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ARTICLE

Patterns of help and care by adult only children and children with siblings

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Abstract

Adult children with siblings can share caring for older parents but adult only children face this responsibility alone. Given increased longevity and reliance on informal care-giving, as well as an increase in one-child families, there is a need to investigate only children's care-giving further. Using data from three large-scale British birth cohorts, this paper investigates patterns of parent-care, care intensity and wellbeing at ages 38 and 42 (N = 17,255, N = 16,703; born 1970), 50 and 55 (N = 12,775, N = 11,339; born 1958) and 63 (N = 2,364; born 1946), how sibling composition intersects with gender in relation to care-giving and whether different care-giving patterns are associated with wellbeing. Only children are more likely to provide parent-care and the pattern is consistent with an interpretation that differences by sibling status might increase with age. Provision is gendered, and the sibling group composition matters for involvement. Although care-giving is related to wellbeing, we found no evidence that this differs between only children and those with siblings. The literature on only children has hitherto focused largely on childhood, suggesting that on some outcomes they benefit from a concentration of parental resources. Our results suggest that in middle adulthood parental care needs may instead be concentrated for the only child without the 'resource' of siblings. This indicates a need to develop further our understanding of this growing demographic subgroup.

Keywords: care; only children; siblings; gender; cohort studies; wellbeing

Introduction

With increased longevity and eldercare policy relying heavily on informal carers, several global North countries have been projected to face a care gap (Cangiano, 2014; Pickard, 2015). Such projections raise concerns both for older people in need of additional support in daily life and their family care-givers. Adult children are the most frequently cited source of anticipated informal care other than a spouse (Abrahamson *et al.*, 2017; Stafford and Kuh, 2018); intensive informal care-giving in turn being associated with gendered inequalities, stress, lower mental wellbeing and detrimental effects on employment (Pearlin *et al.*, 1990;

Wolf *et al.*, 2015; Gomez-Leon *et al.*, 2019). Adult children with siblings can share the responsibility, time and cost, potentially reducing the stress.

In contrast, only children – defined here as not having co-resident biological siblings in childhood – face parent-care alone. Although a relatively small group in most Western/global North populations, one-child families have been increasing in prevalence among cohorts of women born in the 1940s to 1960s in a number of countries (Frejka, 2008; Breton and Prioux, 2009; Frejka *et al.*, 2010), and in the United Kingdom (UK) among cohorts of women born in the mid-1960s to mid-1970s (Office for National Statistics (ONS), 2020). In the context of projected increased future need for parent-carers (Pickard, 2015), if care-giving poses more of a strain on adult children without siblings, only children and their ageing parents may be of increasing interest to policy if the trend of growth in one-child families continues. Yet research on only children's parent-care is limited. Based on the studies available, compared with their counterparts who have siblings, only children in the United States of America (USA) tend to be more likely to provide care (Coward and Dwyer, 1990; Dwyer and Coward, 1991; Spitze and Logan, 1991), but more recent European research is less conclusive (Ogg and Renaut, 2006; Rainer and Siedler, 2012). With limited existing research, and especially amid concerns about future demands on a potentially shrinking pool of kin carers where formal eldercare is not universally accessible, such as in the UK, there is a need to better understand how only children's care-giving may differ from those with siblings. Being an only child in middle adulthood may present parent-care challenges without the resource of a sibling to draw on for support.

Drawing on unique data from three large-scale UK surveys, and informed by theories on kin care-giving as well as on only children, this paper makes both empirical and theoretical contributions. First, it contributes to the literature on care patterns among adult children by providing detailed analysis of how patterns of care-giving differ between only children and those with siblings. We analyse assistance given to parents at multiple ages covering before, during and after the lifecourse phase when parent-care is most common and investigate how these patterns are gendered. Second, drawing on the care-giver stress framework, we investigate whether the well-being of parent-carers differs by sibling status. Third, as theories and empirical evidence on only children have hitherto focused largely on the childhood stage, our focus on intergenerational relations in midlife makes a significant contribution to the literature on only children with both theoretical as well as empirical implications.

Background

Informal care is generally defined as unpaid assistance without which the recipient would struggle or be unable to cope with everyday tasks. Although 'care' is often associated with the more time-intensive and physically demanding personal care tasks such as bathing, dressing and feeding, care-giving also encompasses more practical assistance such as arranging for bills to be paid or doing the weekly food shop (tasks we refer to as 'helping' in our analysis).

Among informal carers in the UK, two-fifths care for a parent (Department for Work and Pensions , 2020), and need for care by adult children is projected to grow (Pickard, 2015). Adult children, often alongside spousal and/or formal care, provide

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emotional, practical and instrumental assistance, as well as personal care, and co-ordinate formal/informal care (Matthews and Rosner, 1988; Pickard *et al.*, 2007; Blomgren *et al.*, 2012). Although practical assistance is more common than personal care among parent-carers, even sporadic 'help' can maintain independence or complement basic/personal care from other sources (Matthews and Heidorn, 1998; Brandt *et al.*, 2009).

Empirical evidence suggests informal care-giving is most common in middle adulthood, with estimates of about a fifth of individuals aged 45–59 providing care (Dahlberg *et al.*, 2007; Robards *et al.*, 2015). In a lifecourse perspective, parent-care tends to be confined to the adult child's older midlife (Moen *et al.*, 1994), although with increasing longevity this phase may well become delayed or extend towards later ages for future cohorts as their parents live longer. The nature of eldercare also means the balance of assistance needed and thus the demands on different sources of care (spouse, adult child, formal) can shift with time as the older person ages. It is therefore important to allow for the possibility that patterns by (care-giver's) age may differ by sibling status whether due to differing characteristics such as parental age profiles, normative expectations or the resource of a wider care network, to better understand filial care-giving.

Theories of kin care

Amongst several social science theories developed to explain patterns of kin eldercare, we focus on exchange theory and social norms for their contrasting frameworks. *Exchange* theory suggests adult children bargain within sibling groups over care-giving according to relative opportunity costs (Bianchi *et al.*, 2006). Accordingly, siblings with lower earnings, and/or living nearer, would be more likely to provide care. Exchange theory also incorporates an element of reciprocity, eldercare being given in return for prior care received by the adult child (*e.g.* childcare help) and/or with an expectation of future inheritance. *Social norms* regarding filial responsibility are sets of, often gendered, expectations to which individuals are held accountable which also differ in salience over the lifecourse. This theory predicts prioritising care for closer relatives, more care-giving by women, especially where the care recipient is the mother, and parent-care increasing in midlife (Bianchi *et al.*, 2006; Gans and Silverstein, 2006). An alternative motive is altruism (Bianchi *et al.*, 2006), assistance irrespective of own benefit, although in practice it is difficult to distinguish from social norms.

