

# **The Relevance of Green Spaces for Moving into a Family House across Social Class**

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## **Abstract**

A proper family house is for many a self-owned house with a private garden in a purely residential area. We analyse the relevance of having grown up in a parental home with a garden and in close proximity to green spaces for moving into a detached or terraced house for one or two families, whether rented or bought, which we call a ‘family house’. Simultaneously, we analyse whether the same predictors trigger becoming a homeowner, accounting for parental social class in both equations of bivariate probit models. On the basis of West German Socio-Economic Panel data (SOEP, 1984–2016) the housing trajectories of respondents from age 16 are followed for up to 32 years (N=8,005 persons). We find that having lived in a parental home with a garden increases the likelihood of moving into a family house but not the likelihood of first-time homeownership. Likewise, parental homeownership increases exclusively the likelihood of adult children’s first-time homeownership. Parental home characteristics are found to be more important for adult children’s housing type choice and tenure than social background. The results suggest that moves into a family house are triggered by intergenerational transmission of housing type preferences, whereas the transmission of homeownership is a parallel but distinguishable process. Additional findings about the importance of having lived close to public green spaces for both, housing choice and tenure, call for further research.

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## 1 Introduction

The desire to live in a self-owned home in the country is widespread in Western societies, especially among young families (Lauster, 2016; Maak, 2014). Leafy suburbs with single-family houses or terraced houses for one or two families are expanding in many metropolitan areas in Germany, although various environmental side effects are well known (Maak, 2014). In the last two decades, demographic research has made great progress in unravelling the determinants of residential mobility and in explaining patterns in a housing career over the life course (Aybek, Huinink, & Muttarak, 2015; Mulder, 2013). When young adults start a family, their needs for living space increase and their demands on their housing environment may also change. This is also the time when many couples decide to settle down and buy their first property. The spatial gradient in housing prices, with expensive and densely standing houses in the city centres and more spaciouly distributed, affordable houses in the suburbs and rural areas is often a main driver of young families' relocations to the fringes of the cities (Rossi, 1980 [1955]). But cultural scripts like those of 'a proper family house' may also play a part in housing decision-making in the life course (Huinink & Kohli, 2014). The understanding of a proper family house might comprise tenure (self-owned versus rented), the housing type (detached house versus apartment building), housing characteristics (with a garden), and characteristics of the dwelling's environment (proximity to green spaces). To date, we know little about the relevance of green spaces, such as private gardens and public parks, for relocation decisions in general and housing choice in particular. This is surprising in the light of findings that the single-family

house is often seen as the ideal place for raising children (Feijten & Mulder, 2002; Kurz, 2004a; Lauster, 2010; Mulder & Billari, 2010). This article aims at closing this gap a little further, focussing on closeness to nature as a possibly desired housing feature for moving into a family house.

Desired housing characteristics like having a garden and being close to green spaces are not likely to be independent of housing type and tenure, and they are possibly not equally distributed across social classes. The picture of the ‘housing ladder’ (Lersch & Vidal, 2014) suggests that living in a self-owned single-family house occupies the top rung of a housing prestige scale, whereas living in rented social housing is at its bottom. Becoming a homeowner assures a maximum of control over the housing situation as well as accumulation of wealth and disposable income (Mulder & Wagner, 1998). Like other assets, homeownership can be transferred between generations. People whose parents owned their house or flat are more likely to become homeowners themselves (Bayrakdar, Coulter, Lersch, & Vidal, 2018; Kurz, 2004b; Lersch & Luijkx, 2015; Mulder & Lauster, 2010; Mulder & Wagner, 1998). On the one hand, the mechanisms are straightforward: inheriting property or capital, gifts, or parents as guarantors for a bank loan. On the other hand, children of homeowners might be socialised into homeownership: they regard being a homeowner as a matter of course, learning early how to calculate property investments and to talk with bank employees (Filandri & Olagnero, 2014; Kurz, 2004a). Aspects of housing quality other than tenure have only been investigated sparsely (Mulder & Lauster, 2010): housing inheritance, housing density and expenditure, and housing value. When the housing features we are interested in – green spaces and gardens – are part of an overall housing wealth closely

related to class position, they might also be part of intergenerational transmission.

Therefore, we will analyse whether the characteristics of the parental home are relevant for moving into a family house and for first-time homeownership simultaneously.

We will apply the widely used class schema proposed by Erikson, Goldthorpe and Portocarero (Erikson & Goldthorpe, 2002; Erikson, Goldthorpe, & Portocarero, 1979) to estimate intergenerational transmission of housing characteristics with regard to moving into a family house and first-time homeownership. The sociological concept of social class accounts for power and prestige, making a primary distinction between employers, self-employed workers and employees. Furthermore, income security and career prospects are considered by distinguishing different kinds of work and their usual forms of employment contracts. Class effects on a wide range of life chances were found to persist even when income is controlled for (Erikson & Goldthorpe, 2002). In this vein, we will analyse whether parental social class and parental housing characteristics are (still) influential when their adult children's individual and household characteristics are considered.

## **2 Theoretical framework and state of research**

### **2.1 A life course approach to residential relocation**

The body of research explaining how residential relocation is linked to other aspects of the life cycle, like partnership and family formation or occupational and housing careers, has improved rapidly over the last decades (Courgeau, 1990; Wagner & Mulder, 2015). The life course approach provides a powerful theoretical framework for

analysing and explaining the processes underlying the development of interlinked life course dimensions (Bernardi, Huinink, & Settersten, 2019). In this vein, residential moves are part of a multidimensional process of welfare production (Lindenberg, 2001) that requires complex decisions to be taken by individuals, couples, and possibly other actors. Moving house is not a life course goal in itself, but instrumental behaviour for improving subjective well-being via improvements in family life, career, social status etc. (Huinink, Vidal, & Kley, 2014; Kley, 2011; Willekens, 1987). Within this framework, all actors are thought of as being constrained by extra- and intra-individual conditions, in the case of moving for instance by the housing market, and their subjective understanding of a 'proper family house'. Therefore, the life course approach is also suitable to examine how cultural scripts and institutional programmes interact with individual preferences (Bernardi et al., 2019; Huinink & Kohli, 2014).

