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What explains intergenerational associations in home ownership and value in the UK? Investigating the transmission mechanisms

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ABSTRACT

Evidence shows strong associations in wealth across generations, yet the underlying mechanisms are not fully understood. Some studies attribute these associations to direct financial transfers between generations, while others suggest more indirect mechanisms such as the impact of parental wealth on children's earnings, family formation, or saving and investment behaviour. Factors such as residential homophily and house value appreciation may also play a role. This study examines the extent to which these mechanisms explain intergenerational associations in home ownership and home value in the UK. Using 30 years of high-quality panel survey data, we link 1341 parent-child pairs, track children's sources of wealth accumulation in early adulthood, and assess their home ownership and value outcomes at mid-life (around age 35). We employ mediation analysis to determine the relative importance of different transmission mechanisms. Our findings reveal significant age-adjusted correlations in home ownership (0.27) and home value (0.40) between parents and their adult children. These correlations are mainly explained by children's accumulated earnings, savings and investment income, while parental financial transfers and children's family lives play limited roles. A substantial part of the correlations in home values are also explained by parental characteristics other than their housing wealth, particularly their place of residence. Future research should pay more attention to the role of place and the influence that parental housing wealth has on the earnings and financial behaviour of young adults.

Recent data suggests that between one-third and one-quarter of the wealth advantage in Great Britain is passed down from one generation to the next (Gregg & Kanabar, 2023). Such persistence in wealth inequality is concerning as wealth is not only distributed highly unequal (Brewer, 2019; Pfeffer & Waitkus, 2021), but also strongly linked with life opportunities and outcomes such as children's educational achievement, social and cognitive development, labour market outcomes and family formation (Karagiannaki, 2017a; Killewald et al., 2017; Hällsten & Thaning, 2022). These effects of parental wealth are observed even after accounting for other parental characteristics such as income, and therefore arise at least in part by the distinct mechanisms related to wealth (Hällsten & Thaning, 2022). Piketty (2014) has famously predicted that as wealth grows in importance relative to income and becomes more unequally distributed, inherited wealth (of the top 1 %) will be a primary source of inequality. However, for the majority, inheritances contribute only a small portion to wealth accumulation (Bauluz & Meyer, 2021; Black et al., 2022), while other advantages passed on from parents to children early in the life course may be more significant (Pfeffer & Killewald, 2017).

In most OECD countries, housing is the most important source of wealth for the majority of the population (OECD, 2022). Moreover, a substantial share of wealth inequality – within and between countries – can be explained by differences in housing wealth (often solely by house prices) (Bastagli and Hills, 2012; Fuller et al., 2019; Kuhn et al., 2020; Pfeffer and Waitkus, 2021). In the UK, rising house prices and ownership rates throughout the 1980s and 1990s slowed the growth of wealth inequality, but led to the emergence of a growing divide between owners and renters, who frequently have little or no wealth (Appleyard & Rowlingson, 2010; Brewer, 2019; Coulter et al., 2020). This divide is particularly relevant for younger people as family background (especially parental housing tenure) has become more important to the chance of home ownership (Mulder et al., 2015; Coulter, 2018, 2020; Gregg & Kanabar, 2023; Blanden et al., 2023). For example, Blanden et al. (2023) show that in 1991, 33-year-olds in the UK were 18 % more likely to own a home if their parents were homeowners; by 2015, this difference had risen to 35 %.

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In a homeowner-centric society like the UK where two-thirds of the population owns their homes and the vast majority aspire to home ownership, buying a home signifies a crucial step towards stability in adulthood and closely aligns with societal values (Wilson et al., 2017; Bayrakdar et al., 2019; Arundel & Ronald, 2021). Government initiatives have historically encouraged ownership as a means to secure stable living conditions, provide a financial investment, and promote social mobility (Saunders, 2016; Arundel & Ronald, 2021). Recent policies have included *Right to Buy*, *Help to Buy* and other shared ownership initiatives as well as financial incentives such as the *Lifetime ISA*, all of which have aimed to make home ownership more affordable, especially for first-time buyers and those on lower incomes (Wilson et al., 2017). However, despite these efforts, home ownership rates have continued to fall especially for young people with renter or less wealthy parents (Saunders, 2016; Arundel & Ronald, 2021; Gregg & Kanabar, 2023; Blanden et al., 2023).

That there is a strong link between the housing wealth of parents and their children is well-documented, yet the transmission mechanisms underlying this link are less well understood. Several studies highlight the importance of parental financial support and guarantees that are crucial to mortgage down payments in an environment of rising financial constraints and decreasing affordability to home ownership (Spilerman & Wolff, 2012; Suh, 2020; Boileau & Sturrock, 2023a). Parental wealth also shapes children's ability to accumulate wealth throughout their lives because it influences educational attainment, employment opportunities and family formation decisions (Pfeffer & Killewald, 2017; Davenport et al., 2021). Other scholars focus on the similarity in attitudes to home ownership, saving and investment behaviour, or place of residence and housing market conditions between parents and their adult children for explaining intergenerational wealth transmission (Henretta, 1984; Charles & Hurst, 2003; Mulder et al., 2015; Lersch & Luijkx, 2015; Black et al., 2020, 2023). Moreover, most wealth accumulation mechanisms may also be influenced by other parental characteristics, such as education, earnings or social class, so whether it is the wealth or other characteristics of parents that drive the intergenerational correlations of wealth remains subject to debate (Dewilde et al., 2018; Coulter, 2018).

This paper investigates the mechanisms explaining the transmission of housing wealth across generations in the UK. We first estimate the intergenerational associations of home ownership and home value, and then examine the relative importance of mechanisms underlying these associations. We use harmonised data from British Household Panel Survey (BHPS) 1991–2008 and Understanding Society (UKHLS) 2009–2020, which follow households over time, including children as they grow up and form their own households. This allows us to link data on 1341 children and parents over the observation period, and follow children across their life course until midlife (on average around age 35). We examine home ownership and home value (of the primary residence) separately, as each may be determined by distinct processes (Doorley & Sierminska, 2014). While owning a home or not may indicate differences between individuals holding no wealth or some wealth, variations in the value of the primary residence has recently been shown to provide a good proxy for overall wealth in stratification and mobility research (Pfeffer & Killewald, 2017; Wagner et al., 2020; Blanden et al., 2023).[1]

We make three significant contributions to the literature. First, we asses the role of macro-contextual factors such as the appreciation of house prices and homophily in place of residence in explaining intergenerational associations in housing wealth. These factors may be crucial due to the substantial regional differences and growth in UK house prices over recent decades. This analysis extends the evidence about the role of place (Coulter & Kuleszo, 2024) and housing assets (Killewald & Bryan, 2016) in wealth accumulation processes by taking an intergenerational perspective. Second, we investigate the role of micro-level mechanisms such as work and family lives, financial transfers and saving and investment income of adult children that can link their wealth to that of their parents (Killewald et al., 2017). The role of these mechanisms in transmitting wealth has been documented for some countries (Charles & Hurst, 2003; Pffefer and Killewald, 2017; Fagereng et al., 2021), but evidence for the UK is lacking, particularly regarding housing wealth. Moreover, as an important contribution to the literature, our analysis not only examines these mechanisms individually but also assess their combined effects and their relative significance. Finally, we assess how parental characteristics other than wealth such as education, income, social class, household structure and health influence the intergenerational associations of housing wealth, extending current understanding on the net 'wealth effect'.

1. How does wealth transmit across generations?

In this section, we will first consider macro-contextual factors, specifically place of residence and house prices, that might contribute to the intergenerational transmission of housing wealth. We will then review theories of wealth accumulation and discuss how parental wealth (separate from other parental characteristics such as education, earnings and occupation) affects children's sources of wealth accumulation over the life course and discuss our expectations.[2]

1.1. Place and housing asset

Wealth is a distinct form of resource, often produced outside of labour market, thus bringing new forms of inequalities such as asset or debt ownership, which are significantly affected by price mechanisms (such as house or stock prices). In the last 25 years, average house prices have risen rapidly across the UK by international standards (for example, compared to the US, France, Germany or OECD average) (Blanden et al., 2023), with gains spread unevenly across regions creating significant regional inequality in housing wealth (Levin & Pryce, 2011). This has meant that while some families have seen large gains in housing assets, for others, such gains have been relatively modest.

Such development might contribute to the correlation of parents' and children's housing wealth in two ways. First, given regional differences in house prices, similarity in place of residence between parents and children might explain intergenerational associations in wealth. In general, parents and adult children tend to live in close proximity (Chan and Ermisch, 2015), hence face the same housing market conditions, and in regions with higher house prices, transmission tends to be higher as parental support might be necessary to afford a home (Mulder et al., 2015; Coulter, 2017).[3] For example, Coulter (2017) finds for England and Wales that young adults, and specifically those coming from a disadvantaged background, are less likely to be home owners in regions with higher house prices such as London and South-East of England. However, even when adult children move from the area in which they

[1] For example, Blanden et al. (2023) show that the correlation between home value rank and overall wealth rank is 0.74 for the UK in 2015. Using housing wealth, we possibly miss some variation at the top where financial wealth is also significant, but our aim is to explore patterns for the majority of the population given that wealth is an important dimension of stratification, not only at the top of the distribution (Killewald et al., 2017).

[2] Throughout, we consider the theories and evidence about overall wealth, and discuss distinct aspects of home ownership and value where needed.

