadvantage. Conversely, the lower levels of parental support received by older mothers persisted following adjustments for socio-demographic characteristics but was attenuated when we adjusted for grandparental age. An older maternal age at first birth could therefore reflect lack of availability of grandparental support, which as discussed in the theoretical background of the paper, could be either the cause or the consequence of childbearing postponement. This explanation is bolstered by the results of the analyses showing that both the disadvantaged and the advantaged mothers—who are likely to have different needs—were less likely to receive parental support with increasing maternal age at birth. A possible explanation for the residual association in the fully adjusted models is that it is confounded by other variables that were not considered in this study due to a lack of information in the data. Indeed, due to data limitations, we were unable to explore the role of a comprehensive set of parents' (i.e., the grandparent generation's) characteristics beyond parental age. Indeed, the MCS does not collect information on the parents' (the cohort members' grandparents') health, pre-birth levels of support and contact, employment status and the geographical distance between the mother and her parents (Grundy & Murphy, 1999; Henretta et al., 2002b). Mothers who have

delayed childbearing could have older parents who might not be able to help for health reasons, or because they have moved to the countryside or abroad after retirement (Tomassini et al., 2004). Alternatively, the residual association could reflect intergenerational norms and the weaking of ties as children transition to adult social roles since previous research has found that age is, on average, a robust predictor of support from parents to young adults (Hartnett et al., 2013). More and different data is needed to test these hypotheses.

These novel findings have potentially important implications for the family demography literature on both the determinants and the consequences of the postponement of childbearing. Since parental support is positively associated with the well-being of both the parents and their children (Colen, 2011; Colen et al., 2006a), with the transition to subsequent parity births and with women's labour market participation (Aassve et al., 2012; Arpino et al., 2014; Schaffnit & Sear, 2017a; Thomese & Liefbroer, 2013), receiving lower levels of parental support with increasing maternal age at birth could represent a cost of the postponement of childbearing. This cost might be particularly pronounced for more disadvantaged population groups who are less likely than their more advantaged counterparts to be able to substitute parental support with market alternatives such as nannies or nurseries whose cost in the UK is high and are poorly subsidized until age 3 (Gambaro, 2012; Mamolo et al., 2011; Viitanen, 2005). For example, evidence shows that the risk of giving birth to a low birth weight child rises more quickly for disadvantaged than advantaged mothers (Geronimus, 1996) and Colen et al., (2006a) show that African American women having a co-residential mother in the household at the time of birth experienced significantly reduced odds of giving birth to a low birth weight child. The findings of our study showing that older mothers—regardless of their level of education—are less likely to receive support from their parents around the time of birth suggest that it would be fruitful for future research to explore the role of parental support in explaining the widening gaps in low birth weight with increasing maternal age at first birth.

Before we can test and understand the extent to which parental support is integral to these or other associations, and if so whether the effects varies across subgroups of the population, we need to better understand *why* parental support and maternal age at birth are correlated. That is, does postponing the first birth result in lower levels of parental support? Or, conversely, do lower levels of parental support result in some groups delaying childbearing? Moreover, can this association be explained by individual characteristics that are associated with both the timing of motherhood and levels of parental support? If the lack of parental support was somewhat accounted for in the decision to postpone childbearing to older ages, it is possible that the consequences of having less or little support could be smaller than if one postponed because of other reasons (e.g. investments into education) and found herself without support. Ultimately, these costs and consequences could be mediated by individual circumstances (e.g. financial resources to attenuate the lack of support by relying on high quality market alternatives) and by the context (e.g. access to subsidized childcare). Disentangling the causality of the association is beyond the scope of this study and the MCS data we used. However, the results presented here will be of interest to those interested in teasing out this complex association. Longitudinal data covering different institutional contexts that provide information on levels of parental support before and

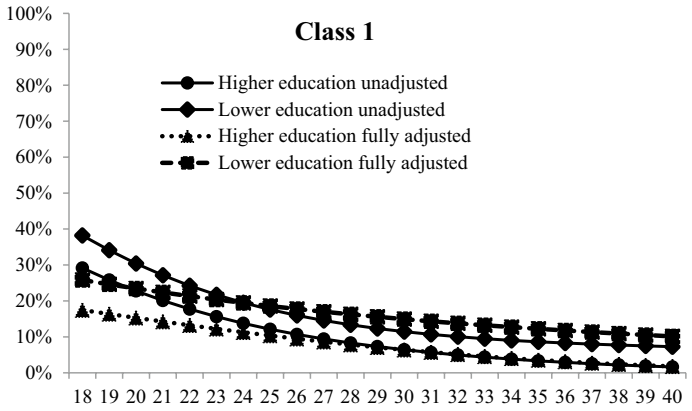

Fig. 5 Predicted probability of membership in class 1 by mother's level of education and maternal age at first birth (Model (1) and (3) results). Adjusted model controls for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership and grandparental age at time of interview. Except for maternal age and maternal age squared, all variables are held constant to the mean. Values and 95% Confidence intervals are presented in Appendix Table 10

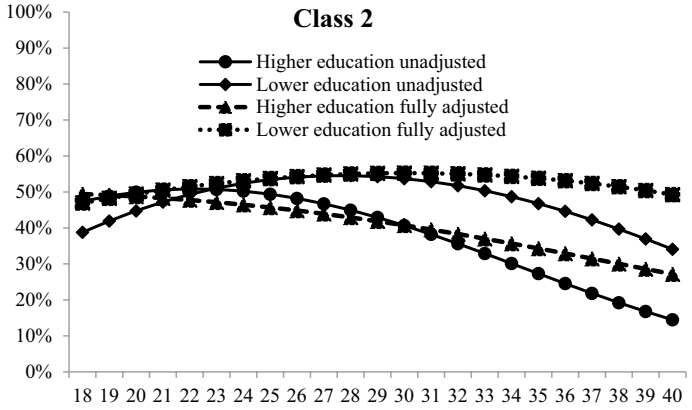

Fig. 6 Predicted probability of membership in class 2 by mother's level of education and maternal age at first birth (Model (1) and (3) results). Adjusted model controls for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership and grandparental age at time of interview. Except for maternal age and maternal age squared, all variables are held constant to the mean. Values and 95% Confidence intervals are presented in Appendix Table 10

after the first birth, as well as information on adult children and their parents' characteristics, would offer us the opportunity to examine these questions more closely.

