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# Does the impact of the family increase or decrease over the life course? Sibling similarities in occupational status across different career points☆

Maaike Hornstra [a,b,*], Ineke Maas [c,d]

[a] Netherlands Interdisciplinary Demographic Institute (NIDI)-KNAW/University of Groningen, Lange Houtstraat 19, 2511 CV, The Hague, Netherlands
[b] University of Amsterdam (UvA), Department of Sociology, Nieuwe Achtergracht 166, 1018 WV, Amsterdam, Netherlands
[c] Utrecht University (UU), Department of Sociology, Padualaan 14, 3584 CH, Utrecht, Netherlands
[d] VU Amsterdam, Department of Sociology, De Boelelaan 1105, 1081 HV, Amsterdam, Netherlands

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ABSTRACT

In this study, we examine how the influence of the family on occupational success fluctuates when studying different points across individuals' lives (i.e., from career entry to midlife). Resource theories propose that individuals with more parental resources will continue to profit as they get to later life-stages, increasing their advantage over others. In contrast, signaling theories predict that parental resources will lose their importance when children advance in their career, since employers will increasingly select on actual worker productivity, not social background. To shed some light on these theories, we use data from the German Socioeconomic Panel Survey (SOEP). Multilevel SEM sibling models are applied in which individuals (N = 12,443) are nested in families (N = 7,766). These models assess the extent to which siblings are similar with respect to occupational status as opposed to individuals to which they are not related, enabling the estimation of a broad measure of family and community effects. We divide this broad measure into direct impact and indirect impact via education. Our results indicate that the indirect family impact increases after the child's career entry up to the ages 30 and 35, stabilizing thereafter. The direct effect shows a similar yet more stable pattern, as the effect as well as the variations with age are much smaller. Finally, the proportion of family-level variance explained by measured family indicators increases over the life-course.

## 1. Introduction

Family is a key agent in stratification processes. Individuals from higher status families are able to obtain a better occupational position than individuals from lower status families. Mechanisms through which social inequalities are transmitted from one generation to another have therefore been carefully documented in the social inequality literature (Ganzeboom, Treiman, & Ultee, 1991). Still, most research focusses on family impact on occupation at career entry or current position, while possible changes over the life-course received less attention (but see Hauser, Sheridan, & Warren, 1999; Warren, Hauser, & Sheridan, 2002). The status attainment model (Blau & Duncan, 1967), which decomposes the relationship between fathers' and sons' occupational status into a set of effects, also includes the claim that fathers' occupational status directly affects their sons' current occupation, when controlling for the son's initial career position. This hints that social origin might affect career success beyond labor market entry and potentially increases inequalities across individuals' lives (Ballarino, Cantalini, & Panichella, 2020; DiPrete & Eirich, 2006).

Theoretical arguments regarding this issue are based on two approaches. *Resource theories* argue that parents help their children throughout their lives via resources such as financial, cultural or social capital (Bourdieu, 1984). The notion of accumulative advantage suggests that those with more parental capital continue to profit as they get to later stages in their life, increasing their advantage over others (DiPrete & Eirich, 2006). In contrast, *signaling theories* propose that, once individuals enter the labor market, employers will increasingly select on actual performance, not on signals related to family background. As a

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* Corresponding author at: Netherlands Interdisciplinary Demographic Institute (NIDI)-KNAW/University of Groningen, Lange Houtstraat 19, 2511 CV, The Hague, Netherlands

*E-mail addresses:* hornstra@nidi.nl (M. Hornstra), i.maas@uu.nl (I. Maas).

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result, parental resources will lose importance when employers gain access to other performance signals (Ferrer, 2005; Weiss, 1995). Thus, whereas resource theories hypothesize increasing family effects across the life-course, signaling theories propose decreasing effects.

We aim to shed some light on this theoretical puzzle by studying whether the influence of the family environment on occupational success decreases or increases when looking at different points across individuals' lives (i.e., from career-entry to midlife). By doing so, our goal is to uncover whether early differences in family resources decline in importance across individuals' lives or lead to accumulating disadvantages on the labor market.

This paper contributes to previous research in several ways. First, whereas most scholars examine associations between social origin, education, and occupation in early adulthood, some go beyond this approach and consider how social origin effects fluctuate over the life-course. In general, individuals from families high in socioeconomic status have been found more likely to obtain a better position later in the career, which indicates that the effect of family background increases over the course of individuals' lives (Warren et al., 2002). This finding is often based on inconsistent measures, however, either comparing a limited number of career-stages (Bukodi & Goldthorpe, 2011) or examining family effects across different outcomes (Conley & Glauber, 2005). Studies on career mobility provide relevant findings, as studies on upward and downward mobility examined whether social fluidity strengthens or weakens over the career (e.g., Barone & Schizzerotto, 2011; Bukodi & Goldthorpe, 2011; Härkönen & Bihagen, 2011; Hillmert, 2011). These studies suggest accumulating inequality on the labor market, although this dynamic attenuates because upgrading or downgrading in occupation becomes more difficult at later career-stages. Since upward and downward mobility are separated while controlling for prior-career stages, however, career mobility research does not provide conclusive information on variations in overall family impact across different stages. We aim to build upon these studies by also employing a life-course perspective, yet using a systematic approach by measuring family origin effects across several subsequent life-course stages from career entry to midlife.

Second, there exists an extensive body of literature on direct and indirect effects (i.e., via education) in status transfers, as Blau & Duncan's (1967) status attainment model has been replicated many times in various settings (Ganzeboom et al., 1991). As life-course variability in status attainment has not received much attention (Hauser et al., 1999; Warren et al., 2002), the theoretical expectations on life-course variability in direct and indirect effects have rarely been distinguished theoretically, nor have they been explicitly formulated. For instance, research on the indirect path is often characterized by a specific focus, examining either the effect of social origin on educational achievements (Francesconi, Jenkins, & Siedler, 2010; Sandefur, Meier, & Campbell, 2006; Sieben & De Graaf, 2003) or the effect of education on occupational success (Mazumder, 2008). Therefore, the empirical evidence is inconclusive about the overall indirect family effect that is anticipated, as well as, the manner in which this effect is expected to evolve across individuals' lives. We aim to fill this gap by simultaneously examining life-course variability in direct and indirect family impact, while explicitly distinguishing between the two with respect to the theoretical arguments and hypothesized relationships.