Cultural scripts are shared convictions based on values that give people guidance on what is worth striving for and how to behave properly in society (Vaisey, 2008). Such values are passed on during the process of socialisation, especially during primary socialisation within the family. With regard to our research question, convictions about the 'proper family house' for raising children are important. There is evidence for a widespread view in Western societies that children should grow up in quiet surroundings and not in the hustle and bustle of city centres (Matthews, Taylor, Sherwood, Tucker, & Melanie Limb, 2000; van Dam, Heins, & Elbersen, 2002).<sup>2</sup> The

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<sup>2</sup> Some German norms might be seen as institutionalised programmes in support of this view. The concept of primary and secondary residence gives primacy to the place where the family lives, whereas the workplace is secondary. Tax concessions compensating for employees' commuting costs have a long

single-family house is therefore often seen as the ideal place for raising children properly (Boyle & Halfacree, 1998; Feijten & Mulder, 2002; Kulu, 2008; Kulu & Steele, 2013; Lauster, 2010; Mulder & Billari, 2010). It is either situated in the country or in a purely residential area with reduced traffic; it has few neighbours at greater distance compared to apartment blocks; and it normally has a garden where the children can play outdoors.

However, many cities gained attractiveness for families in the past years (Gans, 2015). In densely built and functionally mixed cities the commute to work is normally shorter than in suburbia, what might gain importance in societies with rising rates of double-earner families. In Germany, childcare facilities for children under three years of age and full-time day school were expanded to support the employment of mothers (Drasch, 2013). This development contributes to attractive infrastructures in many cities that also comprise public transport systems, medical facilities, theatres, and a large selection of retail stores. For many city dwellers, public green spaces might satisfy the need for being surrounded by nature (van Leeuwen, Nijkamp, & Noronha Vaz, 2010). Living close to a public park or green shoreline might substitute for having an own garden, especially for children who have a small radius of action. This experience might foster fondness for direct access to green spaces. Therefore, both having a private garden and living near public green spaces might increase young adults' likelihood of moving into a family house.

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tradition, as do state subsidies for young families to become homeowners (e.g. *Eigenheimzulage*, *Baukindergeld*).

## 2.2 Housing careers: empirical findings

Within life course research, various strands of empirical findings concerning housing careers are relevant for this analysis:

- a) findings on determinants for leaving the parental home, since family formation usually takes place in a separate household;
- b) findings on the connections between family formation and residential mobility, since moving into a family house might be triggered by (anticipated) marriage and childbirth;
- c) findings on the connections between life course events and the housing career, especially between family formation and first-time homeownership; and
- d) findings on the influence of parental class and characteristics of the parental home on adult children's housing trajectories.

Leaving the parental home is normally related to other life course events that are relevant for the transition to adulthood. It is a robust finding that leaving the parental home is associated with moving together with a partner and marriage (Juang, Silbereisen, & Wiesner, 1999; Kley & Huinink, 2006; Wagner & Huinink, 1991), although the proportion of young adults who leave the parental home to live alone have increased (Mulder & Hooimeijer, 2002). In Germany, until the early 1980s marriage was the strongest predictor of setting up a new household (Wagner & Huinink, 1991), but then was replaced by moving together with a partner out of wedlock (Kley & Huinink, 2006). Enrolment in training seldom triggers leaving the parental home, with the exception of starting higher educational studies, but more for West German than for East German students (Kley & Huinink, 2006). An earned income is often

considered to be a prerequisite for setting up a household (Kley & Huinink, 2006; Mulder & Clark, 2000; Mulder & Hooimeijer, 2002). On the other hand, a comfortable situation at home may deter young adults from leaving the parental home early (Juang et al., 1999). Parental homeownership can be an indicator for a generous housing situation. It has consistently been found that parental homeownership deters young adults from leaving the parental home early (Mulder, Clark, & Wagner, 2002).

In the former German Democratic Republic, young adults married and left their parental homes markedly earlier than those in the former Federal Republic of Germany (Huinink & Wagner, 1995). An age gap in leaving the parental home between East and West Germany was still present for many years after unification in 1990 (Juang et al., 1999; Kley & Huinink, 2006). Another age gap exists between the genders, with women leaving on average at earlier ages compared to men (Juang et al., 1999; Kley & Huinink, 2006; Mulder & Hooimeijer, 2002; Wagner & Huinink, 1991).

Family formation is closely related to both residential mobility and first-time homeownership (Enström Öst, 2012; Feijten & Mulder, 2002; Mulder & Lauster, 2010; Mulder & Wagner, 2001). Consistent with the view that relocations are instrumental means for reaching life course goals, like starting a family, moves in young adulthood often take place *in anticipation* of marriage and childbirth (Bayrakdar et al., 2018; Kley, 2011; Kulu, 2008; Kulu & Steele, 2013; Kurz, 2004b; Michielin & Mulder, 2008;

Mulder & Wagner, 1998; Vidal, Huinink, & Feldhaus, 2017; Wagner & Mulder, 2015; Willekens, 1987).<sup>3</sup>

Homeownership rates have increased since 1980 in Germany but are still below those of Great Britain, the Netherlands, and other European countries (Filandri & Olagnero, 2014; Wind, Lersch, & Dewilde, 2017). Differences in housing systems are reflected in different determinants of housing careers. Whereas in Great Britain first-time homeownership is tightly synchronized with partnership formation, in Germany first moves into homeownership typically occur later around the arrival of the first child (Bayrakdar et al., 2018; Mulder & Wagner, 1998).

Parental homeownership was found to accelerate young adults' entry into homeownership in various contexts (Bayrakdar et al., 2018; Coulter, 2018; Kurz, 2004b; Lersch & Luijkx, 2015; Mulder, Dewilde, van Duijn, & Smits, 2015; Mulder & Wagner, 1998), whereas other parental characteristics like education (Mulder & Wagner, 1998), single parenthood or step-parenthood and number of siblings (Bayrakdar et al., 2018; Lersch & Luijkx, 2015) were barely influential. There is evidence that the parents of home buyers are involved in an increasing number of property transactions in European countries (Ronald & Lennartz, 2018) and that the influence of parental tenure on the transition into homeownership has increased (Coulter, 2018; Kurz, 2004b), especially in expensive housing markets (Mulder et al., 2015).

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<sup>3</sup> There is also research on the other causal direction, namely that housing and housing market conditions might influence fertility, but this is not within the scope of our research question.

However, coming from a working-class background was found to *increase* the likelihood of homeownership in West Germany for birth cohorts from 1940 to 1960 over and above the respondent's class and employment status (Kurz, 2004b). It was consistently found that moving into a self-owned home directly after leaving the parental home is associated with *lower* levels of education, whereas those enrolled in university often moved into shared houses (Mulder & Hooimeijer, 2002).