This study suffers from some limitations. First, the MCS did not provide us with information concerning the frequency and the amounts of financial transfers at the time of the interview or before the time of birth. Thus, we were unable to observe the amounts of the transfers the younger and the older mothers might have received from their parents earlier in life. Second, the data did not enable us to distinguish period from cohort effects, as they included women from different birth cohorts. This could

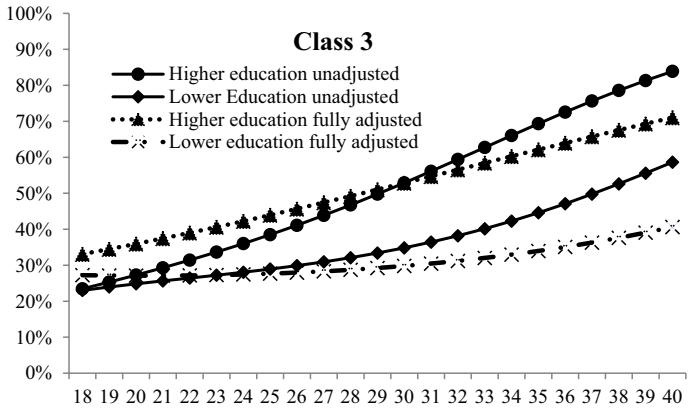

Fig. 7 Predicted probability of membership in class 3 by mother's level of education and maternal age at first birth (Model (1) and (3) results). Adjusted model controls for the mother's partnership status at the time of birth, level of education, household income, area of residence, and house ownership and grandparental age at time of interview. Except for maternal age and maternal age squared, all variables are held constant to the mean. Values and 95% Confidence intervals are presented in Appendix Table 10

be a concern to the extent that women from different birth cohorts were exposed to different societal contexts that may have affected the timing of their first birth, as well as their intergenerational relationships. Reassuringly, additional analyses (Appendix Figure 9) showed that for the maternal ages that overlapped between different birth cohorts, the association between maternal age and parental support was similar. Third, the results are specific to the UK context, and it is unclear whether the findings can be generalized to other contexts, particularly to those with less extensive social safety net programs that provide additional support for new mothers, such as the United States. Future research using different data should address these questions. Fourth, we were only able to account for parental age at interview but did not have access to other information on the grandparents' generation which could be integral to maternal age/parental support association such as health, distance and pre-birth levels of support. These limitations are compensated for by several important strengths. First, the study uses a unique data source, the Millennium Cohort Study, which is representative of the UK population, and which enabled us to comprehensively analyze, for the first time, the association between maternal age at first birth and parental support around the time of birth. Importantly, the sample size allowed us to focus on first-time mothers only, such that the results were not confounded by differences in the ages of children or by the presence of siblings of different ages in the household. It was also a substantial advantage that we were able to focus on mothers who experienced the transition to the first birth around the year 2001, as patterns of intergenerational support and the meaning and/or consequences of having children at older ages might vary over time. Second, the data enabled us to consider different dimensions of parental support, as well as a range of maternal characteristics that might have explained this association.

This is the first study to investigate whether there is a systematic association between an older maternal age at first birth and levels of parental support. The results

suggest that future research would benefit from taking into account parental support and intergenerational relationships when investigating the costs and benefits of the timing of first births. This wider perspective has the potential to enrich and expand our understanding of the perceived and real costs and benefits of having children at older ages, its links to child and family well-being, and intergenerational relations.

Appendix

See Figs. 8, 9, 10, 11

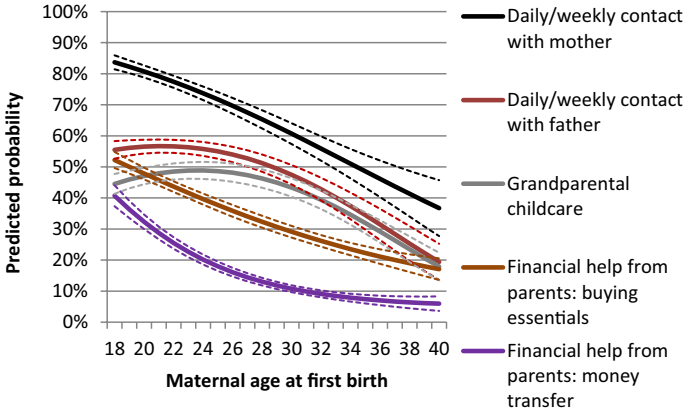

Fig. 8 Predicted probability of receiving parental support or having parental contact by maternal age at first birth (with 95% Confidence Intervals). The predicted probabilities were obtained by running a logistic regression model on each indicator of parental support/contact on maternal age (linear and quadratic terms).

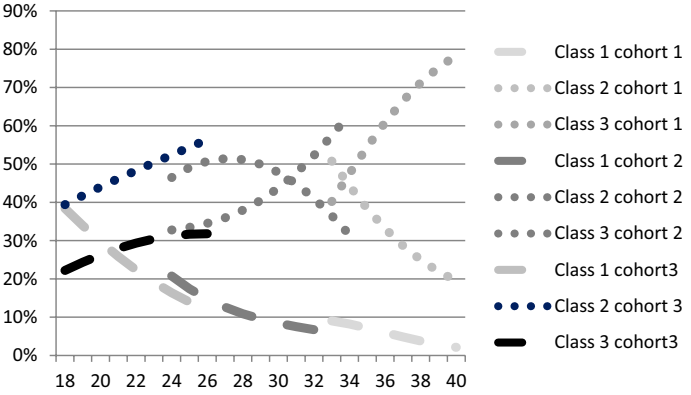

Fig. 9 Predicted probability of membership in classes by maternal age at birth and birth cohorts (Cohort 1: born before 1966, Cohort 2: born 1967–1975, Cohort 3: born 1976–1987)