[3] Blaauboer (2011) argues that such geographical stability (i.e. living in similar residential environments with parents) might be related to socialization, location-specific capital and the wish to maintain close family ties all of which can also possibly increase the intergenerational associations. Bayrakdar and Coulter (2018) show for young people in Britain that higher local house prices are associated with a delayed departure from parental home.

grow up, they tend to move selectively based on their home background i.e., geographical sorting (Clark et al., 2014). This in turn contributes to the spatial segregation of housing wealth given housing market competition and relative housing affordability (Hochstenbach & Arundel, 2021). Therefore, continuity in type of place of residence arise not only due to geographical stability, but also geographical sorting, and given regional differences in house prices, continuities in place can contribute to intergenerational associations in housing wealth.

Secondly, those with wealthier parents might particularly benefit from rising house prices and house value appreciation as they are more likely to own their first-home at a younger age (Boileau & Sturrock, 2023a) and use home ownership as a strategy for wealth accumulation (Killewald & Bryan, 2016). Such advantages can also be location-specific given that rates of home value appreciation are likely to be higher in places where children of wealthier parents live. Therefore, the combination of homophily in place of residence, rising house prices and timing of ownership is expected to contribute to the intergenerational associations in housing wealth. As this may be endogenous to the mechanisms described above (e.g. given the role of transfers in timing of ownership), we examine these alternative mechanisms separately from the micro-level mechanisms (as we further discuss below).

Place of residence is important not only for defining housing market conditions (i.e., housing affordability), but also for the opportunities for further wealth accumulation through higher earnings, saving and investment. London is generally considered to be an 'escalator region' in England, which provides further opportunities for better employment and upward social mobility for internal migrants, although such effects are shown to be waning for the most recent cohorts due to slowing in the expansion of salariat jobs and competition with international migrants (Buscha et al., 2021; Breen & In, 2023). However, while advantaged children tend to live in, or migrate to, areas rife with high-paid jobs and wealth-enhancing opportunities, such moves may not be viable for disadvantaged children due to high living and housing costs (Friedman & Laurison, 2019). A recent report by UK's Social Mobility Commission (2020) finds that young people from a less privileged social class background are substantially less likely to move to prosperous areas with greater opportunities than those from more privileged backgrounds. In general, research on spatial and social mobility shows that movers are more likely to be upwardly mobile (in terms of absolute mobility), while the chances of moving to a high opportunity area is lower for those with a disadvantaged background (Friedman & Macmillan, 2017; Yu & Athey, 2023). Such segregation of place by social and economic advantage can thus be another factor driving intergenerational correlations in housing wealth given.

1.2. Sources of wealth accumulation

In the classical life cycle model, wealth is assumed to be generated from a surplus of income over consumption expenditure that fluctuates over the life cycle in line with changes in work and family lives (Modigliani & Brumberg, 1954). Among the working age, labour earnings are the main sources of household income, and family structure defines the level of resource pooling, as well as consumption needs. Partnership allows spouses to pool income or assets and benefit from economies of scale in consumption, while raising children incurs significant costs and increases needs for income. Accordingly, evidence shows that longer marriage provides a wealth advantage, while divorce and childbearing (in particular early parenthood) result in a wealth disadvantage, except for those in the top wealth deciles (Lersch, 2017; Maroto, 2018; Kapelle, 2022). Many empirical studies have shown that work and family characteristics significantly explain wealth disparities within and between groups (e.g. more recently, Sierminska & Doorley, 2018; Black et al., 2023). Others suggest that the life cycle model predicts wealth well, mainly for those in the bottom half of the distribution, but underpredicts wealth for those higher up in the distribution (e.g. Venti & Wise, 1998; De Nardi et al., 2016).

Two factors might explain why the lifecycle mode underpredicts wealth for those at the top of the distribution. First, the lifecycle model is based on a single generation, and for richer households, intergenerational financial transfers is particularly important (Kotlikoff & Summers, 1981; Nolan et al., 2020). However, recent evidence for France, Norway and the US shows that such transfers have very little role in wealth accumulation except for those at the very top of the distribution (Bauluz & Meyer, 2021; Black et al., 2022). Secondly, as noted by Thaler (1994) in an early critique, life cycle model assumes optimal saving and investment behaviour over the life course. However, financial capability has been shown to vary substantially across the wealth distribution, and explains a significant share of wealth disparities, especially in the upper part of the distribution (Benhabib et al., 2019; Fagereng et al., 2020). For example, differences in financial knowledge and skills (Lusardi et al., 2017), propensity to plan (Ameriks et al., 2003), time discounting, (i.e., willingness to trade-off present for future consumption) (Epper et al., 2020), portfolio composition (i.e., investing more vs. less risky assets) (Kuhn et al., 2020), and beliefs or expectations about macroeconomic conditions (Malmendier & Nagel, 2011) significantly contribute to wealth inequality.

1.3. Effect of parental wealth on sources of wealth accumulation

Pfeffer (2011) argues that parental wealth provides three functions that influence children's ability to accumulate wealth (see also Hällsten & Pfeffer, 2017). First, wealth provides a purchasing function which allows parents to use available resources for investing in their children; second, it delivers an insurance function, an actual and psychological safety net against possible negative outcomes influencing children's ability to take risks in different contexts; and third, it carries a normative function, which shapes relevant wealth-enhancing behaviours. In addition, wealth may bring with it a power function, allowing parents to exploit their privilege and informal networks on their children's behalf. Given these functions, we expect parental wealth to influence each source of wealth accumulation for children as the following.

Child's work life. Parental wealth might increase children's earnings potential by providing access to i) better schooling and college education (Killewald et al., 2017; Pfeffer, 2018; Dräger, 2022), high-opportunity places with well-paid jobs but high rents or house prices (Chetty & Hendren, 2018; Card et al., 2021), and ii) security against short-term unemployment and risky occupational pathways (e.g. with low or no initial, but high future earnings), which may contribute to occupational sorting (both within and between sectors and companies) (Pfeffer, 2011; Friedman & Laurison, 2019; Toft & Friedman, 2020). Well-off parents may also exploit their privilege and networks for children's advantage, for example, by affecting the enforcement of rules and teachers' evaluation in privilege-dependent schools (Calarco, 2020), or providing information and informal networks to help their children access jobs (Ioannides & Datcher Loury, 2004; Friedman & Laurison, 2019). The role of parents in affecting child's employment outcomes, while most obvious among the very rich (e.g. in the succession of CEOs within lineage, Korom et al., 2017), is important across the distribution (Corak, 2013).

Child's family life. Parental wealth may also affect children's demographic decisions. Parental wealth may encourage early transitions by easing costs associated with marriage and childbearing (Schneider, 2011; Pessin et al., 2022) including those related to home ownership. However, it may also encourage the postponement of family formation by providing the opportunity to remain in the parental home for longer or because of the value attached to educational attainment often expected to be completed before starting a family (Billari et al., 2019). If the influence of parental wealth of demographic decisions is similar to other stratification measures (e.g. social class), we may expect children from less wealthy parents to have earlier family transitions (Billari et al., 2019). In that case, having children early might boost while longer marriages may compensate for the parental wealth disadvantage of

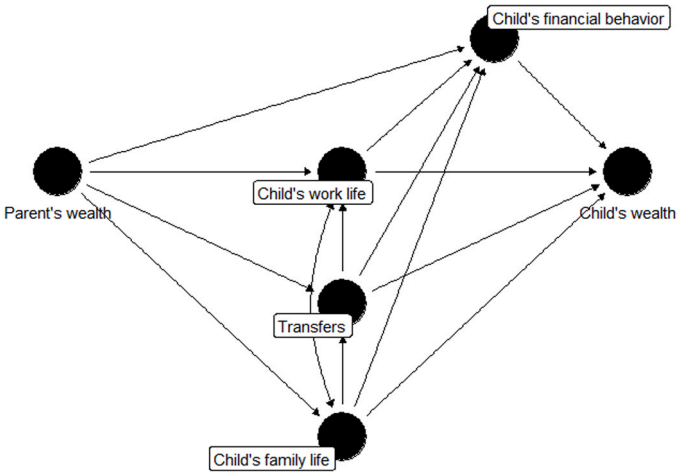

Fig. 1. Wealth transmission across generations. *Notes: The figure represents the conceptual model of wealth transmission from parents to children. The circles represent observed variables, and the arrows show our hypothesized causal pathways. Double arrows as between child's work and family life shows associations in both directions. The figure only considers micro-mechanisms between parents and children and does not include macro-contextual factors such as place of residence, housing market and prices as further discussed in the text. A key point from the figure is that transmission mechanisms are related to each other, and often mediate each other's effects – specifically financial behaviour plays a mediator role for all other mechanisms, while still having a direct mediating effect between parent's and children's wealth. To disentangle the overlaps, we have run sequential mediation models.*

these children. Moreover, the influence of marriage on wealth will also be driven by spouses' wealth potential, which is affected by mating preferences, and the social and wider networks that parental wealth brings (Wagner et al., 2020; Fagereng et al., 2022; Lersch & Schunck, 2023).