These findings are somewhat contradictory to the idea that family wealth, of which homeownership is a part, plays the most important role in first-time homeownership. Instead, cultural scripts like the idea of a 'proper family home', to which young adults with working-class background might be especially responsive, might play a crucial part.

Individual characteristics that have been found to exert an influence on the likelihood of first-time homeownership are related to the respondent's socioeconomic status and that of their spouse. A positive influence was found for higher education (Mulder & Wagner, 1998) but not so in a newer study for Germany (Bayrakdar et al., 2018), occupational prestige (Mulder & Wagner, 1998), employment or occupational status (Enström Öst, 2012; Kurz, 2004b; Lersch & Luijkx, 2015) and income (Bayrakdar et al., 2018; Enström Öst, 2012), whereas not being in employment (Coulter, 2018; Mulder & Wagner, 1998) or being unemployed (Bayrakdar et al., 2018; Kurz, 2004b) were found to decrease the likelihood of moving to a self-owned home. Moreover, living with a partner or spouse was found to increase the likelihood of becoming a

homeowner (Coulter, 2018; Enström Öst, 2012). Migration background was found to be negatively related to homeownership in some countries but not in others (Coulter, 2018); for Germany, no influence was found (Bayrakdar et al., 2018).

Structural characteristics of the housing market and the overall development of wealth are normally controlled for with cohort dummies and regional information. The likelihood of homeownership was found to increase in younger cohorts (Kurz, 2004b; Mulder & Wagner, 1998), whereas for urban areas lower entry rates into homeownership were found compared to rural regions (Bayrakdar et al., 2018; Kurz, 2004b; Lersch & Luijkx, 2015; Mulder & Wagner, 1998).

### **2.3 Hypotheses**

With regard to our research question about whether green spaces are relevant for housing decisions, we are especially interested in whether having lived in a parental home with a garden influences later housing decisions. Our first research hypothesis is therefore:

*H1: Having lived in a parental home with a garden increases the likelihood of moving into a family house.*

But, with the life course framework outlined above (Bernardi et al., 2019), it seems also likely that having lived near public green spaces fosters the fondness of direct access to nature equally well than having had a private garden. Our second hypothesis is therefore:

*H2: Having lived in a parental home near green spaces increases the likelihood of moving into a family house.*

Having a private garden is likely intertwined with homeownership, as single-family homes and terraced houses for one and two families supposedly more often have a garden and are more often privately owned. Previous findings provide evidence for the inter-generational transmission of homeownership; but it remains unclear whether acquired preferences play a part beyond the transmission of socio-economic assets. To complete our analyses based on a supposed importance of socialization for housing decisions, we want to test whether the likelihood of first-time homeownership is increased by parental homeownership over and above parental social class. Our hypothesis is:

*H3a: Parental homeownership increases the likelihood of first-time homeownership over and above parental social class.*

Moreover, when the idea of a ‘proper family house’ is tied to both housing type and homeownership, having lived in a parental family house with a garden may well increase the likelihood of homeownership. Our respective hypothesis is:

*H3b: Having lived in a parental home with a garden increases the likelihood of first-time homeownership over and above parental social class.<sup>4</sup>*

### **3 Data, Method and Variables**

This study makes use of individual and household data from the German Socio-Economic Panel (SOEP; <http://www.diw.de/en/soep>; Schupp et al.). The SOEP is a representative study of the German population, which has been conducted since 1984 in the former Federal Republic of Germany (West) and since 1991 also in East Germany (Goebel et al., 2018). Our analysis is restricted to the West German sample and covers the years 1984–2016, that is 32 years. We do not use the East German Sample because the principles of urban construction and regional planning were different in the former German Democratic Republic, and because a socialist system of housing assignment was practised there (Huinink & Wagner, 1995). Moreover, after re-unification there was large net migration from East to West Germany for more than a decade (Kemper, 2008). These developments could disguise patterns of moving into certain types of houses, like the ‘family house’.

A spell data set based on individual data was constructed to estimate the hazard of moving into a family house and of first-time homeownership longitudinally with event history methods. In a first step, households with respondents aged 16 years were selected. From this age onwards, the teenagers are interviewed individually on a regular

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<sup>4</sup> As a sensitivity test, we will also estimate the influence of having lived in a parental *family house*, although it is strongly correlated with having had a garden.

basis within the multi-actor framework of the SOEP study. Therefore, the observation starts when the respondents are 16 years old and follows them year by year. The SOEP study is especially suited for the analysis of residential histories, since the respondents are followed if they change their residence within Germany. Moreover, new household members are also included in the survey. This framework enables us to follow the young respondents when they leave the parental home to form a new household, and to consider their individual and household characteristics along with those of their coresiding partners, and those of their parents and parental homes. The observation ends when the respondent moves into a family house and/or when they become first-time homeowners. Respondents who never reach either outcome are retained in the sample; their histories end with the last interview.

The dependent variable *family house* is defined as a detached or terraced house for one or two families. The SOEP does not differentiate between houses for single families and houses for two families. In the first part of the results section it will be shown that in West Germany the single-family house is much more common than the home for two families, and that both building types have important features in common that justifies their pooled analysis. The dependent variable *homeownership* refers to moving into a self-owned flat or house. In the case of couples, no distinction is made between whether the home is owned by one of the partners or both, nor whether the home was newly built, bought or inherited. These characteristics are of minor importance for answering our research question of whether or not moving into a family house is correlated with first-time homeownership and dependent on parental social class. Furthermore, the database for assessing such details is rather limited.

Bivariate probit regression based on discrete time data is applied to estimate two hazards simultaneously with two equations (Green, 2018, sec. 17.9): Equation 1 estimates the hazard of moving into a family house, and equation 2 estimates the hazard of first-time homeownership, allowing for correlation in the error terms. When moving into a family house takes place, succeeding spells are maintained until the other event – first-time homeownership – or censoring takes place, and vice versa, to capture the full interdependence of the two processes under study. This mode of analysis is suitable because previous research suggests that moving into a family house often goes hand-in-hand with first-time homeownership, and there is reason to assume that both outcomes are influenced by the same characteristics and events. For such a discrete time event history analysis, no assumptions about the forms of the event's development over time are necessary, and it facilitates estimates of the effects of time-constant and time-variant influences. The latter are important for assessing the potential influence of parental social class when controlling for life course events like moving together with a partner, having a child, and changing jobs.