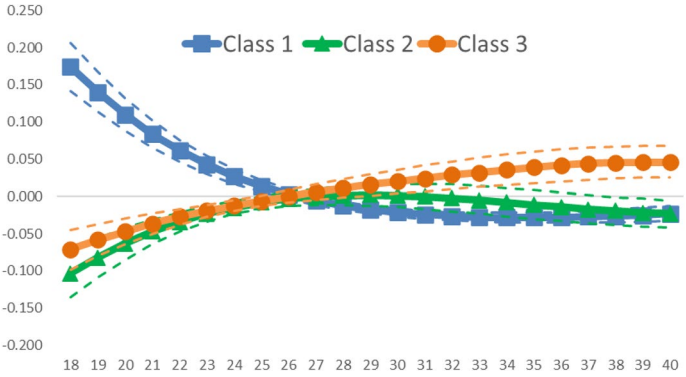

Fig. 10 Difference in the predicted probabilities obtained by running Model (1) and Model (2), by classes and with 95% CI. Estimates obtained following Mize et al. (2019)

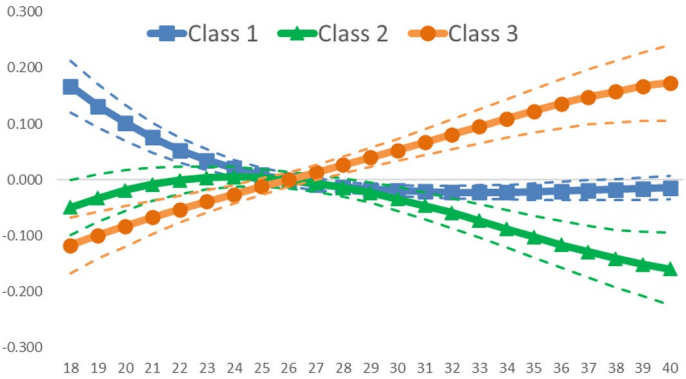

Fig. 11 Difference in the predicted probabilities obtained by running Model (1) and Model (3), by classes and with 95% CI. estimates obtained following Mize et al. (2019)

See Tables 4, 5, 6, 7, 8, 9, 10

Table 4 Goodness of fit test of the latent class analysis

Classes	BIC	AIC	Log Likelihood	% residuals > 4	N
2	44,185.83	43,795.45	− 21,886.73	15	7600
3	43,471.36	43,353.45	− 21,659.72	0	7600
4	43,436.49	43,276.96	− 21,615.48	0	7600

The number of observations differs from the main results tables, as it is not weighted by survey weights

Table 5 Multinomial logistic regression models. Model (2) with adjustment for maternal nativity, employment, and ethnicity is compared to Model (1) and Model (2) (which are unadjusted and adjusted for mother's sociodemographic characteristics)

Class (class 1 reference category)	Model (1)		Model (2)		Model (2) with adjustment for maternal nativity, maternal employment, and ethnicity	
	2	3	2	3	2	3
	RRR	RRR	RRR	RRR	RRR	RRR
Maternal age at birth	1.50***	1.31***	1.17**	1.02	1.22**	1.01
Maternal age at birth^2	0.99***	1.00	1.00*	1.00	1.00*	1
Number of observations	7396					

***p < 0.01, **p < 0.05, *p < 0.1

Table 6 Multinomial logistic models predicting membership in classes by family income

Class (class 1 reference category)	Model (1) for mothers with higher income levels		Model (1) for mothers with lower income levels	
	2	3	2	3
	RRR	RRR	RRR	RRR
Maternal age at birth	1.33	1.29	1.50***	1.28***
Maternal age at birth^2	1.00	1.00	0.99***	1.00*
Constant	0.03	0.01	0.005***	0.015***
Number of observations	2494		4902	

Joint significance of the age coefficients for the lower income group: class (2) vs. class (1) $p < 0.001$; class (3) vs. class (1) $p < 0.001$. Joint significance of the age coefficients for the higher income group: class (2) vs. class (1) $p < 0.001$; class (3) vs. class (1) $p < 0.001$

***p < 0.01, **p < 0.05, *p < 0.1

Table 7 Model results Figs. 5, 6 and 7

Class (class 1 reference category)	Model (1) for mothers with degree level education		Model (3) for mothers with degree level education	
	2	3	2	3
	RRR	RRR	RRR	RRR
Maternal age at birth	1.33	1.29	1.030	1.05
Maternal age at birth^2	− 0.24	− 0.27	− 0.220	− 0.27
Number of observations	2,494		2,071	
Class (class 1 reference category)	Model (1) for mothers with less than degree level education		Model (3) for mothers with less than degree level education	
	2	3	2	3
	RRR	RRR	RRR	RRR
Maternal age at birth	1.50***	1.28***	1.14	1.02
Maternal age at birth^2	− 0.110***	− 0.088	− 0.1	− 0.088
Number of observations	4902		3513	

***p < 0.01, **p < 0.05, *p < 0.1

Table 8 Model (1) run on Model (3) subsample

Class (class 1 reference category)	Model (1)	
	2	3
	RRR	RRR
Maternal age at birth	1.42***	1.26***
Maternal age at birth^2	1.00***	1
Number of observations	5,584	