Direct financial transfers – inheritance and inter vivos. Recent work emphasizes the importance of direct financial transfers, especially inheritances, for explaining wealth associations across generations (Adermon et al., 2018; Fagereng et al., 2021). However, for the majority, inheritances are small or medium sized (Karagiannaki, 2017b; Nolan et al., 2020); often depleted over a short-period (Druedahl & Martinello, 2020; Bauluz & Meyer, 2021); typically received late in life (Nolan et al., 2020; Black et al., 2022), and therefore unlikely to be a major factor affecting the level of housing wealth of children in midlife. *Inter vivos* transfers may have a greater influence on the intergenerational transmission of wealth as they are received across the life course. Wealthier parents are more likely to financially help their children, and to do so more abundantly than those who are less well off (Zissimopoulos & Smith, 2009; Spilerman & Wolff, 2012). However, the value of regular transfers between generations is typically small, and because they are frequently a response to adult children's financial need, often play a compensatory rather than a wealth boosting role (Karagiannaki, 2017b; Boileau & Sturrock, 2023b). Still, one-off targeted transfers, specifically those tied to housing (e.g. assistance with mortgages or down-payments for purchases) may play a significant role in home ownership (Spilerman & Wolff, 2012; Boileau & Sturrock, 2023a).[4]

Child's financial behaviour. Parental wealth can affect financial behaviours of children in several ways. Parental wealth can induce wealth-enhancing financial behaviour by reducing credit and mortgage constraints (Dwyer, 2018); by acting as a buffer against economic shocks such as job loss, divorce or ill-health (Leopold & Schneider, 2011; Huang et al., 2021); by providing opportunities for high-risk high-return investments through better financial education (Pfeffer, 2018; Black et al., 2018), actual and psychological assurance against possible losses (Greenberg, 2013; Schneider et al., 2017), as well as geographical advantages e.g. living in high opportunity areas (Chetty et al., 2018). Parents can also directly or indirectly transmit relevant knowledge, skills, preferences, values or beliefs that are useful for wealth accumulation. Several studies find strong similarities in risk aversion, stock ownership, saving propensities and returns to wealth between parents and children (Charles & Hurst, 2003; Fagereng et al., 2020, 2021). Explaining these similarities, studies based on twins find a bigger role for genetic factors (Barnea et al., 2010; Cesarini et al., 2010; see also Barth et al., 2020), while more recent studies based on adopted children show a larger role for social environment (Black et al., 2017, 2020; Fagereng et al., 2021). Part of this latter social effect might work through formation of financial skills, values or beliefs in early life by observing parent's financial habits or being directly taught by parents (Lersch & Luijkx, 2015; Gudmunson et al., 2016) or in adulthood through knowledge exchange e.g. in investment opportunities (Knupfer et al., 2019) and utilizing social family networks (Ostrovsky-Berman & Litwin, 2019).

1.4. Micro-level mechanisms of intergenerational transmission

Given these theories and evidence, we consider four major mechanisms connecting parent and child wealth: children's work and family lives, financial transfers (from parents or relatives) and children's financial behaviour. As shown in Fig. 1, these mechanisms are not independent of each other. For example, we know that financial transfers are dependent on family structure and major life events (Leopold & Schneider, 2011); marriage and having children have significant effects on earnings (Doren, 2019), and financial behaviour (Grenestam & Mikkelsen, 2019); and, one needs a certain level of income accumulated through transfers and earnings to be able to save and invest. Moreover, whether and to what extent accumulated earnings and transfers lead to wealth accumulation depends not only on their amount, but also on how the money is used by the recipient (e.g., consumed, saved and/or invested) (Nau & Tumin, 2012; Druedahl & Martinello, 2020). It is important to distinguish these processes and understand their separate roles in contributing to the intergenerational transmission of wealth. We, therefore, examine the relative importance of these mechanisms, both based on their total effects and direct effects (i.e. conditional on

[4] Recent data from England shows around 6–7 % of first-time buyers use inheritance, and around 29 % of first-time buyers in 2015–2016 use gifts or loans from parents as a source of deposit (Office for National Statistics, 2016). The level of gifts or loans received from parents is on average estimated to be around 20 % of total deposit, with large inequalities across income groups (Boileau & Sturrock, 2023a). Support from parents extends beyond the house purchase through mortgage or rent payment as well as co-residence before or possibly after ownership (Rowlingson et al., 2022).

other mechanisms) (see below for details).

While for most mechanisms, the expectation is relatively straightforward (for example, having wealthier parents increases transfers, earnings, saving and investment income, which then leads to higher wealth accumulation e.g. home ownership or higher home value), the role of children's family lives is not as clear cut as parental wealth might affect this mechanism in counteracting ways. We expect children's work and family lives to explain variation better at the bottom part (e.g. home ownership), while financial transfers and child's financial behaviour to explain variation better at the upper part of the distribution (e.g. home value).

2. Research design

2.1. Data and sample selection

We use harmonised longitudinal data from British Household Panel Survey (1991–2008) and Understanding Society (2009–2020) (University of Essex, Institute for Social and Economic Research, 2023). In these two surveys, children are registered as a new household when they leave their parents' home allowing us to link adult children and their parents. We focus on children born between 1972 and 1991 (and aged 0–19 in 1991) with information on parental characteristics. We follow them through their early adulthood life course until the latest date for which we have information. This gives us a sample size of 1341. Our sample of adult children are at an age between 27 and 48 when we observe their outcomes (so, we observe their work, family, transfers and wealth information between ages 19 to 27–48). To account for possible selection bias, we use weights that includes corrections for survey design and attrition.

2.2. Missing data

Given that we use long-term longitudinal information, missing data is an important problem. To deal with both case and unit non-response, we utilize the rich longitudinal aspect of our data and impute missing information for some variables, while extrapolating from the available information for others. To deal with unit non-response, especially important for inheritance and targeted external transfers which are not collected in Understanding Society (starting from 2009), we impute missing values with the assumption that the patterns of these transfers do not significantly change over time. To deal with attrition, we calculate longitudinal weights following the guidance provided by the UKHLS team,[5] by taking the 1991 cross-sectional weights as a reference and calculating the risk of attrition for our analysis sample. We report the extent of case non-response, make a preliminary analysis of the nature of missingness, and describe our imputation and other methods used to deal with missing for each variable in the Supplementary Material.

2.3. Measures

Below, we briefly describe the variables used in the analysis. See Appendix for descriptive statistics, and Supplementary Material for other details.

Outcomes. The dependent variable of the study is home ownership and value, self-reported at a household level when children are at an age between 27 and 48. We take those measurements from the latest date children have available information, between 2005 and 2021. Almost half of our outcomes are from 2019 and 2020, and the mean of outcome year is 2016. Home ownership is coded as a binary variable (owner = 1).

To measure home value, we use the self-reported value of the primary residency, where respondents are asked how much they would expect to get for their home if sold today. Such gross value of primary residency is shown to proxy overall wealth well, especially in intergenerational models and mediation analyses, while net home value (i.e., gross home value minus mortgage liabilities) is shown to be a relatively poorer indicator (Pfeffer & Killewald, 2017; Wagner et al., 2020). One reason for this could be that the gross value of primary residency reflects individuals' behaviour (i.e., they take the level of mortgage that they can pay) hence better represents their overall wealth position (see e.g. Hansen & Toft, 2021). The net value probably underestimates the variance in the upper part of the distribution as it shows those who own a relatively valuable house as holding relatively little wealth. For home value, we use percentile ranks that can account for the skewed distribution and differences in inequality between generations (Pfeffer & Killewald, 2017), but we also report main estimates using inverse hyperbolic sine transformation (see footnote viii). We separately look at i) home value of owners, and ii) home value of the whole distribution where renters are coded as zero, which effectively combines ownership and value (of owners) models.

Treatments. For our treatment variables, parental home ownership and value, we use the same methods described above. If parents do not live in the same household (e.g. due to separation), but both are observed, we take the average value of both parents homes. We consider parents to be owners if only one parent owns a house. For the value of the parental home, we use 5-year average value of the home between 1991 and 1995 to reduce measurement error.[6]

Mechanisms. To measure the hypothesized mechanisms, we use extensive longitudinal information about the early adulthood life courses of children. We observe individuals from age 19 to the year they are last observed in the data (between 2005 and 2021, depending on the latest available information for the individual), when individuals are at an age between 27 and 48.

To measure *child's work life*, we use the accumulated earnings and number of years self-employed with additional binary variables showing those who have never earned or worked as self-employed over the observation period. To measure *child's family life*, we use duration of marriage, age at first-birth, and a set of binary variables to indicate whether individuals were ever divorced, ever had a child and have more than one child. To measure *direct financial transfers*, we use inheritance, regular and targeted *inter vivos* transfers that the adult children accumulated over the observation period. While regular transfers show monthly money transfers from a family member from another household, targeted transfers show one-off payments from parents to children related to specific expenses (such as maintenance, bills, education, spending money, loans or other payments).[7] For inheritance and regular transfers, we have used the accumulated amount during the observation period and imputed the amounts for years between 2009 and 2019 (see Supplementary Material for details).[8] To measure *child's financial behaviour*, we use accumulated savings from income (self-reported each year), and accumulated investment income (i.e., interest and dividends from financial assets, self-reported each year). Conditional on other mechanisms, we consider that these variables reflect individual's propensity to save and the rate of return on their investments.

Controls. For the models where we estimate intergenerational

[5] See Understanding Society (2023) for guidance.

[6] To be precise, we take a 4-year average as home value in year 1992 is problematic in BHPS.

[7] To measure targeted transfers, we have information on the receipt, but not the amount of transfers for a period between 1991 and 2008; so, we created an index based on the frequency and variety of transfers from parents (normalised for the number of years of available information) and consider this as a measure for parent's propensity to help children with targeted payments.

[8] We also have information on in-kind support from parents such as child care, shopping, repair among others, but only from seven years which is not adequate to observe life course accumulation. Also, our preliminary analysis shows that such in-kind support has a compensatory role (in line with evidence e.g. Karagiannaki, 2011); so, rather than boosting advantage, such support is given to children in need.

associations (see Eq. 1 below) and mediation effects (see Eqs. 2 and 3 below), we only control for parent's and adult children's age at the year when outcomes are measured (incldluing quadratic terms), and outcome year fixed effects (three-year groups). In additional models, we also include a set of pre-treatment controls to account for other aspects of family background such as parental education, earnings, social class, self-employment, household structure, age and place of residence.