Patterns among sibling groups: help, care and intensity of assistance

Parent-care tends to be organised along kinship lines and is generally provided by own children rather than children-in-law (Szinovacz and Davey, 2008; Henz, 2009, 2010). Although siblings (especially sisters) often collaborate and complement each other's care-giving (Matthews and Rosner, 1988; Vergauwen and Mortelmans, 2021), consistent with exchange theory, one study found most sibling networks adopt a single/main care-giver arrangement (Leopold *et al.*, 2014).

Parent-care is gendered. Daughters tend to be more likely than sons to provide care, to be designated 'main carer' and to provide personal care, whereas sons

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generally provide more instrumental support (Dwyer and Coward, 1991; Matthews and Heidorn, 1998; Gomez-Leon *et al.*, 2019; Vergauwen and Mortelmans, 2021). Women with brothers tend to spend more time care-giving than their brothers, but also more than women with sisters, whereas men with sisters tend to spend less time than men with brothers (Coward and Dwyer, 1990; Collins, 2014; Grigoryeva, 2017). On the other hand, Tolkacheva *et al.* (2011) found that, although gender was related to the propensity to care, among care-givers there was no further gender difference in intensity.

Controlling for gender, within sibling groups, adult children with more contact with their parent and those living nearest to the parent, especially if their sibling(s) live a considerable distance away, have been found most likely to provide care (Ogg and Renaut, 2006; Vergauwen and Mortelmans, 2021). In contrast, own family and employment circumstances are less-important predictors of propensity to care (Vergauwen and Mortelmans, 2021).

Although neither theory makes explicit sibship size predictions, empirical research indicates a greater number of siblings – sisters, in particular – reduces the likelihood of individual care-giving. Siblings can alternate or some can avoid it knowing their sibling(s) will care (Spitze and Logan, 1991; Stuifbergen *et al.*, 2008, Szinovacz and Davey, 2008; Tolkacheva *et al.*, 2011). Multiple parent-carers are more common in larger and son-only sibling groups, and where the care-recipient is the father (Leopold *et al.*, 2014). Consistent with siblings sharing, others report a reduction in *intensity* associated with increased number of siblings or especially increased number of sisters (Spitze and Logan, 1991; Dautzenberg *et al.*, 2000; Grigoryeva, 2017). Birth order does not emerge in the literature as an important factor beyond the presence of a sibling (although an exception is provided by Vergauwen and Mortelmans, 2021).

Only children and parent-care

Two competing explanations of how only children differ from their peers with siblings predominate. The *resource dilution* theory (Blake, 1981; Downey, 1995; Steelman *et al.*, 2002) suggests only children fare better than children from larger families because they benefit from the concentration of parental time and material resources. The *socialisation* (or siblings as resources; Goetting, 1986; Downey and Condron, 2004) theory posits that children benefit from the competition, negotiation and mutual support of growing up with siblings. Existing studies have predominantly focused on only children during childhood, suggesting the resource dilution theory is more applicable, at least regarding educational attainment. Greater access to parental resources might explain only children's educational advantage, especially compared to children from large families, but patterns differ depending on the outcome studied and context (*see e.g.* Falbo and Polit, 1986; Polit and Falbo, 1987; Mancillas, 2006; Falbo, 2012; Choi and Monden, 2019). Further, the focus on childhood in existing studies raises the question of the theories' relative applicability to other stages of the lifecourse. In the case of parent-care in adulthood, 'siblings as resources' may become foregrounded as adult only children experience a concentration of parental need rather than resources.

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Based on care-giving theories, we might expect more care-giving by only children, both in return for greater concentration of past and/or expected future parental resources, or because normative expectations of filial responsibility are focused on the sole child. However, empirical research comparing parent-care among both adults with siblings and only children is sparse. Our search of the literature has yielded only a handful of studies (Coward and Dwyer, 1990; Dwyer and Coward, 1991; Spitze and Logan, 1991; Ogg and Renaut, 2006; Rainer and Siedler, 2012). These studies found only children tended to have more parental contact and to help more than children with siblings (Spitze and Logan, 1991), and only children and single-gender sibling groups were more likely than mixed-gender groups to provide care (Dwyer and Coward, 1991). A further finding was that although only daughters were more likely to provide care than either only sons or daughters with siblings, there was no gender difference in intensity among care-giving only children (Coward and Dwyer, 1990). Published three decades ago and focused on the US context, it is difficult to know whether these findings are generalisable to other contexts and/or periods. Although the US formal care system is more similar to the UK than some European countries with universal coverage (Robertson *et al.*, 2014), based on data collected in the 1980s these findings also pre-date some of the demographic changes that have led to eldercare being framed as 'in crisis'.

More recent analysis of European data suggests less-consistent results by sibling status. One study found no differences in care-giving between only children and mixed-gender sibling groups (Ogg and Renaut, 2006, controlling for parental health status), whereas another reported significantly less parent-care time among siblings than only children but pointed to the important role of the country context (Rainer and Siedler, 2012, controlling for parental age and health). The latter study found the presence of siblings was influential in countries where policy positions eldercare as a family responsibility but not in countries where the responsibility lies with the state. Neither of these more recent studies combined gender and sibling status as a dimension of interest. This is notable given that research has shown the joint importance of own gender and sibling group composition, potentially suggesting patterns of care-giving by only daughters and only sons might differ from patterns of care-giving by those with brothers and/or sisters.

To conclude, rather than a concentration of parental resources, adult only children might instead experience a concentration of parental need as their parents age. Yet, prior evidence on only children's care-giving is limited in the periods and contexts covered and reveals mixed findings. Further, none of the existing studies explicitly investigated parent-care by sibling status at different ages in middle adulthood (Moen *et al.*, 1994; Dahlberg *et al.*, 2007; Robards *et al.*, 2015). Because parental care needs tend to arise in older age, as predicted by social norms theory, we would expect the prevalence and intensity of parent-care to increase with age for both siblings and only children, but without the option to take turns with a sibling it is possible the increase may be relatively greater among only children.

Carer wellbeing

The association between informal care-giving and mental health and wellbeing is well established, including higher incidence of depressive symptoms among carers

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and deterioration with prolonged care-giving, especially at high intensities (*e.g.* Pinquart and Sörensen, 2003; Kenny *et al.*, 2014; Bom *et al.*, 2019). However, effect sizes tend to be small overall and vary considerably by subgroup. As the care-giver stress theory (Pearlin *et al.*, 1990) suggests, the relationship is complex and depends on the combination of care needs as well as the care-giver's time pressure, role conflict and access to support.