***p < 0.01, **p < 0.05, *p < 0.1

Table 9 Figs. 2,3 and 4 predicted probabilities with 95% CI

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.38	0.35	0.42	18	0.40	0.37	0.43	18	0.22	0.19	0.24
19	0.34	0.31	0.36	19	0.43	0.40	0.46	19	0.23	0.21	0.25
20	0.30	0.28	0.32	20	0.45	0.43	0.48	20	0.25	0.23	0.27
21	0.26	0.24	0.28	21	0.47	0.45	0.50	21	0.26	0.24	0.28
22	0.23	0.21	0.25	22	0.49	0.47	0.51	22	0.28	0.26	0.30
23	0.20	0.19	0.22	23	0.50	0.48	0.52	23	0.30	0.27	0.32
24	0.18	0.16	0.19	24	0.51	0.49	0.53	24	0.31	0.29	0.33
25	0.16	0.14	0.17	25	0.51	0.49	0.54	25	0.33	0.31	0.35
26	0.14	0.13	0.15	26	0.51	0.49	0.54	26	0.35	0.32	0.37
27	0.12	0.11	0.14	27	0.51	0.48	0.54	27	0.37	0.34	0.39
28	0.11	0.10	0.12	28	0.50	0.48	0.53	28	0.39	0.36	0.41
29	0.10	0.09	0.11	29	0.49	0.46	0.52	29	0.41	0.38	0.44
30	0.09	0.08	0.10	30	0.48	0.45	0.51	30	0.43	0.40	0.46
31	0.08	0.07	0.09	31	0.46	0.43	0.49	31	0.46	0.42	0.49
32	0.07	0.06	0.09	32	0.44	0.41	0.48	32	0.48	0.44	0.52
33	0.07	0.06	0.08	33	0.42	0.38	0.46	33	0.51	0.47	0.55
34	0.06	0.05	0.07	34	0.40	0.36	0.44	34	0.54	0.49	0.58
35	0.06	0.05	0.07	35	0.37	0.33	0.42	35	0.57	0.52	0.62
36	0.05	0.04	0.07	36	0.35	0.30	0.40	36	0.60	0.55	0.65
37	0.05	0.03	0.06	37	0.32	0.26	0.37	37	0.63	0.58	0.69
38	0.05	0.03	0.06	38	0.29	0.23	0.35	38	0.67	0.60	0.73
39	0.04	0.03	0.06	39	0.26	0.20	0.32	39	0.70	0.63	0.76
40	0.04	0.02	0.06	40	0.23	0.17	0.30	40	0.73	0.66	0.80

Model (2)

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.21	0.18	0.24	18	0.50	0.46	0.55	18	0.29	0.25	0.33
19	0.20	0.17	0.23	19	0.51	0.47	0.55	19	0.29	0.26	0.32
20	0.19	0.16	0.21	20	0.52	0.49	0.55	20	0.30	0.27	0.32
21	0.18	0.16	0.20	21	0.52	0.50	0.55	21	0.30	0.28	0.33
22	0.17	0.15	0.19	22	0.53	0.50	0.55	22	0.31	0.28	0.33
23	0.16	0.14	0.18	23	0.53	0.50	0.55	23	0.31	0.29	0.34
24	0.15	0.13	0.17	24	0.53	0.50	0.55	24	0.32	0.30	0.35
25	0.14	0.13	0.16	25	0.52	0.50	0.54	25	0.33	0.31	0.36
26	0.14	0.12	0.15	26	0.52	0.50	0.54	26	0.35	0.32	0.37
27	0.13	0.12	0.14	27	0.51	0.49	0.53	27	0.36	0.33	0.38
28	0.12	0.11	0.14	28	0.50	0.48	0.53	28	0.37	0.35	0.40
29	0.12	0.10	0.13	29	0.49	0.46	0.52	29	0.39	0.36	0.42
30	0.11	0.10	0.13	30	0.48	0.45	0.51	30	0.41	0.38	0.44
31	0.11	0.09	0.12	31	0.46	0.43	0.49	31	0.43	0.40	0.46

Table 9 (continued)

Model (2)

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
32	0.10	0.09	0.12	32	0.45	0.41	0.48	32	0.45	0.42	0.49
33	0.10	0.08	0.11	33	0.43	0.39	0.46	33	0.48	0.44	0.52
34	0.09	0.08	0.11	34	0.41	0.37	0.44	34	0.50	0.46	0.54
35	0.09	0.07	0.10	35	0.38	0.34	0.43	35	0.53	0.49	0.58
36	0.08	0.06	0.10	36	0.36	0.31	0.41	36	0.56	0.51	0.61
37	0.08	0.06	0.10	37	0.33	0.28	0.39	37	0.59	0.54	0.64
38	0.07	0.05	0.09	38	0.31	0.25	0.37	38	0.62	0.56	0.68
39	0.07	0.04	0.09	39	0.28	0.22	0.34	39	0.65	0.59	0.72
40	0.06	0.04	0.09	40	0.26	0.19	0.32	40	0.68	0.61	0.75

Model (3)

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.21	0.17	0.26	18	0.45	0.39	0.51	18	0.34	0.28	0.40
19	0.20	0.16	0.24	19	0.46	0.41	0.51	19	0.34	0.29	0.39
20	0.19	0.16	0.22	20	0.47	0.43	0.51	20	0.34	0.29	0.38
21	0.18	0.16	0.21	21	0.48	0.44	0.52	21	0.34	0.30	0.37
22	0.17	0.15	0.20	22	0.49	0.46	0.52	22	0.34	0.30	0.37
23	0.16	0.14	0.19	23	0.50	0.47	0.53	23	0.34	0.31	0.37
24	0.16	0.14	0.18	24	0.50	0.47	0.53	24	0.34	0.31	0.37
25	0.15	0.13	0.17	25	0.51	0.48	0.53	25	0.35	0.32	0.37
26	0.14	0.12	0.16	26	0.51	0.48	0.54	26	0.35	0.32	0.38
27	0.13	0.11	0.15	27	0.51	0.48	0.54	27	0.36	0.33	0.39
28	0.12	0.11	0.14	28	0.51	0.48	0.54	28	0.37	0.34	0.40
29	0.12	0.10	0.13	29	0.51	0.48	0.54	29	0.38	0.35	0.41
30	0.11	0.09	0.12	30	0.50	0.48	0.53	30	0.39	0.35	0.42
31	0.10	0.09	0.12	31	0.50	0.47	0.53	31	0.40	0.36	0.43
32	0.10	0.08	0.11	32	0.49	0.46	0.52	32	0.41	0.38	0.45
33	0.09	0.07	0.11	33	0.48	0.45	0.52	33	0.43	0.39	0.47
34	0.08	0.07	0.10	34	0.47	0.43	0.51	34	0.44	0.40	0.49
35	0.08	0.06	0.10	35	0.46	0.41	0.51	35	0.46	0.41	0.51
36	0.07	0.05	0.09	36	0.45	0.39	0.50	36	0.48	0.42	0.54
37	0.07	0.04	0.09	37	0.43	0.37	0.49	37	0.50	0.44	0.57
38	0.06	0.04	0.09	38	0.41	0.34	0.48	38	0.53	0.45	0.60
39	0.06	0.03	0.08	39	0.39	0.31	0.48	39	0.55	0.47	0.64
40	0.05	0.03	0.08	40	0.37	0.28	0.47	40	0.58	0.48	0.67