2.4. Effects of interest

To formally define the effects of interest, we use a potential outcomes framework proposed by Imai et al., (2010, 2011) and extended to multiple mediators setting by Imai and Yamamoto (2013). The total effect (TE) of parental housing wealth T_i on children's housing wealth Y_i, is defined as:

$$TE = E[Y_i(T_i = t) - Y_i(T_i = t^*)]$$

For each child, i, we are interested in the difference between two potential outcomes of Y, for different treatment values, which in binary cases are treated (parental home ownership, $t = 1$) and untreated (parental home ownership, $t^* = 0$).

The mediation effects (ME) and proportion mediated (PM) for each mediator are defined as:

$$ME = E[Y_i(t, M_i = b) - Y_i(t, M_i = b^*)]$$

$$PM = ME/TE$$

Here, for each child i, we are interested in the difference between the two potential outcomes for different values of the mediator $(b - b^*)$, while holding the treatment constant ($t = 0, 1$ for a binary case and $t = t_{\min}, t_{\max}$ for a continuous case). We then take the average of results for two treatment values (e.g. ME when t = 0 and ME when t = 1).

To assess the relative importance of mediators, we consider a setting with multiple mediators, and define controlled mediation effects (CME) and controlled proportion mediated (CPM):

$$CME = E[Y_i(t, M_i = b, W_i(t)) - Y_i(t, M_i = b^*, W_i(t))]$$

$$CPM = CME/TE$$

The main difference here is that to derive CME of a mediator M_i, we condition on other mediators W_i, which take the values that are observed when the treatment is t. Within this multiple mediator framework, the sum of CMEs for all mediators gives us the total indirect effect (TIE), which will be equal to the total effect (TE) if we can explain all the correlation between parents' and their adult children's wealth using our hypothesized mechanisms. Otherwise, the direct effect of the treatment on the outcome remains unexplained by the mediators.

2.5. Identification assumptions

Imai et al. (2010) show that effects of interest defined above can only be identified under the main sequential ignorability assumption. This assumption can be separated into four parts (VanderWeele, 2015: 24–26, 114): given the observed pre-treatment confounders, there are no unobserved confounding variables which affect the relationship between the: i) treatment and outcome, ii) treatment and mediator, iii) mediator and outcome, and iv) between mediator and outcome that is affected by treatment.

Given the observational nature of our data and our design, these are strong assumptions. For example, the third assumption requires that all important mediators are observed, which is difficult to ensure unless we can explain nearly all of the associations between the treatment and outcome. For this reason, we examine the sensitivity of results to potential violations of our assumptions (described below) and examine the robustness of our results to alternative explanations.

2.6. Estimation of effects of interest

We estimate TE and MEs separately for home ownership using a logit model and home value rank of parents and children (giving renters a value of zero) using a linear model.[9] We estimate the total effects (β_1) for outcomes (Y_i) conditional on pre-treatment controls such as parents age (and age square) (P_i) and post-treatment controls such as children's age (and age square) and outcome year (C_i):

$$Y_i = a_1 + \beta_1 T_i + \partial_1 P_i + \gamma_1 C_i + \varepsilon_1 \quad (1)$$

To estimate mediation effects (MEs), we apply a simulation-based algorithm proposed by Imai et al., (2010, 2011). The approach includes three main steps. First, we fit the following mediator and outcome regression models (Eqs. 2 and 3) separately for each mediator (M_i) given treatment (T_i), and pre-treatment (P_i) and post-treatment controls (C_i):

$$M_i = a_2 + \beta_2 T_i + \partial_2 P_i + \varepsilon_2 \quad (2)$$

$$Y_i = a_3 + \beta_3 T_i + \delta_3 M_i + \partial_3 P_i + \gamma_3 C_i + \varepsilon_3 \quad (3)$$

Secondly, we simulate model parameters from their sampling distributions.[10] For each simulation, we predict i) two potential mediator values, one for treated ($t = 1$ for ownership model, and $t = t_{\max}$ for value models) and one for untreated ($t = 0$ for ownership model, and $t = t_{\min}$ for value models). Then, ii) separately using these two mediator values, we predict two sets of potential outcome values. Lastly, iii) we compute the difference in potential outcome values $(Y_{treated} - Y_{untreated})$ for both sets and take the average of these two differences, which gives us the mediation effect (ME). ME represents the average change in the outcome (e.g. child's home ownership) that arise from the change in the mediator (e.g. accumulated earnings) induced by the treatment (e.g. parents' home ownership). For value models, we take the difference between maximum and minimum values of treatment and then divide it by 100, which gives us the average treatment effect across the distribution. Point estimates and standard errors are both derived from the simulated sampling distributions. For both ownership and value models, proportion mediated (PM) is then calculated as ME / TE (β_1).[11]

This approach can accommodate various types of treatment, mediator and outcome variables, linear and non-linear relationships, and parametric and non-parametric models, while easily allowing for a sensitivity analysis of identification assumptions. However, it is not straightforward to extend it into the multiple mediators setting. To estimate CME and CPM, we use a framework proposed by Breen et al. (2013) i.e., Karlson-Holm-Breen method (KHB method), which allows the extension into multiple mediators setting using the simple strategy

[9] As zeros reflect a real, rather than a censored value, the ownership and value models can be modelled separately. When we examined non-parametrically, we have found an almost perfectly linear relationship between home value rank of parents and children. We have replicated the analysis for home value transmission in Table 1 using non-parametric regression and observed almost identical results to the linear model.

[10] We simulate models for 500 times. We have also tried higher number of simulations, and results are generally stable and substantively similar.

[11] For the binary outcome, the given formula for PM is valid only for the latent variable scales; however, as Imai, see Appendix G) et al. (2010) show the real value of PM approximates to the given formula when the effect of treatment in the outcome model (β_3) is relatively small e.g. smaller than 0.5, which in our case is (0.46), so we use the standard formula for both value and ownership models.

Table 1
Intergenerational associations in home ownership and value.

	β/se	β/se	β/se	β/se	β/se
Home ownership (AME)	0.30	0.27	0.17	0.27	0.16
N = 1341	[0 .03]	[0.03]	[0.04]	[0.03]	[0.04]
Home value (owners) (rank-rank)	0.39	0.39	0.31	0.28	0.19
N = 849	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]
Home value (owners & renters) (rank-rank)	0.44	0.40	0.28	0.37	0.25
N = 1341	[0.03]	[0.03]	[0.04]	[0.04]	[0.04]
Controls					
Parents' age		Yes	Yes	Yes	Yes
Parents' characteristics			Yes		Yes
Parents' place of residence				Yes	Yes

Notes: The table presents regressions of child's wealth on parents' wealth where each model controls for additional factors. Age variables include squared terms. Parents' characteristics include education, earnings, social class, household structure, self-employment, self-reported health and mental health. The values represent either the highest (or lowest) or average value of the parent pairs (or the value of only parent if that's the case). Place of residence is the region (among eleven of those defined by the Government's Office) where parents live in 1991. Home ownership is estimated based on a logit model, and coefficients show average marginal effects (AMEs). Home value models are estimated based on a linear model, and coefficients show the unit change in child's home value rank due to a unit change in parents' home value rank.

described in Vanderweele (2015: 114–122) (basically including mediators as controls).[12] Therefore, it allows to include variables sequentially as blocks, and assess the change in their mediation effects and their relative importance.

2.7. Sensitivity analysis

To test the sensitivity of ME estimates to unobserved confounders, we use the framework proposed by Imai et al. (2010) and Imai and Yamamoto (2013). Any omitted pre-treatment variable that confounds the relationship between the mediator and outcome will be part of the error term in both the mediator and outcome models creating a correlation between ε_2 and ε_3. Imai et al. (2010) show that this correlation can be decomposed into the coefficients of determinations for the mediator (R_m^2) and outcome (R_Y^2) models. R_m^2 shows the proportion of the variance in the mediator explained by the unobserved confounders, while R_Y^2 shows the proportion of the variance in the outcome explained by the unobserved confounders. We report how large the explanatory power of the confounder on the mediator R_m^2 and outcome R_Y^2 would have to be to completely explain away the mediation effect based on a sensitivity parameter λ, which is the product of these two terms:

$$\lambda = R_m^2 * R_Y^2$$

The larger the required λ for making ME equal to zero (lowest value where the confidence interval crosses zero), the more robust our estimates are to the unobserved pre-treatment confounder. We will evaluate the strength of this parameter relative to the strength of the relationship of other observed confounders. Using this approach, we can test the sensitivity of MEs, but not CMEs, which is an important limitation here. However, relevant methods for testing the sensitivity of relative importance in multiple mediator settings are not yet readily available for applied researchers (see VanderWeele, 2015: 144–153 for a relevant discussion).

3. Results

We first present our intergenerational estimates before turning to examine the role of place, house value appreciation, and micro-level mechanisms and their relative improtance in explaining the intergenerational these associations.

3.1. Intergenerational associations in home ownership and value

Table 1 reports the estimated intergenerational associations in home ownership and value between parents and their adult children. The first model is unconditional; from the second model on, we condition on some pre-treatment confounders related to other aspects of parental background. We separately look at home value model for owner-children and for all children (owners and renters) coding renters as zero in the rank.

As reported in the first row, the unconditional intergenerational association in home ownership is 0.30, implying that children whose parents were homeowners are 30 % more likely to own their home at midlife (on average at the age of 36). Controlling for age reduces this association to 0.27 as our sample includes more older parents than younger ones.[13] Controlling also for other parental characteristics such as education, earnings, social class, household structure, self-employment, self-reported health and mental health significantly attenuates the association by around 40 %, while controlling for parents' place of residence in 1991 (among eleven regions defined by Government's Office) does not affect the association. Among parental characteristics, parental education and parental social class are the main attributes that meaningfully explain some of the intergenerational association in home ownership.[14]

The findings are relatively similar for the value models. As shown in the second and third rows, unconditional intergenerational associations for home value are 0.39 for owners and 0.44 for all children (owners and renters). Adjusting for parents' age does not change the associations for owners, but reduces the associations for all children. Controlling for other parental characteristics, and specifically parental education, social class and earnings reduces these associations by 20–30 %. Different from the ownership model, controlling for parents' place of residence reduces the intergenerational associations in home value among owners by 30 %. We, however, do not see the same effect in the model with both owner and renter children. So, place seems to specifically affect differences among children who are homeowners. Conditioning on all of these parental background factors reduces the associations in home value by 40–50 % to 0.19 for owners and to 0.25 for all children.