A larger care-giving network or larger number of siblings has been found to be associated with less stress, burden or role strain (Dautzenberg *et al.*, 2000; Tolkacheva *et al.*, 2011), and a review of parent-carer studies found higher social (including emotional) support for the care-giver was associated with lower anxiety, depression and strain (Bastawrous *et al.*, 2015). However, no study has yet investigated whether the association between informal care-giving and wellbeing differs between only children and siblings. One longitudinal study investigated mental health among presumed sole care-givers but did not consider the presence of siblings (Heger, 2017), and although one study of care-giving by sibling status included care-giver stress (Coward and Dwyer, 1990), it did not test whether stress levels differed by sibling status. The relationship is likely complex. A main care-giver arrangement is common among siblings and perceived inequity, poor sibling relations and lack of sibling involvement is linked to higher care-giver stress, yet equal sharing is not a necessity as occasional respite, emotional support and encouragement from siblings have also been cited as beneficial (Ingersoll-Dayton *et al.*, 2003; Leinonen, 2011; Leopold *et al.*, 2014; Ngangana *et al.*, 2016). One Canadian study found half of parent-carers felt they had a choice to provide care and, aligned with the framework of Pearlin *et al.* (1990), this was related to higher life satisfaction and reduced psychological symptoms (Li and Lee, 2020). Although perceived choice can be influenced by siblings' (in)action, only children's perception of choice is directly constrained by the lack of alternative parent-carers. Considering the lack of evidence or clear theoretical prediction on the association between sibling status and care-giver wellbeing, exploratory analysis is required. Drawing on Pearlin's care-giver stress framework, we hypothesise that care-giving might be more detrimental for mental wellbeing without a sibling to share it with.

Study context and contribution

This paper contributes to the existing literature by providing for the first time a detailed analysis of parent-care by adult only children and adults with siblings across a range of ages around the lifecourse phase when parent-care is most common, including variation by gender and associated wellbeing. Given the dynamic nature of ageing parents' care needs and that only children lack the option to share or take turns with a sibling, it is possible that care gaps by sibling status widen with age – yet this possibility remains largely untested given that existing research has tended to provide a single snapshot. We contribute to address this gap in knowledge by investigating whether parent-care differences by sibling status appear to widen with increasing age. More specifically, the paper seeks to answer the following research questions:

- Does involvement in parent-care differ by whether adult children have siblings? If so, is there evidence to suggest that differences widen with increasing age?

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- How do gender and sibling status intersect in the provision of parent-care?
- Does the relationship between care-giving and subjective wellbeing differ for only children and those with siblings?

We focus on the UK, a relevant context for these research questions since the country has been characterised as facing a care crisis due to reliance on informal care, increasing longevity and the need for parent-carers projected to increase and even exceed the availability of filial care-givers (Pickard *et al.*, 2007; Pickard, 2015; Kingston *et al.*, 2018). These projections raise concerns about future demands on a potentially shrinking pool of kin carers and intensifying pressure on working-age people to care for parents. With declining sibship size in the UK and rates of one-child families increasing (ONS, 2020; Präg *et al.*, 2020), there is a need to better understand how only children's patterns of care-giving, and related wellbeing, may differ from those with siblings.

Data and methods

Data

We analyse data from three British cohort studies, born in 1970, 1958 and 1946, respectively. As data on siblings are rarely comprehensively collected in surveys of adults, a key strength of using these studies is that they allow us to identify individuals with and without siblings using data collected in childhood. The 1970 British Cohort Study (University of London, Institute of Education, Centre for Longitudinal Studies (CLS), 2016, 2019) follows the initially approximately 17,000 people born in a particular week in 1970. Similarly, the National Child Development Study (CLS, 2012, 2015) surveys an initial cohort of 17,415 people born in a particular week of 1958. The third dataset is the National Survey of Health and Development (Douglas *et al.*, 2015; Kuh *et al.*, 2015). This survey has followed a socially stratified subsample of the individuals born in a given week in 1946 (5,362 of the initially surveyed 13,687 births). Across the three different cohorts we observe assistance given to parents at five ages: 38 and 42 (1970 cohort), 50 and 55 (1958 cohort) and 63 (1946 cohort). Although the measure of care-giving differs in the 1946 cohort (discussed below), inclusion of this study provides an important insight into parent-care towards the end of the possible parent-care phase; of those who participated in the age 63 sweep, 24 per cent reported having at least one living parent (for most their mother, about half aged 88 years or older). We exclude respondents who report having no living parent by the age analysed. Although care-giving questions were asked at age 69 in the 1946 study, by then too few respondents had a living parent to analyse this sweep.

Outcome variables

Parent-care

The 1970 and 1958 studies asked respondents which tasks they did 'regularly or frequently' for their parent(s): lifts in the car; shopping for them; providing or cooking meals; help with basic personal needs; washing, ironing or cleaning; personal affairs; decorating, gardening or repairs; financial help (not asked at age 42); and other help. Although intergenerational transfers often flow in both directions,

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only the cohort member (adult child) was interviewed and asked about assistance they provided to their parent(s). Respondents who mentioned one or more tasks were then asked to estimate the total number of weekly hours spent assisting their parent(s).

Due to cross-wave differences, we harmonised the questions to relate to any help provided to either or both parents at each age and, based on analysis of the 1958 cohort (results not shown), we assume assistance is primarily directed to own parents (the age 42 wording also included partner's parents).

We grouped 'providing or cooking meals', 'help with basic personal needs' and 'washing, ironing or cleaning' together, combining activities of daily living assistance and support for regular practical tasks that Gomez-Leon *et al.* (2019) term 'basic' activities. The remaining tasks capture help with more instrumental activities. Without direct measures of parental needs, we aim through this distinction to differentiate 'care', without which a parent might struggle to cope with daily tasks, from 'help' that may in part reflect more general socialising. We denote respondents who engage in any of the 'basic' activities as 'carers' and those doing any of the other tasks but none of the 'basic' activities as 'helpers'.

The 1946 cohort members were asked whether they 'look after or give special help to anyone who is sick, frail, or has a disability'. This was followed by a question about their relationship to the care-recipient, allowing us to identify parent-carers. All care-givers were also asked to estimate the range of total weekly care-giving time (any recipient); 0–4 hours to 20+ hours per week. Although we recognise the limitations of comparing across studies due to differences in how the care information is collected, the 1946 cohort provides highly useful information about care patterns towards the end of the age span when individuals may be called upon for parent-care.