The following predictors might not be self-explanatory. Parental social class is measured with the Erikson-Goldthorpe-Portocarero (EGP) scheme (Erikson et al., 1979; Erikson & Goldthorpe, 2002) with regard to each of the respondent's parents when the respondent was fifteen years old. According to the criterion of dominance, in parental couple households the highest of the two parents' classes was used. The more fine-grained classification was collapsed into the five classes non-skilled (including semi-skilled) workers, skilled workers, farm workers, small proprietors and white-collar

workers, plus the category “inactive” for parents who were not engaged in paid employment (6%). Parental social class and features of the parental home when the respondent was aged sixteen, namely whether the parents were homeowners, whether the parental home had a garden, its distance to green spaces, and whether it was in an urban versus a rural region, are considered as time-constant predictors. The survey question for assessing having a garden was: “What amenities does your dwelling have? Does it have ... own yard / garden, access to yard / garden?” The answer categories were “yes” or “no”. The survey question for assessing distance to green spaces was: “How long does it take to reach the following places in your neighbourhood on foot? ... Public green space?” The answer categories were “less than 10 minutes”, “10–20 minutes”, “more than 20 minutes”, “not available / not reachable on foot”. The categories “10–20 minutes” and “more than 20 minutes” were combined into “ $\geq 10$  minutes”.

Individual characteristics of the respondents and their partners, when applicable, were combined in the following ways: Educational level refers to the highest level of either partner; migration background was assigned when at least one of the partners was born abroad or had at least one parent who was born abroad. Employment status was classified as “full-time” when at least one of the partners worked full-time, whereas the other categories reflect households in which neither partner is employed full-time in combination with having “other employment”, being “inactive”, or being “unemployed”. These categories capture the space of possible work statuses well, as additionally enrolment in school and living with a partner are controlled for in the estimation. Moreover, the sum of monthly gross income of both partners, if applicable,

is considered. The number of children living in the household is included and lagged by one year to account for anticipative behaviour during pregnancy (Vidal et al., 2017).

Additionally, area characteristics of the housing stock and its development might influence the relative chance of moving into a family house as well as for becoming a homeowner. Therefore, we control for survey year and federal state.

Applying these criteria and requiring at least two consecutive years of observation resulted in 8,005 observed persons, whereas the regression analysis is based on roughly 58,000 person-years. The sample includes a few persons (1%) who did not live in the parental home at age 16 and a few (2%) who were first observed aged 17 to 19. These characteristics were additionally controlled for in the estimations.

The results are presented in steps. First, the distribution of housing types within the housing stock in West Germany and its development over time are described statistically. Second, the hazard of moving into a family house and the hazard of homeownership by parental social class are described using Kaplan Meier failure functions. Third, the influences on both hazards are estimated simultaneously with bivariate probit regression.

## 4 Findings

### 4.1 Characteristics of the housing stock in West Germany

In West Germany, the single-family house is common, making up two thirds (67%) of residential buildings in 2016 (Destatis, 2018; own calculations). Houses for two families are much less common with 17% of the total housing stock; the remaining 16% are residential buildings for three and more families. Applying our definition of the “family house” and taking houses for one and two families together, results in a share of 79% single-family houses and 21% two-family houses.

Over the last three decades, the number of single-family houses in particular has increased in West Germany (Destatis, 2018). Figure 1 depicts the development of the West German housing stock measured against the base year of 1986, the first year the Federal Statistical Office provided data in form of time series. The number of single-family houses increased by nearly one-third (31%) between 1986 and 2017, whereas the growth in the housing stock of buildings for two families and for three and more households stayed below the average growth rate of 28%.

[INSERT FIGURE 1 ABOUT HERE]

Data in the German Socio-economic Panel (SOEP) does not distinguish between single-family houses and houses for two families, but it does distinguish between detached and terraced houses for one or two families. This survey design raises the question whether

the relevant characteristics of both housing types are similar enough to justify being combined in the following analysis.

[INSERT TABLE 1 ABOUT HERE]

Table 1 compares relevant characteristics of detached and terraced houses for one or two families with each other and with other housing types. These characteristics are measured in the first year of observation,  $t=1$ , when respondents aged 16 are living in the parental home, including 13 respondents (0.2%) living already in their own households. When comparing the row percentages in table 1 with the figures based on data from the Federal Statistical Office above, one has to keep in mind that the percentages in the table are calculated based on *households* rather than based on *buildings*. Moreover, the percentages in table 1 are not representative for all West German households in a specific year, but for those including a sixteen-year-old at some point in time between 1984 and 2016.

Table 1 shows strong similarities between detached and terraced homes for one or two families and marked differences to other housing types in key characteristics: more than 90% of each type of family house has a garden, whereas these percentages are much lower for other housing types. Correspondingly, both types of family houses are more widespread in purely residential areas compared to other housing types. Moreover, the percentages of owner-occupiers are 80% in detached and 74% in terraced houses for one or two families, but only 12–23% in blocks of flats. It therefore seems to be justified to pool both types of family houses in the following analysis. As terraced

family houses are more often located in urban areas compared to detached family houses (see table 1), this regional characteristic will be controlled for in the estimations. Furthermore, close proximity to green spaces is to some extent correlated with the degree of urbanisation (see table 1), but the correlation is reversed for having a garden: apartment blocks are more often surrounded by green spaces than family houses.

## **4.2 Hazard of moving into a family house and homeownership by social**

### **background**

Event history analysis is suitable for describing developments over time depending on time-constant characteristics (Allison, 1982; Green, 2018, sec. 17.9). The analytical data set with N=8,005 is comprised of respondents who were observed at in least two consecutive years for up to 32 years; that is from age 16 up to age 48. On average, the respondents were observed for 7 years. For more information about the distribution of characteristics in the analytical sample, see table A1 in the appendix.

Tables 2a and 2b present Kaplan-Meier failure functions of (a) moving into a family house – a detached or terraced house for one or two families – and (b) homeownership for five social classes. The observation starts in the parental home, when respondents are aged 16, and follows them year by year, as they grow older. The observation ends when the respondents move into a family house for the first time (or become first-time homeowners); or when the last interview was conducted in case the observation ended before the event in question took place.