Table 10 Figs. 5,6 and 7 predicted probabilities with 95% CI

High education—unadjusted (Model (1))

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.29	0.16	0.43	18	0.47	0.36	0.59	18	0.23	0.13	0.34
19	0.26	0.15	0.36	19	0.49	0.39	0.59	19	0.25	0.16	0.34
20	0.23	0.15	0.31	20	0.50	0.42	0.58	20	0.27	0.19	0.35
21	0.20	0.14	0.26	21	0.51	0.44	0.57	21	0.29	0.23	0.36
22	0.18	0.13	0.22	22	0.51	0.45	0.57	22	0.31	0.26	0.37
23	0.16	0.12	0.19	23	0.51	0.46	0.56	23	0.34	0.29	0.38
24	0.14	0.11	0.16	24	0.50	0.46	0.55	24	0.36	0.32	0.40
25	0.12	0.10	0.14	25	0.49	0.46	0.53	25	0.38	0.35	0.42
26	0.11	0.09	0.13	26	0.48	0.45	0.52	26	0.41	0.37	0.45
27	0.09	0.08	0.11	27	0.47	0.43	0.50	27	0.44	0.40	0.48
28	0.08	0.07	0.10	28	0.45	0.41	0.49	28	0.47	0.43	0.51
29	0.07	0.06	0.09	29	0.43	0.39	0.47	29	0.50	0.45	0.54
30	0.06	0.05	0.08	30	0.41	0.37	0.45	30	0.53	0.48	0.57
31	0.06	0.04	0.07	31	0.38	0.34	0.42	31	0.56	0.51	0.61
32	0.05	0.04	0.06	32	0.36	0.31	0.40	32	0.59	0.55	0.64
33	0.04	0.03	0.06	33	0.33	0.29	0.37	33	0.63	0.58	0.67
34	0.04	0.03	0.05	34	0.30	0.26	0.35	34	0.66	0.61	0.71
35	0.03	0.02	0.05	35	0.27	0.23	0.32	35	0.69	0.65	0.74
36	0.03	0.02	0.04	36	0.25	0.20	0.29	36	0.73	0.68	0.77
37	0.03	0.01	0.04	37	0.22	0.17	0.27	37	0.76	0.71	0.81
38	0.02	0.01	0.04	38	0.19	0.14	0.24	38	0.79	0.73	0.84
39	0.02	0.00	0.03	39	0.17	0.11	0.22	39	0.81	0.76	0.87
40	0.02	0.00	0.03	40	0.14	0.09	0.20	40	0.84	0.78	0.90

Low education—unadjusted (Model (1))

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.38	0.35	0.41	18	0.39	0.36	0.42	18	0.23	0.21	0.26
19	0.34	0.31	0.37	19	0.42	0.39	0.45	19	0.24	0.22	0.26
20	0.30	0.28	0.33	20	0.45	0.42	0.47	20	0.25	0.23	0.27
21	0.27	0.25	0.29	21	0.47	0.45	0.50	21	0.26	0.24	0.28
22	0.24	0.22	0.26	22	0.49	0.47	0.52	22	0.26	0.24	0.28
23	0.22	0.20	0.24	23	0.51	0.49	0.54	23	0.27	0.25	0.29
24	0.20	0.17	0.22	24	0.52	0.50	0.55	24	0.28	0.26	0.30
25	0.18	0.16	0.20	25	0.53	0.51	0.56	25	0.29	0.27	0.31
26	0.16	0.14	0.18	26	0.54	0.51	0.57	26	0.30	0.27	0.32
27	0.15	0.13	0.16	27	0.55	0.52	0.57	27	0.31	0.28	0.34
28	0.13	0.12	0.15	28	0.55	0.52	0.58	28	0.32	0.29	0.35
29	0.12	0.11	0.14	29	0.54	0.51	0.57	29	0.33	0.30	0.36

Table 10 (continued)

Low education—unadjusted (Model (1))

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
30	0.11	0.10	0.13	30	0.54	0.51	0.57	30	0.35	0.32	0.38
31	0.11	0.09	0.12	31	0.53	0.50	0.56	31	0.36	0.33	0.40
32	0.10	0.08	0.12	32	0.52	0.48	0.55	32	0.38	0.35	0.42
33	0.10	0.08	0.11	33	0.50	0.47	0.54	33	0.40	0.36	0.44
34	0.09	0.07	0.11	34	0.49	0.45	0.53	34	0.42	0.38	0.46
35	0.09	0.07	0.11	35	0.47	0.42	0.52	35	0.45	0.40	0.49
36	0.08	0.06	0.10	36	0.45	0.39	0.50	36	0.47	0.42	0.52
37	0.08	0.06	0.10	37	0.42	0.36	0.49	37	0.50	0.44	0.56
38	0.08	0.05	0.10	38	0.40	0.32	0.47	38	0.53	0.45	0.60
39	0.07	0.04	0.11	39	0.37	0.29	0.45	39	0.56	0.47	0.64
40	0.07	0.04	0.11	40	0.34	0.25	0.43	40	0.59	0.49	0.68

High education—adjusted (Model (3))