Subjective wellbeing

Different measures of mental health and subjective wellbeing have been included at different sweeps of the cohort studies. The 1970 study included the nine-item Malaise scale and the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) at age 42, the 1958 study included the Malaise scale at age 50 and CASP-6 at 55, and the 1946 study included the General Health Questionnaire (GHQ) at age 63. All are multi-item scales providing a summary score. The Malaise scale and GHQ capture negative affect (higher scores indicating more depressive symptoms) whereas CASP-6 and WEMWBS capture positive subjective wellbeing and self-realisation (higher scores indicating greater wellbeing).

Covariates

Sibling status

We identified only children in each study based on information available at age 10/11 which we deemed late enough in the cohort member's childhood to capture the existence of younger siblings in the vast majority of cases (age gaps of 10+ years being rare) and also early enough for older siblings to likely still be co-resident. Although parental separation was not very common in these cohorts overall (10, 8 and 14% in the 1946, 1958 and 1970 cohorts, respectively), in the 1970 cohort

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parental separation is notably higher among children classified as only children (27% *versus* 12% among siblings). Some of these may have (non-resident) half-siblings, who we cannot observe in the data but may assist with parent-care in adulthood, a point we return to in the Discussion. The 1970 and 1958 studies further allow us to identify whether the siblings reported included brothers, sisters or both. At age 10/11, 8 per cent of those born in 1970, 7 per cent of those born in 1958 and 14 per cent of those born in 1946 were only children. The general trend reflects the proportions of women with one child only, as reported in official UK cohort fertility estimates (ONS, 2020).

Other covariates

Only children may differ systematically from individuals with siblings and in ways related to caring patterns. Age at first birth tends to be higher on average for mothers of only children, whereas parental divorce/separation is another documented factor more common among only children (Jefferies, 2001; Parr, 2007). Socio-economic selection into which parents have one child may also differ by context and period, thus an important aspect to account for in analysis of different cohorts. For example, one study found only children associated with lower parental socio-economic status in contexts where one-child families were rare, and *vice versa* (Choi and Monden, 2019). In our models, we included covariates to capture parental circumstances (collected in childhood), as well as individual adult circumstance and care-relevant information.

We include maternal age at the time of the cohort member's birth (continuous for the 1970 and 1958 cohorts, age bands for the 1946 cohort), an indicator of maternal education beyond compulsory schooling age and the father's social class using the General Register Office occupational categorisation. As a proxy measure of parental separation during childhood, we include an indicator of whether the father was recorded as present in the household at the age 10/11 interview.

Measures of circumstances in adulthood include the cohort member's qualification level, occupation and marital status. Highest qualification was measured as National Vocational Qualification (NVQ) level in the 1970 and 1958 cohorts (six categories ranging from None to NVQ Level 5 or above), whereas the 1946 cohort included a four-category measure (from None to degree-level or above). The standard major groupings were used for respondent occupation (1970 and 1958 cohorts only) and marital status was recorded as married, co-habiting or single.

Past research indicates parental gender and marital status (particularly widowhood), and geographical proximity, are positively associated with care (Dwyer and Coward, 1991; Kalmijn, 2007; Rainer and Siedler, 2012). We therefore included the following care-related covariates: an indicator of which parent is alive (both/mother/father); and a binary indicator of whether the cohort member's recorded region of residence is the same as in childhood (age 10/11) as a crude proxy for distance, in the absence of a direct measure. We do not have measures for other sources of formal or informal care parents may receive and thus are unable to control for these.

Methods

Due to the long-running nature of the birth cohorts, attrition over the decades has affected the size and representativeness of the samples (Mostafa and Wiggins, 2014;

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Mostafa *et al.*, 2021). To adjust for missingness we used multiple imputation (MI) prior to undertaking analysis and all analyses we report are based on MI data (for details of the imputation models, checks and sensitivity analyses, *see* Appendix 1 in the online supplementary material).

For the 1970 and 1958 data, we used multinomial logistic regression to analyse the odds of providing help, or of providing care, as opposed to neither, and linear regression to analyse the hours of care/help (among those providing assistance). For the 1946 data, we used binary logistic regression to analyse the odds of providing care to a parent and ordered logistic regression for caring time (among carers). Each regression was run firstly unadjusted, including sibling status as the only predictor, and then adjusting for the covariates listed above. To investigate how parent-care is gendered, we ran the fully adjusted models for the 1970 and 1958 cohort data with a variable combining own gender with only child status and the gender composition of the sibling group. This allowed us to distinguish explicitly between women who are only daughters, have sisters, have brothers or both, and the corresponding among men. Finally, for all three datasets, we used linear regression to analyse the mental health and wellbeing, and included interaction effects to investigate whether variations in wellbeing by care-giving differ by sibling status. All analyses were performed using Stata SE version 16.

Results

We begin with a descriptive overview of the cohorts (for summary statistics, *see* Table A2.1 in the online supplementary material). Among those with at least one living parent, the majority of respondents born in 1970 had both parents alive at both age 38 and 42. Among the older cohorts, the largest proportion of respondents reported that only their mother was alive (just under half at age 50 and just over half at age 55, among those born in 1958, and over two-thirds of those born in 1946 at age 63). The majority were recorded as living in the same region in adulthood as at age 10/11, but co-residence with a parent was uncommon. Most respondents with at least one living parent reported their parent(s) living elsewhere, ranging from 91 per cent among only children at age 38 to 96 per cent among those with siblings at age 50. At age 55, co-residence was more common among only children (10% compared with 5% of those with siblings). Comparable co-residence rates cannot be calculated for the 1946 cohort, where we only have information about co-residence for care-givers.

Table 1 shows parent-care patterns for only children and those with siblings. At each age, we show the percentage doing helping tasks only and the percentage (also) doing caring tasks (for individual tasks, *see* Table A2.2 in the online supplementary material). The proportion doing care tasks increased with age among both only children and siblings, likely a reflection of parental care needs arising with age. However, on average, adult only children were more likely to do care tasks at every age. Except at age 38, this was also the case for helping tasks. Table 1 also shows the weekly hours spent assisting parents. Among helpers, the intensity is similar among only children and those with siblings, and fairly low at each age, at around 2–2½ hours per week at ages 38, 42 and 50; rising to 3–4 hours per week among those aged 55. Among carers at age 55, only children spent almost 2 extra hours per

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Table 1. Parent-care summary: percentage of respondents by care-giving type