Third, stratification research often underestimates the impact of the family environment, since it generally uses traditional indicators, such as fathers' occupational status, which are not likely to grasp the full variety in family and community effects (even studies including mother's status and father's career mobility, e.g., Byrne, Chandola, & Shlomo, 2018). We aim to account for this issue by applying Multilevel SEM sibling models. Several scholars have argued that it is fruitful to employ data on more than one child in a family, using sibling resemblance with respect to a dependent variable as a broad measure of family and community factors (Hauser & Mossel, 1985; Hauser et al., 1999; Schnitzlein, 2014; Sieben & De Graaf, 2003; Sieben, Huinink, & De Graaf, 2001; Warren et al., 2002). This approach builds upon the assumption that sibling resemblance functions as an accurate indicator for all that siblings have in common with respect to family environment, shared genetic factors, and inter-sibling effects. Sibling models are advantageous when aiming to disentangle direct and indirect effects without possible bias due to overestimation, as they control for overall family variance in education (Sieben & De Graaf, 2003). Additionally, sibling analysis is valuable in its possibility to assess whether traditional status indicators, such as parents' education or occupation, account for the overall impact of social origin (Thaning & Hällsten, 2018). In other words, we can examine the percentage of the broad measure of family and community effects that can be explained by measured factors, taking an explorative step in evaluating traditional measures.

We use data from the German Socioeconomic Panel Study (SOEP, 2019), which has been collected annually from 1984 onwards, making it one of the longest and largest panel studies worldwide (Wagner, Frick, & Schupp, 2007). This longitudinal household survey also follows the children of initial panel-members from the moment they start their own household. As SOEP has data on respondents nested in families, siblings can be identified as those who entered the panel as part of the same family. This enables us to study a large sample of siblings across several life-stages.

Although the mechanisms we theorize about are generalizable to most Western countries, a few aspects make the German context unique. Germany is known for its vocational training system, which includes tracking, emphasizes the role of educational credentials, and corresponds to a relatively old average age at career-entry (Wagner et al., 2007). Moreover, the German sociodemographic context is characterized by a traditional male-breadwinner regime, as well as, its previous division into East and West Germany. Such contextual features should be considered when interpreting social origin effects on occupation, making the focus on Germany an important addition to the literature.

## 2. Theory

In this section, we provide an overview of the two main theories with respect to life-course variability in status attainment processes, namely *resource* and *signaling* theories. The status attainment model (Blau & Duncan, 1967) functions as the foundation, as several hypotheses on direct and indirect family effects are distinguished per theory.[1] Note that, when we discuss the effect of family background, we refer to the overall family effect. That is, we refer not solely to the family effects driven by parental status, but to effects of all family characteristics that are shared by siblings (e.g., genes, parental investments, early life family-events, inter-sibling influences).

### 2.1. Status attainment model

Blau and Duncan's status attainment model (1967) enabled stratification research to decompose the relationship between fathers' and sons' occupational status into a set of linkages, introducing the division between direct and indirect effects. The direct effect is assumed to run straight from the parents' occupational status to the child's occupational status, regardless of educational attainment. This effect is expected to have been dominant in earlier times, when individuals inherited their parents' titles, ranks or capital, such as machinery or farms. The indirect effect flows from the parents' occupational status to the child's educational attainment, thereby indirectly influencing the child's occupational status, which is strongly affected by the child's educational attainment. When we shift our focus to overall family effects rather than traditional status measures, the indirect effect via education is still

[1] With the data at hand, we cannot identify causal effects of the family on occupational status. Hence, any family effects discussed in this study relate to statistical correlations or the effects implied by the theory, not to causation.

important to consider, given that for many family influences, the educational system is the first place where children's positions on the socioeconomic ladder are solidified (Sieben & De Graaf, 2003).

### 2.2. Resource approach

Mechanisms underlying status transfers between parents and their children have been studied extensively in the stratification literature, with resource theories seemingly shaping the most dominant explanations (DiPrete & Eirich, 2006). According to resource theories, parents help their children throughout their career by providing parental resources. Social inequalities may consequently be reinforced, as such resources are often unequally distributed over a population, with people occupying more privileged positions having access to more desirable resources (Bourdieu, 1984). To start, the child's occupation is influenced by personal resources, which are the abilities or characteristics that are to a large extent inherited from parents, such as talent or perseverance. From a theoretical viewpoint, such features are often perceived as fair to select upon within schools or the labor market (Fossati, Wilson, & Bonoli, 2020). Resource theories therefore also focus on other forms of capital, such as those described by Bourdieu (1984).

The resources families have at their disposal are threefold: economic, cultural and social capital (Bourdieu, 1984). Economic capital is characterized by the financial support parents offer their children with respect to educational costs (e.g., tuition) or unemployment costs (e.g., financial support in times of unemployment and the search for a new occupational position). Cultural capital can take form in credentials, such as advanced educational degrees, but also show through status markers unrelated to formal education, such as cultural participation, verbal skills, and extracurricular activities. Finally, individuals might also experience benefits as a result of their parents' social network, that is, their social capital. A broad social network may be advantageous when applying for a position on the labor market.

The larger family context in which the resources are transmitted from parents to children also determines the family component influencing occupational status. It is not simply the additive of parents' resources that matters. Resource theories also elaborate on the role of family structure (e.g., two-parent vs. divorced families) or early-life family events (e.g., death of a parent) and how this has (a possibly countervailing) influence on labor market participation and the extent to which parental support/resources are available and can successfully be used to solidify children's position on the social ladder (Schulz & Maas, 2012).