Social class was estimated on the basis of the highest working status of the parents when the respondent was aged 15. It was measured with the EGP-scheme suggested by Erikson, Goldthorpe and Portocarero (Erikson et al., 1979; Erikson & Goldthorpe, 2002).

[INSERT TABLE 2A ABOUT HERE]

The hazard of moving into a family house increases rapidly at early ages for adult children of blue-collar workers, both skilled and non-skilled. By age 30, 32% of the skilled workers and 29% of the non-skilled workers are estimated to have moved into a family house. These percentages are higher than the 26% of white-collar workers who might have spent on average more time in education and postponed starting a family (Blossfeld & Huinink, 1991). The percentages of adult children from other social classes are estimated to be even lower, with each at about 20%. By the age of 40, the hazard of moving into a family house has become largest for adult children of white-collar workers: 60% of them are estimated to live in a family house at the age of 40, whereas the figures are 52% for skilled blue-collar and 46% for non-skilled workers. The distance between adult children of non-skilled workers and those of the other classes is small by then.

[INSERT TABLE 2B ABOUT HERE]

The development of the hazard of homeownership parallels that of moving into a family house: A rapid increase between the ages of 25 and 30 for adult children of blue-collar

workers, and also of farm workers, who all exceed the shares of homeowners among the adult children of white-collar workers at the age of 30. But in their thirties, the adult children of white-collar workers overtake the other classes. At the age of 40, the percentages of homeowners are 48% among the adult children of white-collar workers and between 32 and 39% among the adult children of other classes, except for the adult children of inactive parents, who are estimated to be homeowners more seldom.

#### **4.3 Determinants of moving into a family house and homeownership**

The probability of moving into a family house is measured in two steps, applying discrete-time event history analysis with bivariate probit regression to estimate the hazard of moving into a family house and first-time homeownership simultaneously (table 3). In both models, the test of the rho coefficient suggests that the two equations are not independent of each other. Therefore, the simultaneous estimation is suitable to account for the interrelatedness of influences on both the outcomes, by allowing for correlation of the error terms. The observations are clustered within persons, and robust standard errors are estimated.

In the first model, the influence of parental social class and parental home characteristics are estimated without controlling for the adult children's individual and household factors. Preliminary stepwise analysis revealed that the parental home characteristics did not interact with parental social background or with individual characteristics of the respondents concerning the outcomes in question. In the second model, individual and household characteristics are introduced. Variables that were additionally controlled for in both models are the survey year, as the housing stock of

single-family houses increased more than that of other houses over recent decades; the region 'Bundesland', as the percentage of single-family houses differs between city states and other states; not living in the parental household at age 16; and having missing information on educational level or income.

The first model in table 3 reveals that compared to adult children of white-collar workers, both adult children of non-skilled and skilled blue-collar workers have a significantly higher hazard for moving into a house for one or two families. For adult children of non-skilled workers, a higher risk for first-time homeownership is also estimated, whereas it is significantly reduced for adult children of economically inactive parents. These estimates largely reflect the descriptive findings suggesting that young adults who enter the occupational system early have higher hazards for moving into a family house early compared to those enrolled in tertiary education, and that moving into a family house often goes hand-in-hand with first-time homeownership. Moreover, having lived in a parental home with a garden only increases the likelihood of moving into a family house, whereas parental homeownership only increases the likelihood of moving into a self-owned home. In the next step, we will see whether these effects are still influential when individual and household characteristics of the young adults are controlled for.

The second model in table 3 reveals that the influence of parental social background disappears as soon as individual and household characteristics are introduced. A more fine-grained stepwise analysis shows (not displayed) that social class is no longer influential for either moving into a family house nor homeownership when age is

controlled for. Age has a strong positive effect that fades out as the young adults grow older. That it trumps the effects of social background is in line with the descriptive findings: adult children of blue-collar workers move into a family house faster and buy their homes earlier, but in their thirties adult children of white-collar workers catch up and overtake them. Women are more likely to move into a family house and households with migration background are less likely, whereas neither characteristic plays a role for homeownership. For both outcomes, partnership status and the number of children – measured when conception took place – are significant. Whereas for moving into a family house, living with a partner out of wedlock is as important as having a spouse, for homeownership having a spouse is more important. Interestingly, having children triggers the hazard of moving into a family house more than becoming a homeowner. The couple's income is important for both moving into a family house and homeownership, whereas unemployment prevents young adults from becoming homeowners. Completing vocational education additionally triggers moving into a family house. This finding might be interpreted as a sign of adherence to the image of a 'proper family house' in the lower middle class.

Parental home characteristics in model 2 (table 3) are additionally influential, over and above parental social class and respondents' individual and household characteristics. Parental homeownership only triggers becoming a homeowner in the respondents but not moving into a family house. Those who had a garden in their parental home have a significantly higher hazard for moving into a family house, but this feature does not play a role for becoming a homeowner. We interpret this effect as substantial, because whether the parental home is in an urban versus a rural region is controlled for and

exerts no additional influence. Additionally, a parental home in close proximity to green spaces triggers both moving into a family house and homeownership. The latter might reflect the fact that living close to green spaces often means living in privileged locations, which are normally rather expensive. This variable therefore might partly reflect parental wealth (Best & Rüttenauer 2017). The overall fit of the full model 2 is good, as the Wald  $\chi^2$  statistic is rather high; moreover, the constant terms suggest that there are no omitted variables of significant influence.

[INSERT TABLE 3 ABOUT HERE]

As a sensitivity analysis, we additionally estimated the influence of having lived in a parental family house on both moving into a family house and homeownership (see table A2 in the appendix). As expected, the results were similar: The parental housing type influences the adult children's choice of housing type, but not their likelihood of homeownership. Likewise, parental homeownership increases the likelihood of moving into a self-owned home for adult children, but it does not influence their choice of housing type. Having lived close to green spaces triggers both moving into a family house and homeownership. Since having had a parental garden is correlated with having lived in a parental family house (Pearson's  $r = 0.66^{***}$ ), it is no longer significant when the parental housing type is considered in the estimation. All other effects remained stable. In the appendix, a comprehensive model 3 with all variables is presented next to a more parsimonious model 4 that exclusively includes significant effects of parental characteristics. Its model fit is as good as that of model 2, as the Wald  $\chi^2$  statistics are similar and the constant terms are not significant.