	1970 cohort				1958 cohort				1946 cohort	
	Age 38		Age 42		Age 50		Age 55		Age 63	
	Only child	Siblings	Only child	Siblings	Only child	Siblings	Only child	Siblings	Only child	Siblings
	Percentages									
Care-giving type:										
No help	62.5	61.9	46.1	49.2	34.8	43.8	26.8	35.6	55.9	70.0
Helper	20.4	24.0	33.5	32.1	43.4	36.8	40.0	36.2		
Carer	17.1	14.1	20.5	18.7	21.8	19.4	33.2	28.1	44.1	30.0
Intensity among carers:[1]										
Up to 4 hours	62.0	61.7	61.6	62.6	52.1	53.9	37.0	43.6	43.7	35.0
5–9 hours	17.7	18.2	14.9	17.4	19.2	19.2	21.9	22.1	31.6	29.7
10–19 hours	14.1	13.6	14.4	13.1	16.9	14.2	20.4	19.2	13.1	15.5
20 hours or more	6.3	6.5	9.1	7.0	11.8	12.7	20.7	15.2	11.6	19.9
Intensity (mean hours):										
Helpers	2.0	2.3	2.1	2.1	2.6	2.4	3.6	3.1		
Carers	5.7	5.9	6.6	6.1	8.9	8.7	12.9	11.1		
Observations (all)	1,677	15,578	1,574	15,129	940	11,835	811	10,528	355	2,009

Notes: Multiple imputation estimates on 50 imputed datasets. Sample excludes individuals with both parents known to have died. 1. Care intensity in the 1946 cohort includes all care-giving to any recipient, and thus for the small minority (<10%) who cared for someone else as well as a parent the hours reported would be higher than the time spent on parent-care.

week care-giving, at an average of about 13 hours per week. A fifth (21%) of only children who were carers at age 55 reported spending 20 hours or more per week on parent-care (15% among siblings). At age 63 among parent-carers, a smaller percentage of only children than those with siblings reported higher intensities of care-giving (in total to all recipients), 13 per cent spending 10–19 hours and 12 per cent spending 20 or more hours per week (16 and 20%, respectively, among those with siblings).

Provision of help or care

Table 2 summarises the unadjusted and adjusted exponentiated coefficients for only children (reference category: children with siblings) across the regression models (for full model results, *see* Table A2.3 in the online supplementary material). The unadjusted coefficients confirm that at ages 50 and 55 (but not earlier ages), only children were significantly more likely than those with siblings to do helper tasks. At ages 50, 55 and 63 only children are also significantly more likely to provide care. The coefficients for the covariates included in the full model were in the expected direction and consistent with the existing literature. Where adjusted coefficients differed in magnitude from the unadjusted, the direction of change was generally to strengthen or increase the difference between only children and those with siblings. This indicates the differences observed in the descriptive analysis above are not explained by only children and their parents having different socio-demographic characteristics (*e.g.* different maternal age profiles).

Some of the non-significant coefficients in the unadjusted analyses became statistically significant when including covariates. At age 38, only children were more likely to do carer tasks (significant at the 10% level), and at age 42, only children were both more likely to do help and care (5% level), when adjusting for other variables. Thus, in the fully adjusted models, only children were clearly more likely to provide care, rather than no help or care, at every age. At the later ages, the size of the coefficients also increased slightly when including covariates. Finally, with the caveat that the analysis does not observe the same individuals across the ages and this assessment is thus based on the pattern of results across separate models, the size of the coefficients also appears to increase across the ages, suggesting the increase with age is relatively greater among only children. At ages 55 and 63 only children were substantially more likely to provide care than were those with siblings.

Intensity of help/care provision

Table 3 shows the unadjusted and adjusted coefficients for only children across the models (for full model results, *see* Table A2.4 in the online supplementary material).

Given some help or care provision, there was no significant difference by sibling status in the intensity of care-giving at any age. However, although not statistically significant at conventional levels, the size of the coefficient at age 55 is of a substantively greater magnitude than at the other ages (in the direction of only children spending more time on average per week assisting their parent(s) compared to

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Table 2. Regression summary: coefficients for only child (reference: sibling)

	Multinomial logistic regression – base category: no help											
	Helper						Carer					
	Unadjusted			Fully adjusted			Unadjusted			Fully adjusted		
	RRR	SE	*p*	RRR	SE	*p*	RRR	SE	*p*	RRR	SE	p
1970 cohort:												
Age 38	0.84	0.10	0.15	0.92	0.12	0.49	1.20	0.14	0.11	1.27	0.16	0.06
Age 42	1.11	0.11	0.27	1.21	0.12	0.05	1.17	0.13	0.16	1.30	0.15	0.02
1958 cohort:												
Age 50	1.48	0.14	0.00	1.57	0.16	0.00	1.41	0.19	0.01	1.45	0.21	0.01
Age 55	1.47	0.21	0.01	1.63	0.24	0.00	1.57	0.21	0.00	1.78	0.26	0.00
							Binary logistic regression – base category: no parent-care					
							Carer					
							Unadjusted			Fully adjusted		
							OR	SE	*p*	OR	SE	*p*
1946 cohort:												
Age 63							1.84	0.46	0.02	2.11	0.67	0.02

Notes: Separate regression models were run for each age, multiple imputation estimates on 50 imputed datasets. Sample excludes individuals with both parents known to have died. N = 17,255 (age 38), N = 16,703 (age 42), N = 12,775 (age 50), N = 11,339 (age 55), N = 2,364 (age 63). Fully adjusted models control for respondent's gender, maternal age at respondent's birth, maternal education, paternal occupational class, parental separation in childhood, respondent's level of qualification, occupation (1970 and 1958 cohorts only), cross-regional move since childhood and which parent is alive. For full results, *see* Table A2.3 in the online supplementary material. RRR: relative risk ratio. OR: odds ratio. SE: standard error.

Table 3. Regression summary: coefficients for only child (reference: sibling)

	Linear regression: hours per week spent helping/caring					
	Unadjusted			Fully adjusted		
	Coefficient	SE	*p*	Coefficient	SE	*p*
1970 Cohort:						
Age 38	0.13	0.35	0.71	0.08	0.34	0.81
Age 42	0.25	0.39	0.52	0.49	0.38	0.20
1958 Cohort:						
Age 50	0.18	0.49	0.71	0.33	0.50	0.51
Age 55	1.19	0.90	0.19	1.46	0.86	0.09
	Ordinal logistic regression: banded hours per week spent caring					
	Unadjusted			Fully adjusted		
	OR	SE	*p*	OR	SE	*p*
1946 Cohort:						
Age 63	0.68	0.19	0.16	0.66	0.21	0.18

Notes: Separate regression models were run for each age, multiple imputation estimates on 50 imputed datasets. Sample excludes individuals with both parents known to have died and those known not to provide help/care. N = 11,702 (age 38), N = 12,003 (age 42), N = 9,607 (age 50), N = 9,339 (age 55), N = 2,121 (age 63). Fully adjusted models control for respondent's gender, maternal age at respondent's birth, maternal education, paternal occupational class, parental separation in childhood, respondent's level of qualification, occupation (1970 and 1958 cohorts only), marital status, cross-regional moves since childhood and which parent is alive (1970 and 1958 cohorts only). For full results, *see* Table A2.4 in the online supplementary material. OR: odds ratio. SE: standard error.

those with siblings). At age 63, although again not statistically significant, the coefficients suggest only children were less likely to provide care at higher intensities than those with siblings.