The notion of accumulative advantage offers a theoretical proposition on status attainment over the life-course. Merton (1968) introduced the 'Matthew' effect to describe how inequalities in the scientific field emerge and accumulate, as scholars who have gained scientific recognition were being credited for contributions more easily than scholars without such recognition. This argument has been used to develop a more general theory regarding accumulative advantage: initial inequalities are likely to magnify with the passage of time (Dannefer, 2003; DiPrete & Eirich, 2006). With respect to parental resources and the family context, the initial advantages children experience as a result of their parents' financial, cultural or social capital are expected to magnify over the course of their lives.

#### 2.2.1. Direct effect in the resource approach

For direct family effects, the notion of accumulative advantage proposes that individuals continue to profit from an advantageous family environment after labor market entry. Children with an advantageous family background (e.g., raised in high SES households) benefit from family resources in an accumulative manner, since their environment facilitates and enhances the positive effects of, for instance, cognitive abilities or personality traits (DiPrete & Eirich, 2006). Individuals with more parental capital will thus benefit from these resources as they get to later career-stages, increasing their advantage over others. In short, the direct effect of the family on the child's occupational success increases across subsequent career points (H1a).

#### 2.2.2. Indirect effect in the resource approach

With respect to indirect effects, resource theories take more specific form in the human capital theory, which argues that education should be perceived as an investment in knowledge and skills, that is, human capital (Becker, 1993). When acquiring more human capital, individuals will be more productive on the labor market, increasing their chances of achieving a good occupational position. More parental resources will translate in more human capital, fostering an environment in which the child's productivity on the labor market can blossom, which in turn is selected upon by future employers (Becker, 1993; Weiss, 1995). Growing up in a more stable family structure or higher SES neighborhood is also expected to create an advantage in acquiring human capital (Solon, Page, & Duncan, 2000). Family background factors, such as genes, parental resources, or family structure, could then continuously have an effect on the child's occupational status. For instance, those who have acquired a higher educational degree are expected to be more likely to invest in schooling later in the career, which secures their occupational position (DiPrete & Eirich, 2006). Accordingly, qualifications through life-long learning seem to benefit those from managerial and professional origins most (Bukodi, 2017). If career-opportunities and work-related training are more often provided to those in which more has already been invested by the employer, early labor market advantages or disadvantages between individuals may be emphasized over time. Human capital returns are then partly expected after labor market entry, making later occupations more strongly associated with parental background.[2] Thus, the indirect effect of the family on the child's occupational success increases across career points (H2a).

### 2.3. Signaling approach

Signaling theories propose that, when screening potential employees, employers have little information on the productivity of the individuals they hire. To solve this information problem, employers screen applicants on signals which are assumed to predict unobserved skills (Fossati et al., 2020). When a potential employee recently entered the labor market, employers' hiring decisions are based on a limited set of signals that are often highly associated with the employee's family background (e.g., educational level, informal references). However, as individuals advance in their careers, employers gain access to a broader range of productivity indicators, such as job performance or employment records (Bills, 1988; Barone & Schizzerotto, 2011). Thus, signaling theories predict that, once entered the labor market, employers will increasingly select on actual performance, not on social background.

#### 2.3.1. Direct effect in the signaling approach

Education functions as the most prominent signal upon which employers base their decisions (Weiss, 1995). However, there are other features unrelated to education which also play a role in hiring processes (Bills, 1988). Many of these are expected to be associated with family background (e.g., appearance, migration background, language skills, communication skills). This complies with cultural capital arguments (Bourdieu, 1984): those who have acquired more cultural capital via their family generally have better verbal skills and more knowledge on the functioning of the labor market and possible behavioural codes in the job-application process. In accordance, a recent study found that, when (differences between) applicants' educational profiles were ambiguous, employers were more likely to use probalistic signals, such

[2] We assume that the association between the parents' socioeconomic status and education remains constant after the child has entered the labor market. Our reasoning on indirect effects is directed at the possible changes in the relationship between the child's education and occupation.

as socio-economic status (SES) indicators, in their assessments (Fossati et al., 2020).

Signaling theories propose that the direct effect of family background is important at career-entry, because employers are more likely to base their decisions upon socioeconomic status signals when direct productivity-signals are not yet available. When individuals get to later career stages, such signals are no longer selected upon by employers, as more direct information on individuals' capacities have become available (Barone & Schizzerotto, 2011; Ferrer, 2005; Weiss, 1995). When individuals' education is taken into account, the family background is thus expected to influence the child's status at first occupation, while the association is less strong later in the child's life. To summarize, the direct effect of the family on the child's occupational success decreases across subsequent career points (H1b).

#### 2.3.2. Indirect effect in the signaling approach

In signaling theories, educational credentials mostly function as an indicator of individuals' occupational skills or their ability to acquire those skills (Weiss, 1995). Education is thus perceived as a productivity indicator, but also expected to translate into the training costs that are associated when hiring employees with certain credentials, with training mostly taking place on the job, not in school. The family is therefore expected to strongly influence the child's status at first occupation via educational attainment, as education then function as the most prominent signal upon which employers base their hiring decisions (Weiss, 1995). If education mainly functions as a certificate indicating one's trainability, however, formal credentials may be replaced by more recent productivity signals later on. And if education becomes less accurate in describing productivity at later life-stages, employers become more inclined to base their decisions on the references one has acquired or the career-progress one has made at previous employers (Ferrer, 2005). Thus, the indirect effect of family resources on the child's occupational success decreases across subsequent career points (H2b).

### 2.4. Other sources of family impact over the life-course

Our main focus is on the direct and indirect effects of family background via resource and signaling mechanisms, which we examine using sibling correlations in occupational status and their variation over the life-course. However, the literature mentions various characteristics that siblings share that are not traditionally thought of as family background (Erola, Jalonen, & Lehti, 2016). Therefore, we need to consider what additional mechanisms could be at work, especially when these suggest life-course variation. Below we discuss two of such alternatives.