## 5 Summary and outlook

Over the last two decades, the body of research about the determinants of household relocation has increased significantly, but the relevance of housing characteristics other than homeownership are still understudied. Currently, Germany is undertaking significant political efforts to increase housing construction. But although ecological side effects of the single-family house are well known, an increase in urban spread is to be feared. The single-family house seems to be a widespread housing dream, and in fact the proportion of this housing type increased compared to all other housing types since the 1980s (Destatis, 2018). Still, our knowledge about what lies behind the popularity of the single-family house is scant. Is it part of a cultural script that places the self-owned, single-family house at the top of a ‘housing ladder’ of wealth and prestige (Lersch & Vidal, 2014)? Is it the expression of a widespread belief that children should grow up in a natural environment, in a ‘proper family house’ (Lauster, 2010)? This article contributes to closing this gap a bit further by analysing the relevance of key housing characteristics on moving into a family house, private gardens and distance to green spaces, while estimating the hazard of first homeownership simultaneously.

We applied a life course framework, following the housing trajectories of respondents aged 16 while accounting for their individual and partnership characteristics and those of their parents. Making use of event history methods, we estimated the influences of various time-constant characteristics, like parental class and migration background, and

time-variant characteristics like occupational career and family events on both moving into a family house and homeownership.

The family house was defined as a detached or terraced house for one or two families, as the German SOEP data does not distinguish between homes for one or two families. The descriptive analysis showed that similarities in key characteristics of the detached and terraced types justified their pooled analysis. However, detached single-family houses were likely to be the majority of family houses in this analysis, as the single-family house comprises two thirds (67%) of residential buildings in Germany, whereas houses for two families are much less common, with only 17% (Destatis, 2018; own calculations). Moreover, in the analytical data set, the share of detached family houses was nearly double the share of terraced ones.

The results showed that adult children of blue-collar workers move significantly earlier into a family house compared to other classes, and that *having lived in a parental home with a garden or close to green spaces increases the likelihood of moving into a family house*. Whereas class differences disappear when individual and household characteristics of the respondents are controlled for, the influence of parental housing characteristics persist. These findings support the interpretation that preferences for a certain housing type like the single-family house are subject to intergenerational transmission. Because we have little background knowledge from the survey data whether and how the respondents made use of the green spaces near their homes, and whether they intended to compensate for such spaces with a private garden, more research would be needed for further inferences.

Moreover, it was found that *parental homeownership increases the likelihood of first-time homeownership over and above parental social class*, and that *having lived in a parental home close to green spaces did also increase the likelihood of homeownership*. The effect of the parental home's closeness to green spaces for homeownership supports the idea that this parental home characteristic also might signify a sought-after property location, and therefore wealth.

To analyse how closely connected the housing type is with homeownership in a cultural script of the 'proper family house', we tested whether *having lived in a parental home with a garden increased the likelihood of first-time homeownership*. As this proposition was rejected, we conclude that preferences for certain housing types like the single-family house are significantly connected with homeownership, but only to some extent. Intergenerational transmission of housing characteristics other than homeownership is at work, and our analysis shows that this is more a matter of life course stage and individual characteristics than of social background. Other characteristics relevant for moving into a family house that are *not* or at least *much less* relevant for homeownership are: having a partner out of wedlock and childbirth; a female household head; no migration background in the household; and vocational education level.

The findings of this analysis were gained on the basis of a representative, longitudinal population survey in West Germany, covering 32 years. Although the Socio-Economic Panel (SOEP) offers very rich data on a broad range of topics, the possibilities for analysing the relevance of green spaces for housing relocation are limited. It remains

unclear, for instance, whether the respondents made use of their parental garden or close green spaces; whether having a garden was important for deciding to move into a family house; whether alternative housing types were considered. At different stages of migration decision-making, moving desires might be abandoned or changed because they are perceived as not feasible (Coulter, 2013; Kley, 2011). A proper multistage modelling of relocation decision-making was not possible on the basis of the limited SOEP data on planning migration. The additional analysis of data on how much respondents suffer from a lack of green spaces at their place of residence would have been interesting for this study, but these questions were only asked at large intervals. Further research could collect primary data and test the relevance of green spaces on the whole process of migration decision-making.

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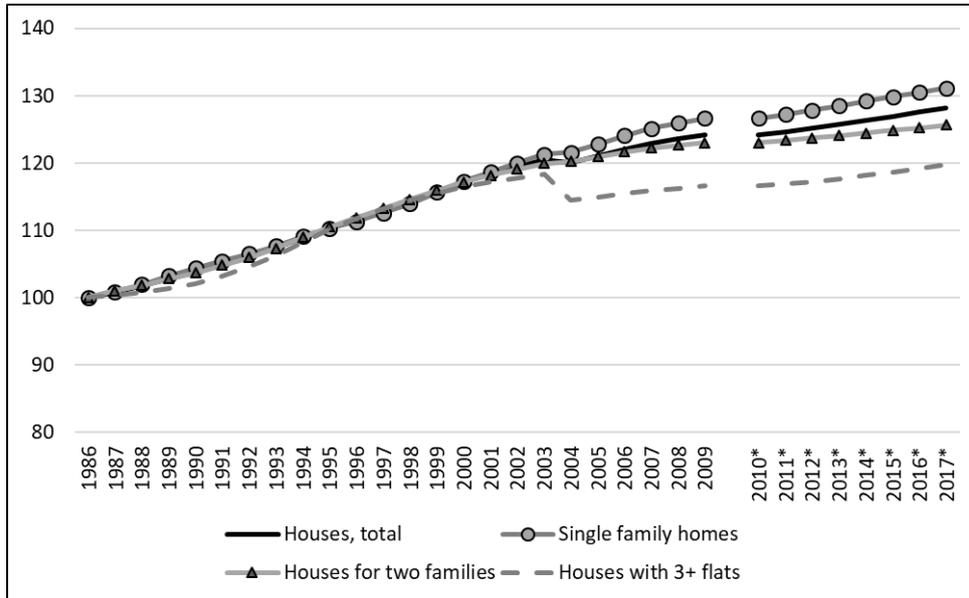
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**Figures and Tables of the manuscript “The Relevance of Green Spaces for Moving into a Family House across Social Class”**

Figure 1: Housing stock in West Germany, 1986–2017



Source: Federal Statistical Office (Destatis), 2018; own calculation

Notes: Without residence halls. In 2005 West Berlin was re-assigned to the Neue Bundesländer (former GDR).

\* Continuation based on results of Gebäude- und Wohnungszählung 2011; own continuation of series based on values in year 2009.