	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.17	0.03	0.32	18	0.49	0.32	0.67	18	0.33	0.15	0.52
19	0.16	0.04	0.29	19	0.49	0.34	0.64	19	0.34	0.18	0.51
20	0.15	0.05	0.25	20	0.49	0.36	0.62	20	0.36	0.22	0.50
21	0.14	0.06	0.22	21	0.48	0.37	0.59	21	0.37	0.26	0.49
22	0.13	0.07	0.20	22	0.48	0.38	0.57	22	0.39	0.29	0.49
23	0.12	0.07	0.17	23	0.47	0.39	0.55	23	0.41	0.32	0.49
24	0.11	0.07	0.15	24	0.46	0.40	0.53	24	0.42	0.35	0.49
25	0.10	0.07	0.14	25	0.46	0.40	0.52	25	0.44	0.38	0.50
26	0.09	0.07	0.12	26	0.45	0.40	0.50	26	0.46	0.40	0.51
27	0.09	0.06	0.11	27	0.44	0.39	0.49	27	0.47	0.43	0.52
28	0.08	0.06	0.10	28	0.43	0.39	0.47	28	0.49	0.45	0.54
29	0.07	0.05	0.09	29	0.42	0.38	0.46	29	0.51	0.46	0.56
30	0.06	0.05	0.08	30	0.41	0.37	0.45	30	0.53	0.48	0.57
31	0.06	0.04	0.07	31	0.40	0.35	0.44	31	0.55	0.50	0.59
32	0.05	0.04	0.07	32	0.38	0.34	0.43	32	0.57	0.52	0.61
33	0.05	0.03	0.06	33	0.37	0.32	0.42	33	0.58	0.54	0.63
34	0.04	0.03	0.05	34	0.36	0.31	0.41	34	0.60	0.55	0.66
35	0.04	0.02	0.05	35	0.34	0.29	0.40	35	0.62	0.56	0.68
36	0.03	0.02	0.05	36	0.33	0.26	0.39	36	0.64	0.58	0.70
37	0.03	0.01	0.04	37	0.31	0.24	0.39	37	0.66	0.58	0.73
38	0.02	0.01	0.04	38	0.30	0.22	0.39	38	0.68	0.59	0.76
39	0.02	0.00	0.04	39	0.29	0.19	0.38	39	0.69	0.60	0.79
40	0.02	0.00	0.04	40	0.27	0.16	0.38	40	0.71	0.60	0.82

Table 10 (continued)

Low education—fully adjusted (Model (3))											
	Class 1				Class 2				Class 3		
	PP	CI lower	CI higher		PP	CI lower	CI higher		PP	CI lower	CI higher
18	0.26	0.22	0.30	18	0.47	0.42	0.52	18	0.27	0.23	0.32
19	0.25	0.21	0.28	19	0.48	0.44	0.53	19	0.27	0.23	0.31
20	0.23	0.20	0.27	20	0.49	0.45	0.53	20	0.27	0.24	0.30
21	0.22	0.20	0.25	21	0.51	0.47	0.54	21	0.27	0.24	0.30
22	0.21	0.19	0.24	22	0.51	0.48	0.55	22	0.27	0.24	0.30
23	0.20	0.18	0.23	23	0.52	0.49	0.55	23	0.27	0.25	0.30
24	0.19	0.17	0.22	24	0.53	0.50	0.56	24	0.27	0.25	0.30
25	0.19	0.16	0.21	25	0.54	0.51	0.57	25	0.28	0.25	0.30
26	0.18	0.15	0.20	26	0.54	0.51	0.57	26	0.28	0.25	0.31
27	0.17	0.15	0.19	27	0.55	0.51	0.58	27	0.28	0.25	0.31
28	0.16	0.14	0.19	28	0.55	0.52	0.58	28	0.29	0.26	0.32
29	0.16	0.13	0.18	29	0.55	0.52	0.59	29	0.29	0.26	0.33
30	0.15	0.12	0.18	30	0.55	0.51	0.59	30	0.30	0.26	0.34
31	0.14	0.12	0.17	31	0.55	0.51	0.59	31	0.30	0.26	0.35
32	0.14	0.11	0.17	32	0.55	0.50	0.60	32	0.31	0.26	0.36
33	0.13	0.10	0.16	33	0.55	0.49	0.60	33	0.32	0.27	0.37
34	0.13	0.09	0.16	34	0.54	0.48	0.61	34	0.33	0.27	0.39
35	0.12	0.09	0.16	35	0.54	0.47	0.61	35	0.34	0.27	0.41
36	0.12	0.08	0.16	36	0.53	0.45	0.62	36	0.35	0.27	0.43
37	0.11	0.07	0.16	37	0.52	0.43	0.62	37	0.36	0.27	0.46
38	0.11	0.06	0.16	38	0.51	0.40	0.63	38	0.38	0.27	0.48
39	0.11	0.05	0.16	39	0.50	0.38	0.63	39	0.39	0.27	0.51
40	0.10	0.04	0.16	40	0.49	0.35	0.64	40	0.41	0.26	0.55

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Data availability The MCS data are freely available to researchers under standard access conditions via the UK Data Service (http://ukdataservice.ac.uk) and the MCS website provides detailed information on the study (https://cls.ucl.ac.uk/cls-studies/millennium-cohort-study/).

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval Ethical approval for each sweep of the Millennium Cohort Study was obtained through the NHS Research Ethics Committee. Where appropriate, informed consent was obtained from the cohort members' parents and, as they grow up, from the cohort members themselves. More information can be found here: MCS ethical review.

References

Aassve, A., Arpino, B., & Goisis, A. (2012). Grandparenting and mothers' labour force participation: A comparative analysis using the Generations and Gender Survey. *Demographic Research, S11*(3), 53–84.

Albertini, M., Kohli, M., & Vogel, C. (2007). Intergenerational transfers of time and money in European families: common patterns — different regimes? *Journal of European Social Policy, 17*(4), 319–334.