First, the family component influencing occupational status also comprises neighborhood effects (Mazumder, 2011). The occupational status of those who are from the same family and thus grew up in the same neighborhood, is influenced by neighborhood effects in similar ways. This influence is likely to change over the life-course, as people live in their parental neighborhood until young adulthood, but often move away and form their own families as they grow older (Solon et al., 2000). Sibling similarity due to neighborhood effects will thus decrease at later life-stages: siblings move to different regions and become exposed to different neighborhoods and different labor market shocks. The neighbourhood effect thus becomes less important over the life-course, but does not disappear (as later neighbourhoods of siblings are more similar than those of unrelated individuals). Second, sibling peer effects are another factor captured in the family component. As siblings generally spend a lot of time together, they influence each other in their aspirations and values and academic behaviors (Nicoletti & Rabe, 2019). The role of parental investments may be amplified via such sibling spillover effects. Similar to neighborhood effects, sibling spillover effects are expected to decrease over the life-course. Contact among siblings is less frequent at later life stages, as they no longer live in the same household and their lives are more separate.

Overall, these mechanisms comply with the general argument that also follows from signaling theories, namely that the influence of the family component is likely to decrease over the life-course (both directly and indirectly).

## 3. Data and method

### 3.1. Data description

We used Waves 1–35 from the German Socioeconomic Panel (SOEP), which has been collected annually from 1984 onwards (Wagner et al., 2007). The survey includes information on education, occupation, and household structure. The sampling units are households, which means that all household members are observed, and children from initial SOEP members are followed from the moment they start their own household. This feature allows us to link adult respondents to the household in which they grew up. A nested sample of siblings is therefore available in the data. Individuals nested into families function as this study's unit of analysis.

We selected all individuals whose parental household can be identified within the SOEP. That is, we selected all who have at least once been observed to be the child of a household-head participating in the survey (N = 57,290 individuals, 24,211 families). This selection accounts for the most considerable reduction in sample size, as compared to the full SOEP sample (N = 142,308 individuals, 42,427 households). We used the sibling-identifiers as generated by SOEP to determine which respondents are siblings (we used the BIOSIB-file; see Goebel, 2017). That is, when two respondents have the same original household identifier and were both linked to a parent in the original household as their child, the two are assumed to be siblings (N = 45,248 siblings identified). Given that the SOEP data structure is built around households and the relations between household members, its parental identifiers are based on a social definition (i.e., cohabitation rather than biological relatedness). Although detailed information on the biological children is recorded for all mothers, similar information on fathers is only available since 2000. Restricting our sibling sample to individuals which are confirmed to have the same biological mother and the same biological father, would therefore greatly reduce our sample size, especially for later life-stages. We therefore also include half-siblings when calculating the sibling correlations. This is not problematic, as we are not aiming to identify the genetic component in occupations, but it should be considered when interpreting our results. In other words, because half-siblings share genes from one parent rather than two or lived in different households in parts of their youth (Knigge, Maas, & Van Leeuwen, 2014), our estimated family impact on occupational status could be considered as a lower bound.

Moreover, although our aim is to calculate sibling resemblance, households in which only one child is present are also included (N = 12,042 singletons identified). This is done because (a) singletons contribute to the identification of the family component, (b) we want to secure the statistical power of our analyses by using a larger sample, and (c) singletons may be more advantaged compared to children from larger families and excluding them from the analyses may result in a distorted picture (Mazumder, 2008). Individuals younger than age 20 at time of the interview were excluded from the sample, as they are likely to not have completed formal education or entered the labor market and including them biases the sample towards lower educational levels. This reduced the sample size to 18,558 individuals, as many siblings in the SOEP have not yet reached adulthood. It is unlikely to identify many respondents who entered the panel as children of a SOEP household and have grown-up to ages 45–65. The sample is therefore restricted to respondents aged 40 or below (190 individuals have been deleted).

Finally, we restrict the sample to individuals for which status information is available on at least one of the life-stages ($N = 6115$ individuals deleted).[3] It is generally not advisable to impute missing values on the outcome variable unless you can assume the socioeconomic characteristics of non-missing cases and missing cases are the same. We cannot assume this with full confidence for our samples (e.g., women who left the labor force are overrepresented in missing cases) and therefore, listwise deletion is the preferred strategy (Allison, 2000). The results were not sensitive to the choice of missing-data handling strategy (also see Section 4.3). Our sample consists of 12,443 individuals nested into 7,766 families.

### 3.2. Variables and measurement

#### 3.2.1. Occupational status

The dependent variable is the occupational status of siblings at various subsequent life-stages, according to the respondent's age (i.e., occupation at $age_x$). To measure occupational status, we use the measure for which occupations are sorted by the ISCO classification (International Labour Office, 1968) and then coded according to the ISEI measure. The ISEI-scale is based on objective characteristics for occupational categories, namely the educational level and average income (Ganzeboom, De Graaf, & Treiman, 1992). The scale runs from 16 to 90, with a higher score representing a higher level of occupational status. Since sibling correlations in occupation will be compared across several life-stages, the variable for occupational status is generated for various life-stages. The first stage is defined by the respondents' status at their first job (i.e., the first ISEI value available for each respondent). The subsequent time-points are defined via the respondents' age, with $age_x$ taking the value of 25, 30, 35, 40. For each individual, the occupational status was measured at each of these ages, and included as dependent variable in the analyses.[4]

#### 3.2.2. Educational attainment

Part of the SOEP data is collected during a period in which Germany was divided into two states. This might lead to problems with respect to the measure of education, as both former states (former FRG and former GDR) had different educational systems. Educational attainment is therefore measured by the *years of formal schooling* completed at labor market entry. This continuous variable ranges from 7 to 18, and indicates the minimum years of schooling needed to obtain certain educational degrees. This strategy is often used in comparative research and is applied here to make the measure more comparable.