Table 1: Characteristics of family houses<sup>a</sup> and other dwellings in West Germany  
(column percentages)

	Detached houses for one or two families	Terraced houses for one or two families	Block with 3-4 flats	Block with 5-8 flats	Block with 9 and more flats	Other	Total
Own garden	95	92	59	25	14	76	72
Resident. area	80	81	68	72	68	60	77
Owner occupied	80	74	23	12	21	52	57
Urban region	61	79	81	87	94	62	74
Close to green space <sup>b</sup>	62	68	68	71	76	79	67
Total, row perc.	42	23	9	16	9	0	100
Total, N	3,217	1,810	788	1,354	806	30	8,005

*Source:* SOEP 1984–2016, own calculations, estimates weighted.

*Notes:* Parental households of respondents aged 16 years at t=1; incl. 13 respondents in own household (0.2%).

<sup>a</sup> Detached or terraced houses for one or two families.

<sup>b</sup> Distance to green spaces  $\leq$  10 minutes.

Table 2a: Kaplan-Meier failure functions of moving into a family house<sup>a</sup> by parental social class

Age	Inactive	Non-skilled	Skilled workers	Farm	Small proprietor	White collar
20	0.02	0.02	0.03	0.04	0.03	0.02
25	0.08	0.11	0.14	0.13	0.15	0.10
30	0.21	0.29	0.32	0.19	0.19	0.26
35	0.32	0.42	0.42	0.25	0.29	0.45
40	0.43	0.46	0.52	0.45	0.44	0.60

Source: SOEP 1984-2016, own calculations.

<sup>a</sup> Detached or terraced house for one or two families.

Table 2b: Kaplan-Meier failure functions of homeownership by parental social class

Age	Inactive	Non-skilled	Skilled workers	Farm	Small proprietor	White collar
20	0.01	0.00	0.00	0.01	0.01	0.01
25	0.03	0.03	0.04	0.06	0.05	0.04
30	0.03	0.12	0.16	0.14	0.08	0.10
35	0.09	0.28	0.27	0.20	0.21	0.31
40	0.18	0.39	0.34	0.32	0.39	0.48

Source: SOEP 1984-2016, own calculations.

Table 3: Bivariate probit regression<sup>a</sup> of moving into a family house<sup>b</sup> and homeownership

	Model 1				Model 2			
	Eq. 1: Family house		Eq. 2: Homeowner		Eq. 1: Family house		Eq. 2: Homeowner	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
<i>Parental class:<sup>c</sup> White collar (ref.)</i>								
Inactive	-0.10	0.14	-0.43*	0.17	0.11	0.15	-0.19	0.20
Non-skilled workers	0.27***	0.07	0.24**	0.08	-0.00	0.09	-0.04	0.10
Skilled workers	0.20**	0.06	0.08	0.08	0.10	0.07	-0.04	0.10
Farm workers	0.10	0.15	0.13	0.19	-0.07	0.21	0.09	0.21
Small proprietor	0.04	0.11	-0.01	0.14	0.05	0.12	0.01	0.15
<i>Parental home charact.:</i>								
Homeownership	0.10	0.06	0.20*	0.08	0.07	0.07	0.25*	0.10
Garden	0.12+	0.06	-0.09	0.09	0.17*	0.08	-0.07	0.11
Distance to green spaces: <10 min. (ref.)								
>=10 minutes	-0.03	0.06	-0.06	0.07	-0.16*	0.07	-0.21*	0.09
Not accessible by foot	0.05	0.08	-0.07	0.09	-0.08	0.09	-0.25*	0.12
Urban region	0.03	0.06	0.14+	0.08	-0.11	0.07	-0.03	0.09
<i>Adult children's charact.</i>								
Age					0.10***	0.01	0.09***	0.01
Age squared					-0.00***	0.00	-0.00***	0.00
Gender: Female					0.17**	0.06	0.12	0.09
Migration backgr. in household: No (ref.)								
Direct					-0.37**	0.13	0.01	0.13
Indirect					-0.19*	0.08	-0.05	0.10
Partner/spouse in household: No (ref.)								
Partner					0.91***	0.08	0.53***	0.10
Spouse					0.90***	0.10	0.93***	0.10
Child number					0.23***	0.05	0.13*	0.05
Educational level in household: Tertiary (ref.)								
In school					-0.17	0.12	-0.01	0.14
<=Lower Secondary					0.03	0.11	0.05	0.13
Higher secondary					0.01	0.10	0.02	0.13
Vocational					0.28**	0.10	0.13	0.12
Labour income in household, gross, per € 100								
					0.01**	0.00	0.01***	0.00
Employment status in household: Full-time (ref.)								
Other employment					0.12	0.08	0.07	0.10
Inactive					-0.01	0.07	-0.03	0.09
Unemployed					0.04	0.09	-0.54***	0.15
Constant	-36.0***	3.77	-49.30***	4.91	-6.34	6.11	-7.77	9.20
No. of person-years	57,739				57,739			
No. of persons	8,005				8,005			
Wald chi <sup>2</sup>	290.9***				2075.6***			
Degrees of freedom	44				80			
Rho	0.802				0.599			
Wald test of rho=0: chi <sup>2</sup> (1):	457.2***				149.4***			

Source: SOEP 1984-2016, own calculations. + p<0.10 \* p<0.05 \*\* p<0.01 \*\*\* p<0.001

*Notes:* Controlled for but not displayed: survey years; not living in parental home at age 16; gap between first observation and age 16; Bundesland; education missing; income of one partner missing.

<sup>a</sup> Observations clustered within persons and robust standard errors applied.

<sup>b</sup> Detached or terraced house for one or two families.

<sup>c</sup> Highest EGP-class of parents when respondents were 15 years old.