Amato, P. R., Landale, N. S., Havasevich-Brooks, T. C., Booth, A., Eggebeen, D. J., Schoen, R., & McHale, S. M. (2008). Precursors of young women's family formation pathways. *Journal of Marriage and Family, 70*(5), 1271–1286. https://doi.org/10.1111/j.1741-3737.2008.00565.x

Antonucci, T. C., & Akiyama, H. (1987). An examination of sex differences in social support among older men and women. *Sex Roles, 17*(11), 737–749.

Arpino, B., & Bordone, V. (2014). Does grandparenting pay off? The effect of child care on grandparents' cognitive functioning. *Journal of Marriage and Family, 76*(2), 337–351.

Arpino, B., Pronzato, C. D., & Tavares, L. P. (2014). The effect of grandparental support on mothers' labour market participation: An instrumental variable approach. *European Journal of Population, 30*(4), 369–390.

Balbo, N., Billari, F. C., & Mills, M. C. (2012). Fertility in advanced societies: A review of research. *European Journal of Population/revue Européenne De Démographie*. https://doi.org/10.1007/s10680-012-9277-y

Becker, G. S. (1991). *A Treatise on the Family*. Harvard University Press.

Berrington, A., Stone, J., & Beaujouan, E. (2015). Educational differences in timing and quantum of childbearing in Britain: A study of cohorts born 1940–1969. *Demographic Research, 33*(26), 733–764.

Billari, F. C., Liefbroer, A. C., & Philipov, D. (2006). The postponement of childbearing in Europe: Driving forces and implications. *Vienna Yearbook of Population Research, 4*, 1–17.

Bucx, F., Van Wel, F., Knijn, T., & Hagendoorn, L. (2008). Intergenerational contact and the life course status of young adult children. *Journal of Marriage and Family, 70*(1), 144–156.

Chan, T. W. (2007). *The structure of intergenerational exchanges in the U.K* Population Association of America, New York.

Chan, T. W., & Ermisch, J. F. (2011, September 2011). *Intergenerational exchange of instrumental support: dynamic evidence from the British Household Panel Survey* British Society for Population Studies, University of York.

Coall, D. A., & Hertwig, R. (2010). Grandparental investment: Past, present, and future. *Behavioral and Brain Sciences, 33*(1), 1–19.

Cohen, P. N. (2015). Maternal age and infant mortality for white, black, and Mexican Mothers in the United States. *Sociological Science, 3*, 32–38.

Colen, C. G. (2011). Addressing racial disparities in health using life course perspectives. *Du Bois Review: Social Science Research on Race, 8*(01), 79–94. https://doi.org/10.1017/S1742058X11000075

Colen, C. G., Geronimus, A. T., Bound, J., & James, S. A. (2006a). Maternal upward socioeconomic mobility and black-white disparities in infant birthweight. *American Journal of Public Health, 96*(11), 2032–2039. https://doi.org/10.2105/ajph.2005.076547

Colen, C. G., Geronimus, A. T., & Phipps, M. G. (2006b). Getting a piece of the pie? The economic boom of the 1990s and declining teen birth rates in the United States. *Social Science & Medicine, 63*(6), 1531–1545. https://doi.org/10.1016/j.socscimed.2006.04.006

Cooney, T. M., & Uhlenberg, P. (1992). Support from parents over the life course: The Adult child's perspective. *Social Forces, 71*(1), 63–84. https://doi.org/10.2307/2579966

Elder Jr, G. H. (1994). Time, human agency, and social change: Perspectives on the life course. *Social psychology quarterly*, 4–15.

Fingerman, K. L., Sechrist, J., & Birditt, K. (2013). Changing views on intergenerational ties. *Gerontology, 59*(1), 64–70. https://doi.org/10.1159/000342211

Frankenberg, E., Lillard, L., & Willis, R. J. (2002). Patterns of intergenerational transfers in Southeast Asia. *Journal of Marriage and Family, 64*(3), 627–641. https://doi.org/10.1111/j.1741-3737.2002.00627.x

Gambaro, L. (2012). *Why are childcare workers low paid? An analysis of pay in the UK childcare sector, 1994–2008* The London School of Economics and Political Science (LSE)].

Geronimus, A. T. (1996). Black/white differences in the relationship of maternal age to birthweight: A population-based test of the weathering hypothesis. *Social Science & Medicine, 42*(4), 589–597.

Goisis, A., & Sigle-Rushton, W. (2014). Childbearing postponement and child well-being: A complex and varied relationship? *Demography, 51*(5), 1821–1841.

Grundy, E., & Murphy, M. (1999). Looking beyond the household: Intergenerational perspectives on living kin and contacts with kin in Great Britain. *Population Trends, Autumn, 1999*, 19–27.

Grundy, E., & Shelton, E. G. N. (2001a). Contact between adult children and their parents in Great Britain 1986–99. *Environment and Planning A, 33*(4), 685–697.

Hank, K., & Buber, I. (2007). *Grandparents caring for their grandchildren: finding from the 2004 Survey of Health, Ageing and Retirement* (217)[working paper]. Mannheim Research Institute for the Economics of Ageing. http://www.mea.uni-mannheim.de/mea_neu/pages/files/nopage_pubs/1un3rw5ajsl80h0y_KarstenHank_IsabellaBuber_127_07.pdf

Hartnett, C. S., Furstenberg, F. F., Birditt, K. S., & Fingerman, K. L. (2013). Parental support during young adulthood: Why does assistance decline with age? *Journal of Family Issues, 34*(7), 975–1007. https://doi.org/10.1177/0192513x12454657

Hawkes, D., & Joshi, H. (2007). *The Grandparents: What is their role in the family?* (Millennium Cohort Study Second Survey A User's Guide to Initial Findings, Issue.

Hawkes, D., & Joshi, H. (2012). Age at motherhood and child development: evidence from the UK millennium cohort. *National Institute Economic Review, 222*(1), R52–R66. https://doi.org/10.1177/002795011222200105

Henretta, J. C., Grundy, E., & Harris, S. (2002a). The influence of socio-economic and health differences on parents' provision of help to adult children: A British-United States comparison. *Ageing and Society, 22*(4), 441–458.