#### 3.2.3. Family characteristics

Traditional indicators of family background are only included in explorative analyses, which are performed to examine *what percentage* of the overall – direct and indirect – measure of family and community effects can be explained by these indicators. The measure for mother's and father's occupational status is based on the occupation of either parent when the respondent was 15 years old (i.e., time-invariant measure). These are coded according to the ISCO classification and scored using the ISEI-measure (Ganzeboom et al., 1992). As siblings reach the age of 15 at different points in time, the measure of father's and mother's occupational status is calculated using the average value among individuals from the same parental household. Migration background is measured using a dummy: *no migration background* (0) and *migration background* (1). Finally, the sib-size is measured by counting the total number of children in a household, varying between 1 and 12.

#### 3.2.4. Controls

Control variables include gender, which is measured using a dummy variable (male = 1; female = 0), and birth order, which measures the individuals' position in the birth order, ranging from being the 1st to being the 10th sibling.[5] These controls are included to not overestimate or underestimate the family impact by also capturing sibling correlations that are due to the siblings being similar/different in sex or birth position.

### 3.3. Descriptive statistics

Table 1 shows the descriptive statistics on the variables. The number of cases in which information on occupation is available becomes smaller as later life-stages are taken into account (e.g., only 996 cases were available for age 45). This is not surprising, as children raised in original SOEP households can only have reached age 45 if they already participated in 1984 or shortly thereafter. Sibling models on occupational status are therefore only specified up to the occupation at age 40. This does not necessarily limit the results, as it is expected that individuals aged 40 and above have already reached a level of *occupational maturity*. This concept relates to the point in individuals' careers after which changes in occupation occur to a lesser extent (Barone & Schizzerotto, 2011). To explore how family effects may develop beyond age 40, we include the later life-stage (age 45) to an additional analysis (see Section 5). However, as the sample is small and prone to selectivity, this is foremost an exploration.

### 3.4. Method

*Multilevel Structural Equation Modelling* (MSEM) is applied to perform sibling analyses. Such models assess the extent to which siblings are similar with respect to a dependent variable (i.e., occupational status),

**Table 1**
Descriptive statistics.

| Variable | N* | Mean | SD | Min | Max |
|---|---|---|---|---|---|
| *Individual characteristics* | | | | | |
| Educational level | 11,007 | 12.073 | 2.541 | 7 | 18 |
| Occupational status at first job | 12,443 | 40.040 | 13.569 | 16 | 90 |
| Occupational status at age 25 | 6,167 | 41.418 | 13.782 | 16 | 90 |
| Occupational status at age 30 | 4,031 | 45.522 | 16.375 | 16 | 90 |
| Occupational status at age 35 | 2,573 | 45.989 | 16.559 | 16 | 90 |
| Occupational status at age 40 | 1,594 | 45.533 | 16.400 | 16 | 90 |
| *Family characteristics*** | | | | | |
| Father's occupational status | 6,590 | 42.281 | 16.048 | 16 | 90 |
| Mother's occupational status | 6,057 | 40.238 | 15.627 | 16 | 90 |
| Sib-size | 7,766 | 2.124 | 1.150 | 1 | 12 |
| Migration background | 7,766 | .282 | | | |
| *Controls* | | | | | |
| Female | 12,443 | .452 | | | |
| Position in birth order | 12,438 | 1.543 | .855 | 1 | 10 |

*Notes:* *N is the number of observed individuals for which the original family household can be identified, also including singletons. N at family-level is number of households.
** *Family characteristics.* These characteristics are only included in additional analyses to examine *what percentage* of the overall measure of family and community effects – direct and indirect – can be explained by these family factors.

[3] We did not contrain our sample to include siblings who are close in age, but note that the average age-difference between the youngest and oldest sibling in a family is 5.6 years.

[4] We measure how similar siblings are at a specific age. The assumption is that family influences how similar siblings are at a certain stage in their life, not how similar they are at specific points in time, at which siblings (with the exception of twins) differ in age.

[5] Note that, after sample selection, respondents with 11 or 12 siblings were no longer present in the sample.

as opposed to individuals to which they are not related. The basic multilevel sibling model decomposes individual variance in occupational status into between-family and within-family variance, with the intra-class correlation coefficient (ICC) functioning as *a broad measure of family and community effects*. This measure is assumed to include all that siblings have in common with respect to their family background (Sieben & De Graaf, 2003; Sieben et al., 2001). The MSEM sibling approach fits our hypotheses best, as it (1) accounts for the natural clustering of individuals within families, (2) maximized the statistical power at both levels, and (3) enables the estimation of path-models (Hox, Moerbeek, & van de Schoot, 2017). The latter is essential for disentangling direct and indirect effects.

Although sibling correlations provide a comprehensive measure of the influence of family background compared to traditional status measures, economists have recently shown that sibling correlations are limited in that they only capture the family influences that are shared by siblings, rather than also capturing family influences that differ among siblings (see Björklund & Jäntti, 2012).[6] In accordance, sociological research found several family effects that actually work as sources of sibling dissimilarity (Knigge et al., 2014). Sibling correlations are thus downwardly biased, given that the actual "total family effect" consists of shared, as well as, nonshared influences. In line with previous literature, we use the concept of overall family impact to indicate the influence of all characteristics that siblings share, but the unshared family impact deserves attention in future research.

The analyses are performed using Mplus. The models are estimated using restricted maximum likelihood (MLR), which adjusts standard errors to be robust in case of non-normality. Cases with missing values have been accounted for by using full information maximum likelihood (FIML). First, a null-model is specified in which no predictors are included and the intercept is allowed to vary across families (M1). This empty model estimates the *overall family impact* on occupational status (ICC). Second, a path is defined between individuals' education and occupation (M2). This applies to both the individual and the family level, as the indirect effect of family background runs via the resemblance between siblings with respect to educational attainment, but besides that, sibling specific educational attainment will lead to sibling differences in occupation (Hauser & Mossel, 1985). This second model captures *direct family impact* controlled for educational attainment and allows us to calculate the *indirect impact.* Third, family indicators are included (e.g., parents' occupational status, sib-size) to estimate what percentage of family-level variance can be explained by measured family aspects (M3).[7] Finally, a full model is specified, also including the possible mediation of education between the *measured* family characteristics and the child's occupational status (M4).[8] Individual-level controls are included throughout the analyses.