Gendered care and sibling group composition

Controlling for the presence of siblings and other factors, the respondent's gender was related to helping at ages 42, 50 and 55, caring at every age, and the intensity among those providing any assistance at every age (*see* Tables A2.5 and A2.6 in the online supplementary material). Building on the existing literature on the gender composition of sibling groups, we explored how men and women without siblings compare with those with brothers, sisters or both using the 1970 and 1958 cohort data. Figure 1 shows the predicted probabilities of cohort members helping or caring by this more detailed breakdown of own gender and the gender of any sibling(s).

At all ages, all groups of women were more likely than men to provide care whereas men tended to be more likely than women to do (solely) helping tasks. Although the differences in rates of caring are small among men and among women (and the confidence intervals for the sibling groupings overlap), some consistent patterns emerge. First, among men, only sons had the highest predicted

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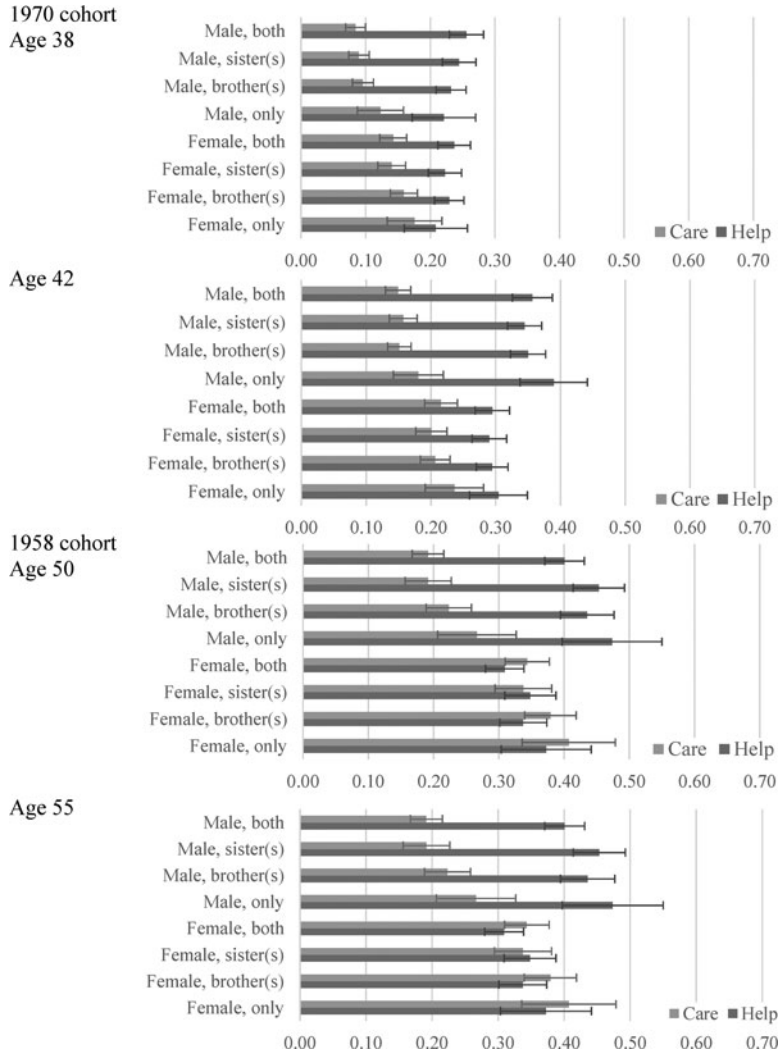

Figure 1. Predicted probabilities: care-giving by gender and sibling composition.
Notes: Predicted probabilities of providing help, or providing care, with 95 per cent confidence intervals, based on model including full list of covariates. For full results, *see* Table A2.5 in the online supplementary material.

probability of providing parent-care at all ages, as was also the case with only daughters among women. Second, the next highest probability of providing care among women was by those with at least one brother (both brothers and sisters at age 38 and 55 or solely brothers at ages 42 and 50). In contrast, among men, the lowest predicted probability of care provision was among those with at least one sister (both sisters and brothers at ages 38, 42 and 50, solely sisters at age 55). One explanation, as others have suggested (Szinovacz and Davey, 2013), could be that men with siblings (in particular sisters) are able to avoid care.

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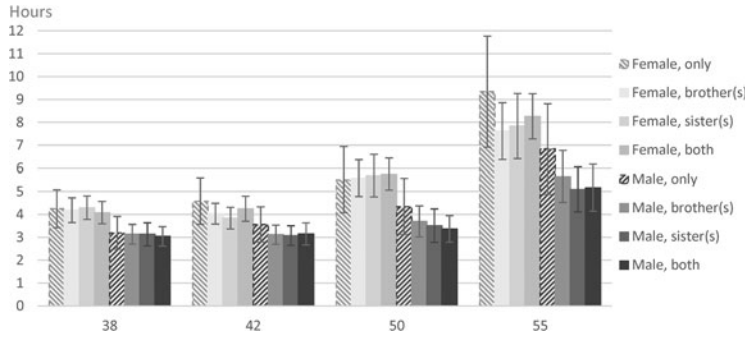

Figure 2. Predicted care intensity by gender and sibling composition.
Notes: Predicted mean hours spent helping parent, with 95 per cent confidence intervals, based on model including full list of covariates. For full results, *see* Table A2.6 in the online supplementary material.

However, the high proportions of men in all groups and at all ages who do helping tasks is at odds with this, a point we return to in the Discussion.

Among adult children who provided help or care, the intensity of care-giving also differed by gender and sibling group composition (Figure 2). Only daughters at age 55 reported the most time on average, while again, men with at least one sister reported the lowest intensity on average at both ages 50 and 55. Although confidence intervals overlap for the groups among men, the general pattern shown in the figure suggests only sons reported somewhat higher intensity than sons with siblings, especially at the later ages.

Assuming parental care needs are unrelated to the sex of their child(ren), we checked descriptively whether men with siblings, who tended to have lower parent-care participation rates and intensity, instead contributed financially at higher rates. Instead, at both ages 50 and 55, helping financially was most common among only sons (at 16 and 17%, respectively), followed by only daughters (11 and 15%; *see* Table A2.7 in the online supplementary material).