Henretta, J. C., Grundy, E., & Harris, S. (2002b). The influence of socio-economic and health differences on parents' provision of help to adult children: a British-United States comparison. *Ageing & Society, 22*(04), 441–458. https://doi.org/10.1017/S0144686X02008735

Hobcraft, J., & Kiernan, K. E. (2001). Childhood poverty, early motherhood and adult social exclusion. *The British Journal of Sociology, 52*(3), 495–517. https://doi.org/10.1080/00071310120071151

Hochguertel, S., & Ohlsson, H. (2009). Compensatory inter vivos gifts. *Journal of Applied Econometrics, 24*(6), 993–1023.

Hogan, D. P., & Eggebeen, D. J. (1995). Sources of emergency help and routine assistance in old age*. *Social Forces, 73*(3), 917–936. https://doi.org/10.1093/sf/73.3.917

Kalmijn, M. (2006). Educational inequality and family relationships: Influences on contact and proximity. *European Sociological Review, 22*(1), 1–16.

Kalmijn, M. (2019). The effects of ageing on intergenerational support exchange: A new look at the hypothesis of flow reversal. *European Journal of Population, 35*(2), 263–284.

Lumsdaine, R. L., & Vermeer, S. J. (2015). Retirement timing of women and the role of care responsibilities for grandchildren. *Demography, 52*(2), 433–454.

Mamolo, M., Coppola, L., & Di Cesare, M. (2011). Formal childcare use and household socio-economic profile in France, Italy Spain and UK. *Population Review*. https://doi.org/10.1353/prv.2011.a434841

Martin, S. P. (2004). *Women's education and family timing: Outcomes and trends associated with age at marriage and first birth*.

McLanahan, S. (2004). Diverging destinies: How children are faring under the second demographic transition. *Demography, 41*(4), 607–627.

Mills, M. C., Rindfuss, R. R., McDonald, P., & te Velde, E. (2011). Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update, 17*(6), 848–860. https://doi.org/10.1093/humupd/dmr026

Mills, M. C., & Tropf, F. C. (2015). The biodemography of fertility: A review and future research frontiers. *Kolner Zeitschrift Fur Soziologie Und Sozialpsychologie, 67*(Suppl 1), 397–424. https://doi.org/10.1007/s11577-015-0319-4

Mitchell, W., & Green, E. (2002). 'I don't know what I'd do without our Mam' motherhood, identity and support networks. *The Sociological Review, 50*(1), 1–22. https://doi.org/10.1111/1467-954x.00352

Mize, T. D., Doan, L., & Long, J. S. (2019). A General framework for comparing predictions and marginal effects across models. *Sociological Methodology, 49*(1), 152–189. https://doi.org/10.1177/0081175019852763

Murphy, M., & Wang, D. (2001). Family-level continuities in childbearing in low-fertility societies. *European Journal of Population/revue Européenne De Démographie, 17*(1), 75–96.

Neugarten, B. L., Moore, J. W., & Lowe, J. C. (1965). Age norms, age constraints, and adult socialization. *American Journal of Sociology, 70*(6), 710–716.

Ní Bhrolcháin, M., & Beaujouan, É. (2012). Fertility postponement is largely due to rising educational enrolment. *Population Studies, 66*(3), 1–17. https://doi.org/10.1080/00324728.2012.697569

Okun, B. S., & Stecklov, G. (2021). The impact of grandparental death on the fertility of adult children. *Demography, 58*(3), 847–870.

ONS. (2011). *Live births in England and Wales by characteristics of the mother 2010* (Statistical Bulletin, Issue.

Pollock, J. I. (1996). Mature maternity: Long term associations in first children born to older mothers in 1970 in the UK. *Journal of Epidemiology and Community Health, 50*(4), 429–435.

Rutigliano, R. (2020). Counting on potential grandparents? Adult children's entry into parenthood across European countries. *Demography, 57*(4), 1393–1414. https://doi.org/10.1007/s13524-020-00890-8

Schaffnit, S. B., & Sear, R. (2017a). Support for new mothers and fertility in the United Kingdom: Not all support is equal in the decision to have a second child. *Population Studies, 71*(3), 345–361.

Schaffnit, S. B., & Sear, R. (2017b). Supportive families versus support from families: The decision to have a child in the Netherlands. *Demographic Research, 37*, 417–454.

Schmidt, L., Sobotka, T., Bentzen, J. G., & Nyboe Andersen, A. (2012). Demographic and medical consequences of the postponement of parenthood. *Human Reproduction Update, 18*(1), 29–43. https://doi.org/10.1093/humupd/dmr040

Settersten, R. A., & Hagestad, G. O. (1996). What's the latest? Cultural age deadlines for family transitions. *The Gerontologist, 36*(2), 178–188.

Silverstein, M., & Bengtson, V. L. (1997). Intergenerational solidarity and the structure of adult child-parent relationships in American Families. *American Journal of Sociology, 103*(2), 429–460.

Sobotka, T. (2004). *The postponement of Childbearing and Low Fertility in Europe*. Dutch University Press.

Suitor, J. J., Pillemer, K., & Sechrist, J. (2006). Within-family differences in mothers' support to adult children. *The Journals of Gerontology Series b, 61*(1), S10–S17.

Thomese, F., & Liefbroer, A. C. (2013). Child care and child births: The role of grandparents in the Netherlands. *Journal of Marriage and Family, 75*(2), 403–421.

Tomassini, C., Kalogirou, S., Grundy, E., Fokkema, T., Martikainen, P., Broese van Groenou, M., & Karisto, A. (2004). Contacts between elderly parents and their children in four European countries: Current patterns and future prospects. *European Journal of Ageing, 1*(1), 54–63. https://doi.org/10.1007/s10433-004-0003-4

Vandell, D. L., McCartney, K., Owen, M. T., Booth, C., & Clarke-Stewart, A. (2003). Variations in child care by grandparents during the first three years. *Journal of Marriage and Family, 65*(2), 375–381.

Viitanen, T. K. (2005). Cost of childcare and female employment in the UK. *Labour, 19*, 149–170.