The four models are repeated for several stages in the life-course. If the intra-class correlation in occupation becomes larger across the stages, it can be assumed that the overall – direct or indirect – impact of the family environment on occupational success increases over the course of individuals' lives. By comparing the models, our broad measure of family effects can be divided into a direct and indirect effect. That is, by subtracting the direct family impact from the overall family impact in occupational success, the indirect family impact on occupational success can also be defined.

## 4. Results

In this section, the unstandardized results are discussed for the overall – direct and indirect –family impact on occupational status at first job and ages 25, 30, 35 and 40. Before interpreting the parameters, the model fit statistics of the full model have been evaluated for each life-stage included in analysis. The full model has an adequate overall fit across the different life-course stages, with the CFI/TFI both having a value above 0.9, and the RMSEA and SRMR having a value below 0.08 (Hox et al., 2017).

### 4.1. Hypotheses testing

Table 2 provides results for (1) the random-intercept model including the total intra-family correlation and (2) the model including a path between the child's education and occupation. The models are displayed for each of the life-stages included. The results in Model 1 shows that individuals' occupational status at all these ages can at least partly be attributed to characteristics of their family.

#### 4.1.1. Overall impact of family effects

To test the hypotheses, we examine the intra-family correlations for each life-stage, divided into the *total*, *direct* and *indirect* intra-family correlation (an overview is displayed in Table 3). These values are calculated using Model 1 and Model 2, as specified in Table 2. Overall, the results indicate that the *total impact* of the broad measure of family effects on occupational status increases over the course of individuals' lives, with it being most pregnant for occupational status at age 30 (ICC = 0.395). This ICC indicates that 39.5 percent of all individual variance in occupational status at age 30 can be attributed to the family level, leaving 60,5 percent of the variance at the individual level. After that point in the career, the overall impact of family and community effects decreases, but only slightly. To add more confidence to these conclusions, we summarized for each life-stage the total ICC and the corresponding S.E. and 95 % Confidence Interval as taken from the estimated models (see Table 5). Based on this information, we see that there is a significant difference between the ICC at age 25 and the ICC at age 30. It is also confirmed that the overall family effect stabilizes after age 30, as there is no significant difference between the ICC at ages 30–40.

#### 4.1.2. Direct family effect

Families' direct impact on the child's occupational status is rather low when the child enters the labor market (ICC = 0.059). It slightly increases after the child has been active on the labor market for some

[6] Also note that, although sibling resemblance does capture at each stage the family influence, due to inter-sibling effects, it does not necessarily capture parent-to-child influence uniformly at each stage.

[7] Model 3: $Y_{ij} = \gamma_{00} + \gamma_{10} Z_{ij} + \gamma_{01}\text{Focc}_j + \gamma_{01}\text{Mocc}_j + \gamma_{01}\text{Sibz}_j + \gamma_{01}\text{Migb}_j + u_{0j} + e_{ij}$. We add the -measured- family factors to the model, with $\gamma_{00}$ representing the model intercept, $\gamma_{10}$ $Z_{ij}$ the controls on the individual-level, respondent sex and birth order, $\gamma_{01}\text{Focc}_j$ the father occupation on the family-level, $\gamma_{01}\text{Mocc}_j$ the mother occupation on the family-level, $\gamma_{01}\text{Sibz}_j$ the sibling-size on the family-level, $\gamma_{01}\text{Migb}_j$ the migration background on the family-level, $u_{0j}$ the family-level variance, and $e_{ij}$ the individual-level variance. The inclusion of -measured- family factors takes up some of the residual variance in our outcome and leads to a lower family component ($u_{0j}$ in M3) compared to the family component without their inclusion ($u_{0j}$ in M1). The difference can be interpreted as the family-variance that can be attributed to the included measured factors.

[8] Model 4: (a) $Y_{ij} = \gamma_{00} + \gamma_{10} Z_{ij} + \gamma_{10}\text{Educ}_{ij} + \gamma_{01}\text{Educ}_j + \gamma_{01}\text{Focc}_j + \gamma_{01}\text{Mocc}_j + \gamma_{01}\text{Sibz}_j + \gamma_{01}\text{Migb}_j + u_{0j} + e_{ij}$. (b) $\text{Educ}_j = \gamma_{01} + \gamma_{01} + \gamma_{01}\text{Focc}_j + \gamma_{01}\text{Mocc}_j + \gamma_{01}\text{Sibz}_j + \gamma_{01}\text{Migb}_j + e_{ij}$. The equation for M4 is additive to the equation for M3 in that it includes education, with $\gamma_{10}\text{Educ}_{ij}$ representing education on the individual-level and $\gamma_{01}\text{Educ}_j$ representing education on the family-level. Paths are drawn between the -measured- family factors and education on the family-level ($\text{Educ}_j$), as explained with equation (b).