Mental health and wellbeing

The final set of analyses investigated whether the association between care-giving and mental health and wellbeing differs by sibling status. The hypothesis is that parent-care may be more stressful for an only child than one with siblings as they cannot share either the tasks and hours of care or the emotional labour and sense of responsibility for ageing parents with a sibling. Where available, we use both measures of mental (ill-)health (the nine-item Malaise scale available at ages 42 and 50, the GHQ scale at age 63) and positive measures of wellbeing (WEMWBS at age 42 and CASP-6 at age 55).

In line with other research (*e.g.* Pinquart and Sörensen, 2003; Bom *et al.*, 2019), we found care-giving was, on average, associated with worse outcomes on both mental health and wellbeing measures, either when measured as care-giver status or intensity, or both (for the full model results, *see* Table A2.8 in the online supplementary material). At age 42, both helpers and carers reported higher malaise scores on average and lower wellbeing scores, whereas at age 50 carers reported

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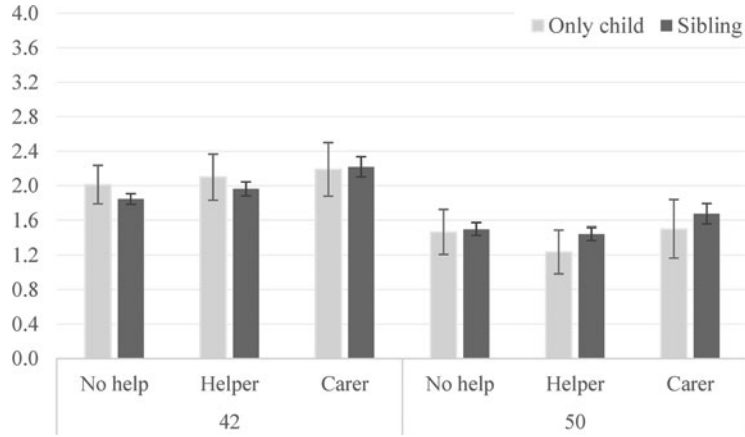

Figure 3. Predicted malaise scores by sibling status and care provision.
Notes: Predicted mean scores on the nine-item Malaise scale, with 95 per cent confidence intervals, controlling for gender. For full results, *see* Table A2.8 (Panel A Model 3 for 1970 and 1958 cohorts) in the online supplementary material.

higher malaise scores. In contrast, helping or caring was unrelated to wellbeing at age 55. Increasing care intensity was also associated with higher malaise scores and lower wellbeing at both ages 42 and 50/55. At age 63, the mental health (GHQ) of those caring for a parent did not differ from those who did not provide care (caring for another recipient was associated with worse GHQ scores). Notably, although statistically significant at the earlier ages, all the effect sizes are small.

Across most of the ages and measures, mental health and wellbeing did not differ significantly between only children and those with siblings. Further, the associations between care status or care intensity and mental health or wellbeing did not differ significantly by sibling status at any of the ages. The results are summarised in Figure 3 for the Malaise scale outcome available at age 42 and 50 (1970 and 1958 cohorts, respectively); the overlapping confidence intervals indicate no significant difference in the association between care-giving and mental health at each age. Bearing in mind that as a group they are more likely to assist parents, this is not to say only children are unaffected by care-giving but rather they do not appear to be differently or more strongly affected than those who have siblings.

Figure 3 also illustrates that the differences observed in mental health are substantively small. The predicted mean scores vary between 1.8 and 2.2 at age 42 and between 1.2 and 1.7 at age 50, on a scale ranging from 0 to 9 where scores of 4 and above indicate 'high' malaise. This finding is likely a reflection of the relatively low intensity of care generally provided by adult children to their parents. As can be seen from Table 1, the average hours of care provided by adult children doing 'carer' tasks ranged from just under 6 hours per week at age 38 to 13 hours per week among only children at age 55. The literature on mental health and wellbeing among carers has generally pointed to detrimental effects particularly of high-intensity care-giving (Bom *et al.*, 2019). As there are few high-intensity care-givers in our samples, the negative but relatively weak associations found are thus consistent with prior research.

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Discussion

The confluence of increasing longevity, declining family sizes and projected informal care gap raises concerns about the future demands on a potentially shrinking pool of kin carers. Prior research suggests only children might provide more help to their parents compared to their counterparts with siblings, but evidence is mixed. Meanwhile, theories about only children have focused largely on the childhood stage and thus it is unclear how they might explain care-giving differences. We contribute to closing this gap in knowledge by analysing parent-care patterns among only children and children with siblings across middle adulthood.

We found only children were more likely to provide parent-care at any age. Although the results show that care-giving increased with age among both siblings and only children, the pattern is consistent with an interpretation that care-giving differences by sibling status might increase with age; at ages 55 and 63 only children were substantially more likely to provide care than cohort members who had siblings. These differences by sibling status in rates of care-giving are compatible with a main-carer or turn-taking arrangement within sibling groups, thus consistent with the 'siblings as resources' theory as having a sibling reduces the chance of a given child providing care. Overall, the emergence at earlier ages and subsequent maintenance of higher rates of help and care among only children could suggest the informal care phase might last longer for only children. Meanwhile, the pattern of the relative difference by sibling status appearing to increase with age (along with the indicative, albeit not statistically significant, finding of somewhat greater care intensity among only children at age 55) might suggest an intensification with age in the demands on only children. In institutional contexts relying heavily on kin for eldercare, informal care-giving could represent a burden for only children. However, although describing patterns at multiple ages that suggest parental need is concentrated for only children in the context of parent-care in middle adulthood, we were unable to track individual care-giving trajectories. If one way that siblings can share care is by alternating 'main carer' status (Szinovacz and Davey, 2013), and in light of longitudinal evidence from England suggesting informal care-giving in middle age can have negative consequences for employment even at fairly low intensities (King and Pickard, 2013), future research could investigate whether care-giving only children do so for a longer duration, and how this might affect their mental health, employment and other outcomes over time. Similarly, older people in need of additional help and support in daily life may be disadvantaged if they have one child only, or none at all, which this research has not been able to investigate but which represents a fruitful avenue for future research.

Consistent with prior research (*e.g.* Coward and Dwyer, 1990; Grigoryeva, 2017), we also found parent-care is strongly gendered, in addition to being patterned by sibling status. Only sons had the highest probability among men of doing carer tasks at each age, and at age 55 they reported on average nearly seven hours per week assistance, approaching the intensity reported by some daughters with siblings. Nonetheless, we found gender and sibling status do not interact in a formal statistical sense as the association between gender and care-giving does not differ by sibling status. The balance of proportions doing solely helping tasks *versus* care among only sons is more similar to other men than to any of the groups of

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women. Further, at no age were only sons more likely to provide care, nor did they report higher intensity on average, than any of the groups of women. Thus, although having no siblings is associated with greater care-giving demands, it seems gender is a more powerful determinant than sibling status. This finding is consistent with earlier findings in the US context (Coward and Dwyer, 1990).