## Appendix

### The Relevance of Green Spaces for Moving into a Family House<sup>a</sup> across Social Class

Table A1: Descriptive Statistics Summary

	Mean	Std. Dev.	Min	Max
<i>Dependent variables</i>				
Family house	0.05	0.22	0.00	1.00
Homeowner	0.02	0.15	0.00	1.00
<i>Parental class:<sup>b</sup> White collar (ref.)</i>				
Inactive	0.06	0.23	0.00	1.00
Non-skilled workers	0.24	0.43	0.00	1.00
Skilled workers	0.23	0.42	0.00	1.00
Farm workers	0.03	0.16	0.00	1.00
Small proprietor	0.06	0.23	0.00	1.00
<i>Parental home characteristics</i>				
Parental family house	0.62	0.48	0.00	1.00
Homeownership	0.54	0.50	0.00	1.00
Garden	0.69	0.46	0.00	1.00
<i>Distance to green spaces: &lt;10 min. (ref.)</i>				
>=10 minutes	0.24	0.43	0.00	1.00
Not accessible by foot	0.10	0.30	0.00	1.00
Urban region	0.76	0.43	0.00	1.00
<i>Adult children's characteristics</i>				
Age	21.15	5.31	16.00	48.00
Age squared	28.21	64.07	0.02	720.66
Gender: Female	0.43	0.50	0.00	1.00
<i>Migration backgr. in household: No (ref.)</i>				
Direct	0.10	0.31	0.00	1.00
Indirect	0.24	0.43	0.00	1.00
<i>Partner/spouse in household: No (ref.)</i>				
Partner	0.03	0.16	0.00	1.00
Spouse	0.05	0.22	0.00	1.00
Child number	0.10	0.43	0.00	5.00
<i>Educational level in household: Tertiary (ref.)</i>				
In school	0.35	0.48	0.00	1.00
≤ Lower Secondary	0.32	0.47	0.00	1.00
Higher secondary	0.14	0.35	0.00	1.00
Vocational	0.15	0.36	0.00	1.00
Labour income in household, gross, per €100	7.61	11.04	0.00	204.52
<i>Employment status in household: Full-time (ref.)</i>				
Other employment	0.11	0.32	0.00	1.00
Inactive	0.44	0.50	0.00	1.00
Unemployed	0.03	0.18	0.00	1.00

Source: SOEP 1984-2016, own calculations.

Notes: Number of person-years: 57,739; number of respondents: 8,005; standard deviation not adjusted for clustering.

<sup>a</sup> Detached or terraced houses for one or two families.

<sup>b</sup> Highest EGP-class of parents when respondents were 15 years old.

Table A2: Bivariate probit regression<sup>a</sup> of moving into a family house<sup>b</sup> and homeownership

	Model 3				Model 4			
	Equation 1: Family house		Equation 2: Homeowner		Equation 1: Family house		Equation 2: Homeowner	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
<i>Parental class:</i> <sup>c</sup> White collar (ref.)	0.00	.	0.00	.				
Inactive	0.11	0.15	-0.19	0.20				
Non-skilled workers	0.01	0.09	-0.04	0.10				
Skilled workers	0.10	0.07	-0.04	0.10				
Farm workers	-0.09	0.21	0.10	0.21				
Small proprietor	0.05	0.12	0.01	0.15				
<i>Parental home characteristics:</i>								
Parental family house	0.23**	0.08	-0.00	0.13	0.26***	0.07		
Garden	0.07	0.09	-0.07	0.12				
Homeownership	-0.01	0.07	0.25*	0.11			0.24**	0.08
Distance to green spaces: <10 min. (ref.)	0.00	.	0.00	.	0.00	.	0.00	.
>=10 minutes	-0.17*	0.07	-0.21*	0.09	-0.17*	0.07	-0.21*	0.09
Not accessible by foot	-0.10	0.09	-0.25*	0.12	-0.09	0.09	-0.25*	0.12
Urban region	-0.09	0.07	-0.03	0.09	-0.09	0.07	-0.03	0.09
<i>Adult children's characteristics</i>								
Age	0.10***	0.01	0.09***	0.01	0.10***	0.01	0.09***	0.01
Age squared	-0.00***	0.00	-0.00***	0.00	-0.00***	0.00	-0.00***	0.00
Gender: Female	0.18**	0.06	0.11	0.09	0.19**	0.06	0.11	0.09
Migration backgr. in household: No (ref.)	0.00	.	0.00	.	0.00	.	0.00	.
Direct	-0.37**	0.13	0.02	0.13	-0.38**	0.12	0.02	0.12
Indirect	-0.18*	0.08	-0.05	0.10	-0.17*	0.07	-0.05	0.10
Partner/spouse in household: No (ref.)	0.00	.	0.00	.	0.00	.	0.00	.
Partner	0.92***	0.08	0.53***	0.10	0.91***	0.08	0.53***	0.09
Spouse	0.91***	0.10	0.93***	0.10	0.91***	0.10	0.93***	0.10
Child number	0.23***	0.05	0.13*	0.05	0.23***	0.05	0.13*	0.05
Educational level in household: Tertiary (ref.)	0.00	.	0.00	.	0.00	.	0.00	.
In school	-0.17	0.12	-0.01	0.14	-0.17	0.12	-0.01	0.14
<=Lower Secondary	0.02	0.11	0.05	0.13	0.03	0.11	0.05	0.13
Higher secondary	0.01	0.10	0.02	0.13	0.01	0.10	0.03	0.13
Vocational	0.29**	0.10	0.12	0.12	0.29**	0.10	0.12	0.11
Labour income in household, gross, per €100	0.01**	0.00	0.01***	0.00	0.01**	0.00	0.01***	0.00
Employment status in household: Full-time (ref.)	0.00	.	0.00	.	0.00	.	0.00	.
Other employment	0.12	0.08	0.07	0.09	0.11	0.08	0.07	0.09
Inactive	-0.01	0.07	-0.03	0.09	-0.02	0.07	-0.03	0.09
Unemployed	0.04	0.09	-0.53***	0.15	0.04	0.09	-0.54***	0.15
Constant	-6.27	6.10	-7.46	9.22	-5.64	6.13	-8.19	9.19
No. of person-years	57,739				57,739			
No. of persons	8,005				8,005			
Wald Chi <sup>2</sup>	2069.7				2029.4			
Degrees of freedom	82				68			
Rho	0.602				0.596			
Wald test of rho=0: Chi2(1):	155.2***				148.4***			

Source: SOEP 1984-2016, own calculations. \*  $p < 0.05$  \*\*  $p < 0.01$  \*\*\*  $p < 0.001$

Notes: Controlled for but not displayed: survey years; not living in parental home at age 16; gap between first observation and age 16; Bundesland; education missing; income of one partner missing.

<sup>a</sup> Observations clustered within persons and robust standard errors applied. Model 4 is a *seemingly unrelated* bivariate probit regression.

<sup>b</sup> Detached or terraced houses for one or two families.

<sup>c</sup> Highest EGP-class of parents when respondents were 15 years old.