[12] KHB method is mainly derived by solving "rescaling problem" in binary models using a residualized regression of the main predictor and mediators on the outcome, which helps to ensure same error variance between reduced and full models, hence show the same properties as linear models. Breen et al. (2013) then extends this strategy to employ a path-analytic decomposition into direct and indirect effects as well as providing relative importance of each mediator based on differences between reduced and full models.

[13] Controlling also for child's age increases this association similar to the literature as it reduces life cycle bias.

[14] See Supplementary Material, Table S3 for results.

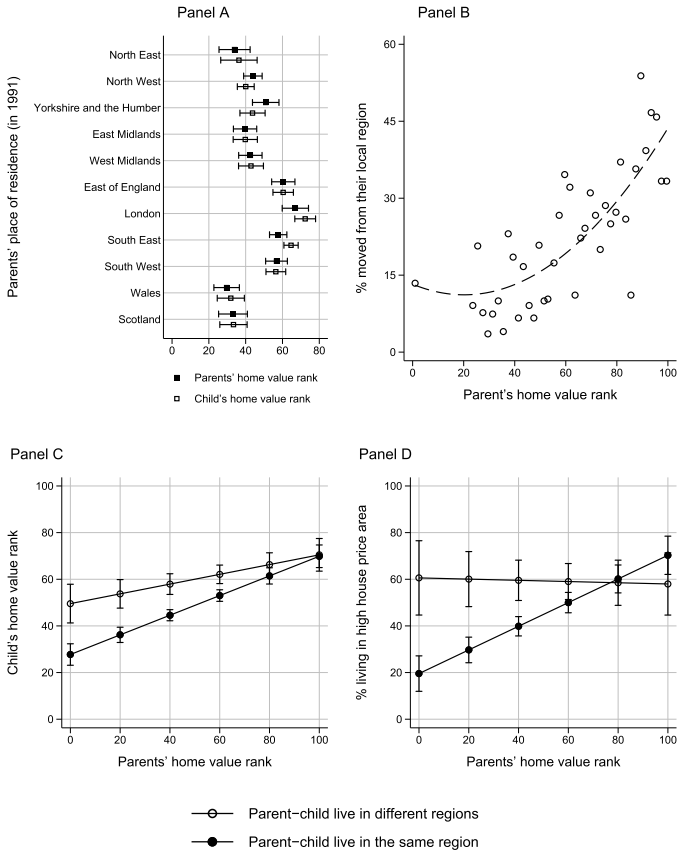

Fig. 2. Why does place of residence explain intergenerational associations in home value?. *Notes: Panel A shows average home value rank of parents and children across places of residence of parents. Those parents and children living in London, South and East England has higher home value ranks. Panel B shows the proportion of children moved from their local region – where parents live in 1991 – and we see that those with higher parental home value are significantly more likely to move from their local region. Panel C shows the association between child's and parent's home value rank depending on whether they live in the same or different regions. The slope is much higher for those living the same region, but the differences matter only for those with parents who own homes with lower value rank. Panel D shows for children who moves from their local area, the likelihood of living in high house price area (London, South and East England) are very similar between those with different parental home value. The results of the Panel B are from binscatterplot, which plots the mean of dependent and independent variables across equal-sized bins of the independent variable, and draw a population regression line (see Stepner, 2013). The results of Panel C are predictions from a linear regression model, where parents' home value rank is interacted with a binary variable showing whether child-parent live in different regions. The results of Panel D are predictions from a binary model estimating the likelihood of living in high price areas on parents' home value rank interacted with a binary variable showing whether child-parent live in different regions. All coefficients show average marginal effects.*

3.2. Place?

In Fig. 2, we explore the effect of place of residence on intergenerational associations in home value. Panel A shows a close similarity in ranks of home value between parents and their adult children within regions. Those parents located in East or South East of England and London, as well as their adult children (regardless of where they live at the outcome year) are in the higher ranks of home value. As we hypothesized, this might be a result of geographical stability (parents and adult children living in the same area) or sorting (children moving selectively by parental wealth).

In Panel B, we see that some children moved from their local region in their adulthood, yet the chances of moving is stratified by parental home value. For example, among those whose parents' home value is in the bottom 20 % of the distribution, only 10–15 % move from their local region, while among those whose parents' home value is in the top 20 %, 35–40 % move from their local region.

In Panel C, we see that intergenerational associations are significantly higher for those children and parents who live in the same regions (as the slope is steeper for this group).[15] Therefore, geographical stability seems to be a relevant explanation for intergenerational associations in home value. This might be because parental background becomes more important in contexts with low accessibility and affordability (Mulder et al., 2015; Coulter, 2017), and the similarity in housing market conditions (e.g. housing stock and affordability) is an important factor in rising intergenerational associations in home ownership (Helderman & Mulder, 2007). Another explanation is the wealth advantage that comes with geographical moving. Among children with less wealthy parents (approximately the bottom 20 % of parental home value distribution), those who moved from their local region have significantly higher home value ranks (around the 50th centile) than those who continue to live in their local region (around the 30th centile). This mobility advantage seems to reduce for those with richer parents; for the richest 20 %, living in the same or different region to their local does not matter to their home value rank.

This mobility advantage argument is further substantiated when we look at whether children move to richer areas in Panel D. Among those who moved from their local region, around 55–60 % move into high

[15] These findings are even stronger when we look at a smaller area unit than region such as Lower Layer Super Output Area (LSOA), which in average has a population of 1500.

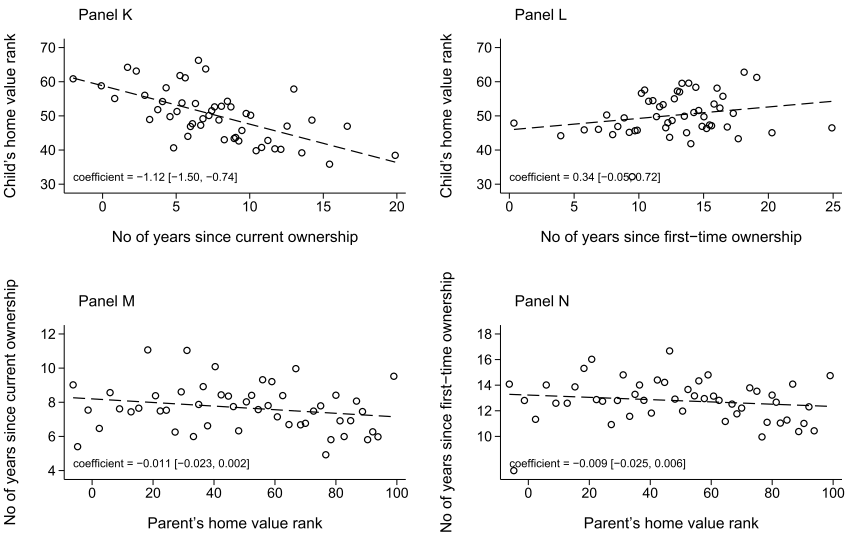

Fig. 3. Housing asset effect? Age at current and first-time ownership, and parents' and children's home value rank. *Notes: This figure examines the relationship of time passed since first and current home ownership with child's and parents' home value rank. Panel K shows that, different from what would be expected from asset effect hypothesis, those children who bought their current house recently have a significantly higher home value. Panel L shows that there is no association between current home's value and the timing of first home ownership. Panel M and N shows a similar picture for parents' home value rank – while those with higher parental home value rank tend to own their current home relatively recently, their timing of first home ownership is no different than those with lower parental home value rank. All results are estimated using binscatterplot, which plots the mean of dependent and independent variables across equal-sized bins of the independent variable, and draw a linear population regression line (see Stepner, 2013). The results of Panel K and L controls for children's age, age square, place of residence and outcome year, while result of Panel M and N controls for parents' age, age square and place of residence. Both independent and dependent variables are residualized for control variables before binning and plotting. Coefficients reported in the graph shows results from linear regressions (including specific controls if relevant and as described above). All coefficients show marginal effects.*

house price area, and more importantly, the likelihood of moving into high house price area (London, and South and East England) is not significantly different across parental home value rank. In other words, among those who move, geographical sorting does not seem to be the case for those with less wealthy parents as they are also equally likely as other children to move into high wealth high-opportunity areas. It is important remember that children of wealthier parents are already more likely to live in richer areas, so geographical sorting already happens due to geographical stability. Moreover, what is different for the children of less wealthy parents is the chances of moving, which is significantly lower than those with wealthier parents as we saw in Panel B. Therefore, geographical sorting seems to be important not due to stratification in the destination of movers, but by i) the initial local place advantage of children with wealthier parents, and ii) the reduced chances of moving of children with less wealthy parents.

Therefore, the strong explanatory power of parents' place of residence in intergenerational associations in home value can be explained by both geographical stability and geographical sorting. While geographical mobility seems to be providing an opportunity for upward wealth mobility as among the children of less wealthy parents, those who could move from their local area tend to move into high-opportunity areas and have higher home value than children still living in their local region; however, the incidence of such geographical mobility is relatively rare for children of less wealthy parents, especially compared to the children of wealthy parents.