**Table 2**
MSEM sibling models on occupational status across subsequent life-course stages.

| | Occupational status First job | | Occupational status Age 25 | | Occupational status Age 30 | | Occupational status Age 35 | | Occupational status Age 40 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M1 | M2 | M1 | M2 | M1 | M2 | M1 | M2 | M1 | M2 |
| *Intercept* (occ. status) | 40.247** | 39.881** | 40.909** | 40.502** | 46.834** | 45.751** | 47.710** | 45.965** | 47.048** | 45.366** |
| | (0.280) | (0.258) | (0.404) | (0.370) | (0.544) | (0.460) | (0.712) | (0.611) | (0.912) | (0.794) |
| *Intercept* (education) | | 0.008 | | 0.048 | | 0.054 | | 0.059 | | 0.020 |
| | | (0.028) | | (0.039) | | (0.051) | | (0.062) | | (0.076) |
| *Individual level* | | | | | | | | | | |
| Education | | 1.944** | | 1.842** | | 2.903** | | 3.242** | | 3.358** |
| | | (0.107) | | (0.155) | | (0.185) | | (0.226) | | (0.394) |
| Female | 2.668** | 1.743** | 4.172** | 2.947** | 2.197** | 0.991* | 1.673* | 0.839 | 0.693 | 0.645 |
| | (0.241) | (0.223) | (0.347) | (0.322) | (0.492) | (0.395) | (0.653) | (0.506) | (0.826) | (0.624) |
| Birth position | −0.778** | −0.336** | −0.734** | −0.222 | −1.272** | −0.418 | −1.388** | −0.235 | −1.100* | −0.065 |
| | (0.133) | (0.128) | (0.195) | (0.179) | (0.255) | (0.239) | (0.345) | (0.328) | (0.456) | (0.429) |
| *Family level* | | | | | | | | | | |
| Education | | 2.900** | | 2.968** | | 4.484** | | 4.493** | | 4.376** |
| | | (0.119) | | (0.169) | | (0.164) | | (0.212) | | (0.297) |
| VAR(e(ij)) | 147.445** | 135.082** | 144.038** | 132.915** | 159.633** | 128.300** | 176.287** | 133.597** | 175.520** | 134.890** |
| | (3.279) | (2.847) | (4.657) | (4.129) | (7.115) | (5.213) | (9.680) | (6.519) | (13.088) | (9.321) |
| VAR(u(0j)) | 34.577** | 8.473** | 41.004** | 11.783** | 104.068** | 14.594** | 93.951** | 10.599 | 91.969** | 12.215 |
| | (3.120) | (2.301) | (4.719) | (3.498) | (7.894) | (4.437) | (10.569) | (5.425) | (14.394) | (8.404) |
| ICC ($\rho$) | 0.190 | 0.059 | 0.222 | 0.081 | 0.395 | 0.102 | 0.348 | 0.074 | 0.344 | 0.083 |
| **Sample** | | | | | | | | | | |
| N individuals | 12,443 | 12,443 | 6,167 | 6,167 | 4,031 | 4,031 | 2,573 | 2,573 | 1,594 | 1,594 |
| N families | 7,766 | 7,766 | 4,169 | 4,169 | 2,887 | 2,887 | 1,960 | 1,960 | 1,266 | 1,266 |

*Notes:* Unstandardized results of MSEM sibling models, with *p < .05; **p < .01. Standard errors between brackets. Note that we model our outcome $Y_{ij}$ as the occupational status for child *i* of family *j*. This outcome is explained by the sum of the family component that is common to all siblings in family *j* ($u_{0j}$) and the individual component ($e_{ij}$).

**Table 3**
Overall measure of family effects – direct and indirect – across the life-course (from career entry to mid-life).

| | Occupational status First job | Occupational status Age 25 | Occupational status Age 30 | Occupational status Age 35 | Occupational status Age 40 |
|---|---|---|---|---|---|
| *Total intra-family correlation* | 0.190 | 0.222 | 0.395 | 0.348 | 0.344 |
| *Direct intra-family correlation* | 0.059 | 0.081 | 0.102 | 0.074 | 0.083 |
| *Indirect intra-family correlation* | 0.131 | 0.141 | 0.293 | 0.274 | 0.261 |

*Notes:* Results from sibling models divided into the overall measure of family effects – direct and indirect – calculated via model 1 and 2 as specified in Table 2. Intra-family correlation is calculated, with ICC ($\rho$) = $\sigma^2_{u0}$ / ($\sigma^2_{u0}$ + $\sigma_e^2$). Indirect intra-class correlation is calculated as the *total* minus the *direct* intra-class correlation.

years, with the intra-family correlation at the age of 30 being 0.102. It seems to decrease thereafter, but not regularly. Overall, the results do not provide a conclusive picture about the development of the direct family impact on occupational success over the life course. The effect does increase after the child's first occupation, this trend turns at the ages 30 and 35, but occupations again become somewhat more related to the child's family background at later life-stages (ICC = 0.083 at age 40). Overall, as both the overall direct impact as the variations with age are small, the direct impact mainly shows a stable pattern, which is also confirmed when we look at corresponding Confidence Intervals as taken from the estimated models (see Fig. 1). Neither *hypotheses 1a* nor *hypotheses 1b* is therefore supported by our findings.

#### 4.1.3. Indirect family effect

The influence of family background on occupation seems to run primarily indirectly, via the child's education. The indirect intra-family correlation shows an increasing trend across individuals' lives (Table 3, Fig. 1). This increase reaches its peak later in the child's career, with the indirect influence of family background on occupational status being strongest around age 30 (ICC = 0.293). As the arguments underlying *hypothesis 2b* state that the indirect family impact is strongest at career-entry, the hypothesis cannot be supported based on our findings. In contrast, *hypothesis 2a* is partly confirmed. However, it should be noted that the increasing indirect effect stabilizes when individuals' reach the age of 35-40 (ICC ~ 0.26).

### 4.2. Exploratory results

To give more insight to the findings on the overall – measured and unmeasured – impact of family effects on occupational status, traditional family characteristics, including the father's and mother's socio-economic status, sibling size, and migration, are evaluated as predictors. This is displayed in Table 4, which shows the results for Model 3, which includes the *measured* family characteristics, and Model 4, which includes the full model with all predictors on the individual and family level as well as the mediation via the child's education. As before, the analyses are repeated and compared across the several subsequent life-course stages.