However, it is important to consider that care-giving is relational and the concept of 'care' is itself a gendered construction. Qualitative research with sons has shown substantively different care-giving than described by daughters (Matthews and Heidorn, 1998), critiquing the literature for taking daughters' approach as the standard for parent-care. Because we lacked data on parental care needs and the questions about assistance can in part reflect close intergenerational relations, we differentiated between 'helping' and 'caring'. However, this distinction, and implicit hierarchy may, in part, reinforce the gendered conceptualisation of what 'counts' as care, by designating more stereotypically female-coded tasks as 'caring'. Consequently, the gender differences we observe may in part be an artefact of our helper/carer distinction. Indeed, the higher rates of 'helping' among men should not be dismissed. As a counter-point, however, smaller gender differences in type and intensity of care have been found among spousal carers than parent-carers, with many male partners/husbands undertaking gender-atypical household and care activities (Arber and Ginn, 1995; Milligan and Morbey, 2016). Further, similarly gendered patterns also emerged in our analysis of the time devoted to assisting which is not dependent on task categorisation.

To our knowledge, this is the first study to have examined the association between care-giving and wellbeing by sibling status. Our analysis was informed by the care-giver stress theory and prior studies finding both larger care networks linked to less care-giver stress and being a (presumed) sole care-giver linked to poorer mental health (Tolkacheva *et al.*, 2011; Heger, 2017; neither focused specifically on only children). We found both care status and intensity were associated with worse mental health and wellbeing but also that these differences were substantively small. We interpret this as a reflection of the relatively low intensity of care provided by most filial care-givers, and thus consistent with prior research.

We found no evidence that the association between care-giving and wellbeing differs by sibling status. Thus, although as a group only children are more likely to provide parent-care and this is linked to lower wellbeing, we do not find an association that would be consistent with their mental health being further affected by being an only child parent-carer. Although a potentially reassuring finding, we emphasise the exploratory nature of the analysis and the complex nature of the relationship between care-giving and wellbeing within a sibling network (including the division of care-giving and sibling-relationship quality and support) which we have not been able investigate. In addition, the results need to be interpreted cautiously because we compare the wellbeing of these groups at a given point in time only. In fact, we do not observe baseline levels of wellbeing and thus we have not been able to test whether, and if so to what extent, the wellbeing of only children has decreased as a result of the onset of care-giving. Future research could address this by comparing the wellbeing of adult only children and those with siblings before and after the onset of care-giving.

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There are some limitations to our study. First, the cohort data allowed us to identify only children but a small proportion of 'only children' were possibly misclassified because we were unable to identify (half-)siblings growing up in another household following parental separation. We do not expect this to have substantially affected our results. Parental separation was fairly uncommon especially in the earlier cohorts who are at ages in our analysis when parent-care is most common and the differences by sibling status are greater. Additionally, the implication, if anything, is that our results provide conservative estimates of the difference in parent-care by sibling status. Had we been able to identify the 'only children' with a non-resident half-sibling growing up elsewhere as having a sibling (who may be able to help care for the shared parent), we would expect the difference by sibling status to become starker.

Second, although we observe care at different ages we do not have parent-care measures at the same ages for the different cohorts. Because of the nature of parent-care, a role that may emerge as parents age, the patterns are logically consistent with an age effect. However, we cannot rule out a cohort effect, *e.g.* in the interpretation of the questions or parental needs. Ages 38, 50 and 63 in this paper refer to data collections corresponding to roughly the same calendar year (2008/2009) for cohorts born 12 years apart. When setting our analysis inclusion criteria of having at least one living parent, we noted parental mortality differs slightly between these cohorts (not shown), suggesting parental care needs may also differ. On the other hand, the proportion of only children was fairly similar across the cohorts, as were the effects of the background covariates included. This suggests the selection into being an only child is unlikely to have changed considerably and thus any parental differences across cohorts should not differentially affect only children and those with siblings.

Third, as noted in the online supplementary material, a potential limitation is having to impute the outcome variable for a large proportion of our samples. As a sensitivity check, we compared results for the substantive parent-care models run on complete cases and MI samples. We found estimates were consistent across the two approaches for provision of help or care and, although there was some disparity in the point estimates for the care intensity models, the substantive interpretation was consistent (*see* Tables A1.5 and A1.6 in the online supplementary material).

Fourth, we lack information on the care needs of the parent(s), all sources of care received and whether the assistance received meets their needs. Regarding parental need, we control for maternal age at the birth of the cohort member, a reasonable proxy for care need since functional limitations are strongly related to age. We also separated 'care' tasks from 'helping', but we cannot rule out the possibility care needs nevertheless differ by parity (*e.g.* for the link between parity and mortality in Sweden, *see* Barclay and Kolk, 2019). However, lacking information on parental needs may not be a serious limitation from the adult child perspective. The finding remains that at each age studied, only children are more likely to provide assistance and whether this is explained by their parents having poorer health neither changes our conclusion that only children experience a concentration of parental need in middle age, nor the implications this entails in light of growth in one-child families in some countries. Future research from the parents' perspective is, however,

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needed to explore whether unmet care needs in older age vary by completed family size and composition.

Despite these limitations, our analysis contributes to the literature on parent-care by being the first to analyse care-giving at different ages through the stage when informal care is most common and to investigate the association between care-giving and mental health by sibling status. Moreover, we add to the literature on only children, focusing on a lifestage that has hitherto received less theoretical focus, and contribute to the body of research suggesting that (where evident at all) the association between only child status and outcomes is complex. We show that, in relation to parent-care, adult only children may experience a concentration of parental needs rather than resources. Therefore, in the context of parent-care the 'siblings as resources' could be a fitting explanation for differences between only children and those with siblings. Although our results relate to a specific outcome in middle-adulthood, they indicate a need to expand the literature on only children for a nuanced examination of a range of circumstances across the lifecourse to further our understanding of this growing demographic subgroup.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0144686X22000198

Data. The data that support the findings of this study are available to registered users from the UK Data Service (https://ukdataservice.ac.uk/) with End User Licence, and from the MRC Unit for Lifelong Health and Ageing at UCL (LHA; https://www.nshd.mrc.ac.uk/) with the permission of LHA.

Author contributions. JC conducted data analyses, interpreted the findings and wrote the first draft of the manuscript, AG interpreted the findings, and JC and AG both edited the manuscript.

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Conflict of interest. The authors declare no conflicts of interest.

Ethical standards. Ethics approval was not required for this project as the data used had been anonymised by the survey teams prior to being made available for analysis.

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