3.3. Housing asset effect?

Another mechanism explaining the association between parents' and children's home value may be the timing of ownership. Both adult children and parents with higher home values (and their parents and children) tend to live in regions where house prices have significantly grown in the last 20 years such as London, the South East and West, and East of England (see Panel A in Fig. 2). Those with wealthier parents might have been able to buy their first house earlier and have benefitted from wealth accumulation due to house value appreciation. Moreover, lower housing costs or other benefits of ownership on employment and investment might also help early homeowners to accumulate more wealth.

To explore this, we examine the relationship between the timing of first-time home ownership, current home ownership, and parents' and children's home value rank (see Fig. 3). In Panel K, we see, in reverse of our expectations, those who bought their houses more recently have significantly higher home values than others. The current residency at the outcome year might not be the first and only house that children owned, but in Panel L, we find that the timing of first-time home ownership (i.e., the number of years between buying their home the first-time and the outcome year) is also not related to the value of their home. This suggests that children with higher home values have accumulated resources over time and bought more valuable houses at later ages, but this accumulation cannot be accounted for by earlier home-ownership. This explanation is consistent with the evidence showing that wealth benefits of home ownership are strongly explained by selection; in other words, those who are expected to accumulate more wealth given their characteristics also own more valuable homes (Lersch & Dewilde, 2018; Killewald & Bryan, 2016). Moreover, as shown in Panel M and N, the timing of current and first-time home ownership is not associated with the parents' home value rank. Therefore, the asset effect of home ownership does not seem to explain the transmission of housing wealth in our sample.

3.4. Micro-level mechanisms?

In Table 2, we present the results of a mediation analysis, where we estimate the total mediating effect of all mediators together in explaining the intergenerational associations of home ownership and value using the KHB framework. The models are adjusted for parents' and children's age and age square, and outcome year. The first row ("Reduced") shows the total effect, while the third row ("Diff") shows the indirect effect i.e., the total mediation effect. The results show that all mediators together could explain around 57 % of the intergenerational associations in home ownership, 25 % of the home value of

Table 2
Mediation analysis - total mediation including all mechanisms using KHB method

	Home ownership	Home value (owners)	Home value (owners & renters)
Reduced	0.293***	0.394***	0.427***
	(11.03)	(11.11)	(14.62)
Full	0.127***	0.294***	0.222***
	(4.25)	(7.21)	(6.09)
Diff	0.166	0.0995***	0.205***
	(.)	(4.46)	(8.56)
N	1341	849	1341
% mediated	56.6	25.2	47.9

Notes: t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The table shows the results of a mediation analysis based on the khb method described in the methods section. The model includes all mediators together to examine the total mediation. Variables are described in the data and methods section.

owners, and 48 % of the home value of owners and renters. The mediation effects are statistically significant for all models.[16] Given the low explanatory power of mediators for only owner children, we only examine home value mode for all children (owner and renter) in the remaining analysis.

To explore the role of mediators, we first descriptively examine the associations of mediators with parents' and children's home ownership and values, and find the associations as predicted by theory, except for family life.[17] So, those with wealthier parents i.e., homeowner or owners with higher home values have higher accumulated transfers, earnings, savings and investment income, and resources are positively associated with wealth i.e., home ownership and home values. In general, the associations with earnings, saving and investment income are much stronger than financial transfers (especially for home value). Among the family life variables, the number of years of marriage is strongly and positively associated with higher wealth, but not with parental home ownership and value.

In Table 3, we present the results of a mediation analysis based on the Imai et al. framework, where we estimated the mediation effects (ME) and proportion mediated (PM) of each mediator separately. The findings are parallel to what we have observed descriptively; for most mediators, the effects are in the expected direction, but some explain only a small part of the intergenerational associations in home ownership and value. Mediation effects are statistically significant only for four mediators: earnings, targeted inter vivos transfers, saving and investment income. For these variables, some of the effects are about having vs. not having any earnings, transfers, saving and investment, but generally most of the effects are related to the level of their accumulation i.e., how much earnings, transfers, saving and investment income adult children accumulates over their life course are the key mediators explaining intergenerational associations. Accumulated earnings explain around 46 %, while accumulated saving and investment income each explain around 27 % of the intergenerational association in ownership model. On the other hand, in the value mode, accumulated earnings explain around 17 %, while accumulated saving and investment income explain 19 % and 27 % respectively. Targeted inter vivos transfers explain around 7–8 % in both ownership and value models.

To assess the robustness of these effects to unobserved confounders at different levels, we have estimated a sensitivity parameter (λ), which shows how strong a possible omitted pre-treatment confounder should be related to the mediator (R_m^2) and the outcome (R_Y^2) to explain away the identified significant effects ($\lambda = R_m^2 * R_Y^2$). We tested sensitivity only for the significant mediators. In ownership model, the λ value for children's earnings, saving and investment income is very similar around 0.050, while it is 0.007 for targeted transfers. Different combinations of R_m^2 and R_Y^2 could be considered, but a more intuitive way would be to take an observed confounder as a reference. For example, parental earnings accounted for around 15 % of the variance in accumulated earnings. For an unobserved confounder similar to parental earnings to explain away the mediation effect of earnings, it needs to explain around 33 % of variance in children's home ownership, which is very high (e.g. it is similar to the difference between those with a homeowner and a renter parent, at 35 %). However, an unobserved confounder that explains just 4 % of the variance in children's home ownership could explain away the effect of targeted transfers. In our home value model, the λ for children's accumulated earnings, saving and investment income are around 0.040–0.045, while it is 0.002 for targeted transfers. For an unmeasured confounder that is similar to parental earnings (which explains around 8 % of the variation in investment income) to explain away the mediation effect of investment income, it should explain around 50 % of the variance in children's home value, which is significantly larger than the explanatory power of parental education or parental earnings (8–9 %). On the other hand, a confounder that can explain only 3 % of the outcome could attenuate the whole mediating effect of transfers. Therefore, only targeted transfers seem to be sensitive to potential unobserved confounders.

Focusing on investment income, one explanation for such strong mediation effects might be that it reflects individuals' accumulated earnings, transfers and saving – so investment income is merely a mediator of the other mechanisms, and does not have a direct mediating effect by itself. However, controlling for these factors (accumulated earnings, transfers and savings) only reduces the proportion mediated by investment income to 19–20 % from 27 % in both ownership and value models. An alternative explanation could be that investment income reflects early transfers from parents (either as lump-sum cash or asset ownership) generating large accumulated returns for children over the life course. If early transfers are part of the explanation, one would expect an early accumulation of investment income from the use of such resources; however, including controls for accumulated investment income between ages 19 and 25 only reduces the proportion mediated by investment income from 27 % to 22–23 % in both ownership and value models. Similarly, controlling for the number of years an individual has received rent from other property only reduces the proportion to 26 %. Moreover, based on unconditional quantile regression reported in Fig. S7 at the Supplementary Material, the contribution of investment income to intergenerational associations can be observed across the distribution of child's home value; hence investment income is stratified across the distribution, not just for the most wealthy. Therefore, most of the effect of investment income likely reflects the direct role of parental wealth in inducing wealth-enhancing behaviours by providing insurance against risk and opportunities for high-risk high-return investments or through transmission of relevant knowledge, skills, preferences, values, and beliefs.

3.5. *Relative importance?*

In Table 4, we present the results of a mediation analysis based on KHB method, where we estimated the proportion mediated (PM) for each block of mechanisms separately. When we separately include each mechanism, all, except financial transfers, explained a substantial amount of the intergenerational associations of home ownership (respectively 20 %, 42 % and 37 % for family life, work life and financial behaviour). The picture is very similar for home value, only that the proportion mediated are substantially lower for family and work lives (14.3 % and 26.5 % respectively), and slightly lower for saving and investment income (33.9 %). Therefore, while child's work life appears to

[16] For the ownership model, standard errors are not reported as the khb method does not provide such information for average partial effects. The mediation effect is significant for log odds.

[17] Results are presented in Supplementary Material, Fig. S3-S6.

Table 3
Mediation analysis – separately for each mediator using Imai et al. method

	Home ownership			Home value (owners & renters)		
	AME	SE	PM%	AME	SE	PM%
Child's family life						
Number of years married	0.007	0.008	2.2 %	-0.005	0.006	-1.1 %
Number of year cohabitated	-0.004	0.003	-1.4 %	-0.003	0.002	-0.7 %
Ever divorced	-0.001	0.002	-0.2 %	0.000	0.001	0.0 %
Ever had a child	-0.005	0.004	-1.8 %	-0.010	0.004	-2.4 %
Have more than one child	0.000	0.003	0.0 %	0.002	0.003	0.4 %
Age at first-child born	-0.004	0.004	-1.5 %	-0.004	0.004	-1.0 %
Financial transfers						
Accumulated inheritance	0.007	0.004	2.2 %	0.008	0.004	1.9 %
Ever had inheritance	0.005	0.004	1.7 %	0.006	0.004	1.4 %
Accumulated intervivos	0.003	0.004	1.1 %	-0.001	0.006	-0.2 %
Ever had regular intervivos	0.003	0.004	0.9 %	-0.001	0.006	-0.3 %
Accumulated targeted intervivos	0.022	0.008	7.4 %	0.033	0.016	7.7 %
Ever had targeted intervivos	0.005	0.007	1.6 %	0.006	0.008	1.4 %
Child's work life						
Accumulated own earnings	0.152	0.033	46.2 %	0.073	0.013	17.1 %
Ever earned	0.036	0.011	11.7 %	0.025	0.007	5.8 %
Self-employment (# of years)	0.001	0.003	0.5 %	0.005	0.004	1.1 %
Ever self-employed	-0.002	0.003	-0.6 %	-0.001	0.004	-0.2 %
Child's saving and investment income						
Accumulated saving	0.084	0.016	27.1 %	0.082	0.015	19.2 %
Ever saved	0.035	0.012	11.6 %	0.033	0.009	7.8 %
Accumulated investment income	0.082	0.014	26.6 %	0.113	0.017	26.6 %
Ever earned investment income	0.052	0.013	16.5 %	0.062	0.012	14.4 %

Notes: The table presents results of the mediation analysis using the Imai et al. framework described in the methods section. AME stands for average mediation effect, SE is standard errors, PM show proportion mediated by a specific mediator. Each mediator is included separately to the model. For descriptives and detailed descriptions of variables, see Supplemental Material S2.

Table 4
Mediation analysis – separately for each mechanism using KHB method.

	Home ownership	Home value (owners & renters)
	PM%	PM%
Child's family life	21.5	15.1
Financial transfers	8.0	7.8
Child's work life	40.7	26.3
Child's saving & investment income	38.0	34.9

Notes: The table shows the results of a mediation analysis based on the KHB method described in the methods section. The results presented for each mechanism separately, where variables related to each mechanisms are added as blocks in separate models. Variables are described in the data and methods section.

be the primary mechanism in ownership model, child's saving and investment income appear to be the primary mechanism in value model. However, some of the mediation effects of family life might be further mediated through other two mechanisms, while some of the mediation effects of earnings might be mediated through financial behaviour. Therefore, the proportion mediated for each block cannot directly be compared to assess the relative importance of mechanisms.

In Fig. 4, we present results of a mediation analysis based on the KHB method, where we sequentially added variable blocks for each mechanism and estimated the controlled proportion mediated (CPM). Given our conceptual model (see Fig. 1), we have started with family life, which explains around 20 % in ownership and 14 % in value model. Adding also transfers does not change these results, but adding work life reduces the proportion mediated by family life significantly by about half to two-third in both ownership and value models. The additional effect of work life is 38 % in the ownership and 24 % in the value model, and controlling further for saving and investment income reduces them only to 29 % in ownership model and 16 % in value model.[18] Adding saving and investment income also further attenuates the effect of family life to 4–5 % in both models. The role of family life in ownership and value transmission is limited, mainly because the effects of marriage and childbearing are mediated through accumulated earnings, saving and investment income. In the last model, where all mechanisms are included together, the controlled proportion mediated by saving and investment income is 21 % in ownership model and 24 % in value model.

Therefore, in line with expectations from wealth accumulation theories, work life is more important for explaining intergenerational associations in home ownership (which considers the variation in the lower part of the distribution i.e., differences between renters and owners), while saving and investment income appear to be more important in explaining intergenerational associations in home value (which accounts the differences in the upper part of the distribution i.e., between low and high home value).

3.6. Wealth effect?

As we argued previously, the mechanisms that lead to higher wealth accumulation could also be affected by other parental characteristics (such as education, earnings or social class), so whether it is the wealth or other characteristics of parents remains an important question. A conservative approach to address this question could be running the

[18] Lower effect of earnings in the value model is mainly due to the fact that parental home value is weakly associated with children's earnings. See Fig. S8 in Supplementary Material for graphs showing these associations. For example, when we examine mediation only among owner children, proportion mediated through earnings in 2 %.

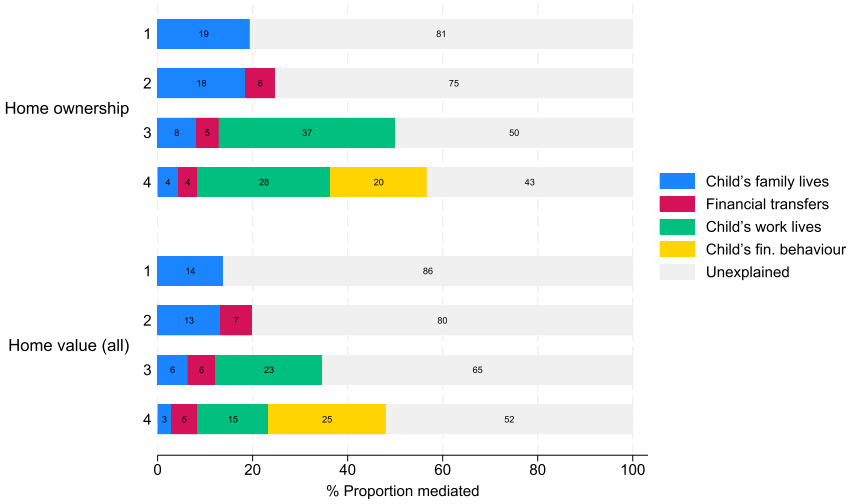

Fig. 4. Mediation analysis – sequential models to examine relative importance of mechanisms using KHB method. *Notes: The table presents results of the mediation analysis using KHB method described in the methods section. The analysis is held sequentially adding an additional mechanism given our theoretical framework. The percentages shown for each mechanism represent the CPM (controlled proportion mediated): the percentage explained by each mechanism of the total estimated intergenerational relationships in home ownership and value, conditional on other mechanisms (except for family life in Model 1). For details of the model and variables, see research design.*

mediation analysis conditional on other parental characteristics (so assuming that the effects that arise from the overlaps between parental wealth and other characteristics are not due to wealth).

When we run the main analyses following this approach, most of the patterns are similar with or without controlling for parental characteristics (see Supplementary Material Table S3-S6 for detailed results).[19] What is different is that total mediation effects, which are smaller by around 25 % in ownership and value models.[20] And this reduction work through all mechanisms expect child's family life. For example, the mediation effect we observed for work life in the ownership model reduces from 42 % to 32 %, and for saving and investment income from 37 % to 27 %, and for transfers from 8 % to 3 %. This probably is due to the fact that some of the mediation is run by intergenerational continuities in education, social class and earnings, and financial transfers are also affected by parental earnings. Still, the main conclusions on mediators and their relative importance remain the same, with or without controlling for other parental characteristics.

4. Discussion

In this paper, we investigated the transmission mechanisms of housing wealth from parents to children in the UK. We first estimated intergenerational associations in home ownership and home value, then examined the extent to which different contextual and individual-level factors can explain these associations. Our results show that, in mid-life (around age 35), children of homeowners are 27 % more likely to own a home than children of renters, and a ten-percentile increase in a parent's home value leads to a four-percentile increase in the children's home value.

Characteristics of parents, beyond their housing wealth, such as their education, earnings, social class, and particularly their place of residence, are strongly linked with these intergenerational associations in housing wealth. Adjusting for these factors, intergenerational associations reduce by 40–50 % and mediation effects attenuate by 15–20 %. The importance of parents' location probably arises from the substantial regional inequalities in housing wealth in the UK and the tendency for geographical stability and/or geographical sorting across generations. Children living in the same region as their parents show stronger intergenerational home value associations, suggesting that geographical mobility could benefit children from less affluent families; yet, the chances of such moves are generally low for these children. Perhaps surprisingly, we do not find the timing of first home ownership is linked with home value of parents or children, indicating that gains from early home ownership do not significantly drive intergenerational associations in housing wealth.

Considering micro-level mechanisms, our analysis finds that the accumulated earnings, savings, and investment income of children are the most important mediators, explaining in total around 40–50 % of intergenerational associations in home ownership and value. Specifically, accumulated earnings alone accounts for 46 % of the associations in home ownership and 17 % for home value. These reduce to 25 % and 14 % respectively when other factors are considered. Savings and investment income explain 20–25 % of the intergenerational associations, after accounting for other mechanisms. Direct financial transfers and the impact of children's family lives play only a minor role in explaining intergenerational associations in home ownership and value. The influence of family life is limited largely because parental housing wealth does not strongly correlate with family formation patterns and the effect of marriage and childbearing is mediated through other mechanisms (e.g. earnings). When examined separately from other mechanisms, family life accounts for 15–20 % of the associations, but this diminishes once earnings, savings, and investment income are considered.

We have also revealed distinct patterns for home ownership versus home value. Work life is the most important mechanism for explaining intergenerational associations in home ownership, while savings and investment income are the most important mechanisms home value. This aligns with existing theory and evidence on wealth accumulation, suggesting that the life cycle model better explains variations in wealth at the lower end of the distribution (home ownership) and differences in savings and investment behaviour explain differences at the higher end (home value). Supporting the findings of Doorley and Sierminska

[19] We used a propensity score to control for these parental characteristics. Using a propensity score instead of including all controls flexibly is to reduce the dimensionality, but these two approaches (conditioning on propensity score vs. all controls) give exactly the same results. Another strategy could be using the propensity score to re-weight the sample (i.e. inverse probability weighting, IPW); however, the propensity scores for our treatments are very skewed, and given the size of our sample, trimming the tails is not a viable strategy. Indeed, applying IPW, our estimates had relatively similar levels, but higher standard errors. Considering all, we have chosen to condition on the propensity score.

[20] In the value model only for owner children, the mediation effects disappear after controlling for parental characteristics.

(2014), our study indicates that decisions for ownership (i.e. whether to own) and level (i.e. whether to own higher or lower value asset) are separately determined, so more appropriate to be modelled separately. Using home ownership as a critical threshold seems to reveal important heterogeneities in the distribution of housing wealth in the UK.

Our findings for the UK align with similar studies and reveal notable differences across countries. Our estimate for intergenerational association in home ownership is similar to those of Blanden et al. (2023)'s UK study, but lower than what Garbinti and Savignac (2021) observed in France for a similar age group and cohort (around 0.36–38).[21] Our estimate for intergenerational associations in home value match findings from international research on intergenerational wealth transmission, including studies from the UK, US, and Sweden, where intergenerational wealth associations typically range between 0.3 and 0.4 (Gregg & Kanabar, 2023; Davenport et al., 2021; Clark & Cummins, 2014; Pfeffer & Killewald, 2017; Adermon et al., 2018). We also note that the influence of parental characteristics such as education, social class, and earnings on these associations mirrors trends observed in the US (Charles & Hurst, 2003). However, this contrasts with findings from Norway and Sweden (Black et al., 2015; Adermon et al., 2018; Hällsten & Thaning, 2022), where intergenerational persistence tends to be higher for wealth than income and social class (Blanden, 2013). This difference may suggest that wealth in Scandinavian countries is passed down through different channels compared to the UK and US, being less about earnings and more about wealth-specific mechanisms, such as direct financial transfers or financial behaviour. Our findings are consistent with evidence on intergenerational continuities in education and earnings (Causa and Johansson, 2011), which are important drivers of wealth accumulation (Killewald et al., 2017). Interestingly, the impact of geographical location on wealth transmission stands out in the UK, diverging from studies in Sweden and Norway that report no significant effects of place (Adermon et al., 2018; Fagereng et al., 2021). This discrepancy could be attributed to the higher regional economic disparities in the UK compared to the more homogeneous Nordic economies (OECD, 2023).

Our findings for micro-level mechanisms suggest that the transmission mechanisms of wealth possibly differ between the UK and other countries. The significance of accumulated earnings is consistent with findings from the UK and the US (Davenport et al., 2021; Charles & Hurst, 2003), but contrasts with studies for Sweden and Norway, where earnings appear less important in explaining intergenerational wealth associations (Adermon et al., 2018; Fagereng et al., 2021). These differences might be due to higher wealth than income/earnings persistence in these countries. Similarly, the limited role of financial transfers aligns with US findings (Pfeffer and Killewald, 2017), but contrasts with the substantial role of lifetime inheritances in Sweden and Norway (Adermon et al., 2018; Fagereng et al., 2021) and gifts/inter vivos transfers in France (Spilerman and Wolf, 2012). Our focus on mid-life wealth outcomes may overlook the full impact of lifetime inheritances, which are typically received later in life and significant only for those higher up in the wealth distribution (Nolan et al., 2020). [22] Other studies from the UK show that only around 1/5 of homeowners under 40 reports receiving help to buy their current property, the majority of housing-related gifts are very small and only amounts to below 10 % of their deposit, and a majority of those who receive substantial gifts (mostly those with higher educated and homeowner parents) use them to put down a bigger deposit rather than buying a more expensive house; therefore, such parental support helps them to buy earlier but does not affect the value of the house that they buy (Boileau & Sturrock, 2023a).

Several studies have suggested a role for saving and investment income in explaining intergenerational wealth associations (e.g., Charles & Hurst, 2003; Boserup et al., 2018; Black et al., 2020; Davenport et al., 2021; Fagereng et al., 2021). Our study directly examines the transmission role of saving and investment income conditional on accumulated earnings and transfers. Those with limited initial economic resources would not have the means to save and invest in the first place, but even among those with the same resources, some might save more or have higher returns to their investments than others. Indeed, controlling for accumulated resources through earnings and transfers, saving and investment income still explain around 22–24 % of the intergenerational associations in home ownership and value. Investment income alone accounts for half of that effect, and is relevant across the distribution, not only for the richest groups, and does not seem to arise out of the returns from possible initial wealth transfers early in life.

Our study has important limitations. First, we focused on describing patterns for the majority of the population, but the relative importance of transmission mechanisms might be different for the wealthiest (top 1 %) who are not captured well in our survey data. Secondly, the importance of mechanisms might vary across the life course, but we do not have sufficient data to examine variations in different life periods. Thirdly, the transmission mechanisms are interrelated; the effects identified should not be conflated with overall causal effects. Fourthly, our analysis of transfers does not capture direct transfers of asset ownership and amounts of targeted transfers, including those related to housing. Capturing those aspects might increase the relative importance of transfers, but not vastly, as the parts we could measure are probably correlated with these missing information. Another issue related to the measurement of transfers is the assumption underlying our imputation that transfer patterns do not change after 2008. Many argue that parental transfers have become more important over the last decade and will continue to become more important as the new elderly cohorts are wealthier (Bourquin et al., 2021). Therefore, not only the patterns over the last decade might differ from earlier periods, future trends might significantly differ from the patterns we observed in this study. Fifthly, our sensitivity analysis considers pre-treatment but not post-treatment confounders, crucial given that we only account for about half of the value transmission, with the remaining direct effect still being statistically and substantively significant (around 0.2). Moreover, our sensitivity analysis examines the significance of mediators, but not their relative importance. Techniques for assessing the sensitivity of relative importance would be an important addition to the mediation analysis toolkit.

Overall, our research confirms that housing wealth significantly persists across generations and highlights various ways it is transmitted from parents to children. Although recent discussions have concentrated on the inherited wealth of the top 1 % due to its size and influence on socio-political dynamics, our study broadens the perspective to include the majority of the population and examines a wider range of advantages gained by children, which is crucial for understanding how wealth influences opportunities (Jencks & Tach, 2006). Echoing Pfeffer and Killewald (2017), we find that the benefits of family wealth begin earlier in the life course than the common focus on bequests implies. For most people in mid-life, the impact of parental housing wealth extends beyond direct transfers, influencing their earnings potential and financial capabilities. This indicates a concentration of economic resources—earnings, savings, investment income, and housing wealth—within certain groups, suggesting broader economic closure processes. Hansen and Toft (2021) noted similar trends in Norway, calling for a closer investigation of the processes that lead to families rich in economic capital being the most successful in reaping economic rewards (Hansen & Toft, 2021). As outlined in our theory section, the advantages of parental wealth may include access to quality education, influential networks, and geographic benefits;

[21] Our estimate is very similar to Blanden et al.'s (2023) estimates from Wealth and Asset Survey and BHPS for 40–44 year olds (around 0.27), but lower than their estimate for 34 year olds, which are around 0.32–0.37. When we use linear probability models without weights (similar to Blanden et al.), we also arrive at similar estimates around 0.34–0.35 for 34–36 year olds. Also, similar to their findings, the associations start to decline after the age of 40 and reaches to 0.27 at the age of 48.

[22] Palomino et al. (2022) also note that intergenerational transfers have a generally lower explanatory power in the UK compared to countries like the US, France, and Spain.

insurance against actual and possible financial losses, enabling riskier yet more rewarding career and investment choices; and the socialization into money, ownership and family wealth, which provides learning financial management, leveraging privilege, and utilizing family networks. These socialization aspects, as also highlighted by Guhin et al. (2020), merit renewed attention in sociological research. Distinguishing between these mechanisms and identifying their causal effect remains a key challenge for future studies.

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CRediT authorship contribution statement

Selçuk Bedük: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Susan Harkness:** Writing – review & editing, Resources, Funding acquisition, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix

Table A1
Descriptive statistics.

Variable	Mean	Median	Min	Max	Sta. dev.
Outcomes and treatments					
Child homeowner	0.59	1	0	1	0.49
Parent homeowner	0.75	1	0	1	0.43
Child home value (for owners, £2018)	266085	217996	285	3153989	207585
Parental home value (for owners, £2018)	129071	105906	5118	1023622	87011
Mediators					
Number of years married	4.22	0	0	29	6.05
Number of years cohabitated	3.66	2	0	28	4.52
Ever divorced	0.06	0	0	1	0.23
Ever had a child	0.58	1	0	1	0.49
Have more than one child	0.28	0	0	1	0.45
Age at first-child born	15.66	21	0	44	13.90
Accumulated inheritance (IHS)	1.00	0	0	13.04	2.86
Ever had inheritance	0.11	0	0	1	0.32
Accumulated inter vivos (IHS)	0.96	0	0	12.10	2.66
Ever had regular inter vivos	0.12	0	0	1	0.33
Accumulated targeted inter vivos (IHS)	1.93	1.88	0	5.76	1.54
Ever had targeted inter vivos	0.82	1	0	1	0.39
Accumulated own earnings (IHS)	9.97	10.39	0	12.67	2.14
Ever earned	0.97	1	0	1	0.18
Accumulated saving (IHS)	6.42	7.31	0	10.71	2.79
Ever saved	0.87	1	0	1	0.34
Accumulated investment income (IHS)	4.96	5.85	0	13.03	3.58
Ever earned investment income	0.72	1	0	1	0.45
Self-employment (# of years)	0.96	0	0	25.96	2.80
Ever self-employed	0.21	0	0	1	0.41
Controls					
Parents' education *(1 =degree)*	3.48	4	1	5	1.35
Parents' earnings (IHS)	9.18	10.37	0	12.58	3.22
Parents ever earned	0.10	0	0	1	0.30
Parents' social class *(1 =higher managerial)*	4.44	4	1	8	2.07
Parents' owned a business	0.18	0	0	1	0.38
Parents' household structure	2.46	2	1	5	1.22
Parents' subjective health *(1 =very poor)*	3.66	4	1	5	0.92
Parents' mental health *(0 =least distressed)*	24.04	25	4	46	5.25
Parent's age	38.09	38	23	63.5	7.30
Parent's place of residence (region)	6.06	6	1	11	2.90
Child's age at outcome year	34.77	33	27	48	5.89
Child's outcome year	2016	2019	2005	2021	4.68
Child's ethnic minority	1.08	1	1	2	0.27
Child's migrant generation	2.13	2	1	3	0.59

Notes: All statistics are weighted using UKHLS longitudinal weight for individuals who were adults in 1991 from the latest available year. These weights account for survey design and attrition. See Supplementary Material S1 for detailed descriptions of variables and an analysis of missing data

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.rssm.2024.100951.

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