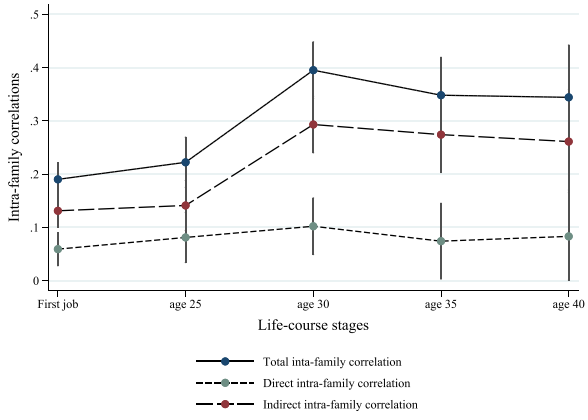


**Fig. 1.** Total, direct and indirect ICC across the life course.

From Model 3 can be concluded that fathers' occupational status, mothers' occupational status and sibling-size significantly relate to the child's occupation across all life-course stages, whereas migration background only at age 40 has an influence. After educational attainment is included as a mediator in Model 4, the role of these family characteristics on occupational status is divided into a *direct* effect controlled for education and an *indirect* effect that runs via education. The results show that, when the individual's education is taken into account, the direct effect of parents' occupational status and sib-size becomes insignificant across later life-stages. The direct positive effect of fathers' occupational success remains significant at the child's first occupation ($B = 0.057$, $p < .01$), while becoming insignificant for ages 30–40. In addition, the direct positive effect of mother' occupational status is significant up to age 35 ($B = 0.058$, $p < .01$), but it's effect size remains approximately the same until age 40 of the child. The direct negative effect of sibling-size ($B = -0.422$, $p < .01$) is largest at age 25, and not significant thereafter. Overall, the findings indicate that the impact of measured family background aspects on child occupation primarily runs through the child's education, which fits with our earlier findings on the direct and indirect intra-family correlations (ICCs). Some life-course variations are shown with respect to the indirect effects of these family characteristics. For instance, the indirect effect of father's occupational status increases between individuals' labor market entry ($B = 0.112$, $p < .01$) and age 40 ($B = 0.258$, $p < .01$). A similar pattern is visible for mother's occupational status. Migration background has a significant negative indirect effect across all life-stages, with this effect also increasing between first job ($B = -1.052$, $p < .01$) and the age of 40 ($B = -1.695$, $p < .01$).

These exploratory analyses enable us to assess *what percentage* of our broad measure of family effects on occupational status can be explained by the traditional measures of family influence. This is examined by determining the proportion of explained variance at the family-level of Model 3. Our study shows that the explained percentage increases over the course of individuals' lives. The *measured* family characteristics account for 52.3 percent of the total family-variance in occupational status at the child's labor market entry. With regards to occupational status at age 25 and 30, the explained family-variance is somewhat higher to that for the child's first occupation ($R^2 = 0.559$ and $R^2 = 0.540$). At the subsequent life-course stages, the proportion explained family-variance increases, with measured family characteristics explaining respectively 59.8 percent at age 35 and 58.8 percent at age 40. This growth partly originates form the effects of parental occupational status and migration background being stronger at later life-stages. In addition, other *unmeasured* family aspects related to the child's occupational status may be at play at earlier career-stages, while the influence of those aspects decreases in importance as individuals advance in their career. The values are slightly higher compared to findings in the existing literature, which showed that traditional family indicators account for approximately half of the overall family impact in status attainment (Schnitzlein, 2014; Sieben et al., 2001; Warren et al., 2002).

### 4.3. Robustness checks

Various robustness tests have been performed. To begin, analyses were replicated for a sample not including households in which the

**Table 4**
MSEM sibling models – effect *measurable* family characteristics on occupational status (from career-entry to midlife).

| | Occupational status First job | | Occupational status Age 25 | | Occupational status Age 30 | | Occupational status Age 35 | | Occupational status Age 40 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | M4 | M3 | M4 | M3 | M4 | M3 | M4 | M3 | M4 |
| *Intercept* (occ. status) | 30.137** | 36.265** | 29.451** | 35.579** | 27.320** | 41.413** | 26.724** | 41.413** | 26.946** | 41.150** |
| *Intercept* (education) | | −2.572** | | −2.761** | | −3.628** | | −3.884** | | −3.986** |
| *Individual level* | | | | | | | | | | |
| Education | | 1.992** | | 1.940** | | 2.981** | | 3.297** | | 3.511** |
| Female | 2.543** | 1.769** | 3.862** | 2.966** | 1.966** | 1.059** | 1.370* | 0.820 | 0.469 | 0.570 |
| Birth position | −0.386** | −0.192 | −0.237 | 0.022 | −0.752** | −0.167 | −0.707 | −0.070 | −0.607 | 0.007 |
| *Family level* | | | | | | | | | | |
| Education | | 2.393** | | 2.241** | | 4.042** | | 3.963** | | 3.822** |
| Father status | 0.170** | 0.057** | 0.184** | 0.075** | 0.293** | 0.044 | 0.310** | 0.051 | 0.329** | 0.067 |
| Mother status | 0.104** | 0.037** | 0.128** | 0.056** | 0.213** | 0.057** | 0.221** | 0.058* | 0.183** | 0.035 |
| Sib-size | −0.618** | −0.243** | −0.778** | −0.422** | −0.922** | −0.230 | −0.549* | −0.013 | −0.234 | 0.081 |
| Migration back. | −0.542 | 0.559 | −0.293 | 0.835 | −0.553 | 1.182* | −1.590 | −0.257 | −2.298* | −0.557 |
| *Effect on mediator(edu)* | | | | | | | | | | |
| Father status | | 0.047** | | 0.049** | | 0.061** | | 0.064** | | 0.067** |
| Mother status | | 0.030** | | 0.033** | | 0.040** | | 0.042** | | 0.041** |
| Sib-size | | −0.168** | | −0.168** | | −0.182** | | −0.148** | | −0.095 |
| Migration back. | | −0.440** | | −0.518** | | −0.433** | | −0.337* | | −0.444* |
| *Indirect effect via edu* | | | | | | | | | | |
| Father status | | 0.112** | | 0.110** | | 0.248** | | 0.255** | | 0.258** |
| Mother status | | 0.071** | | 0.074** | | 0.161** | | 0.168** | | 0.156** |
| Sib-size | | −0.401** | | −0.376** | | −0.736** | | −0.585** | | −0.362 |
| Migration back. | | −1.052** | | −1.160** | | −1.750** | | −1.336** | | −1.695* |
| VAR(e(ij)) | 149.560** | 135.794** | 146.824** | 133.697** | 163.347** | 129.334** | 178.620** | 134.199** | 181.260** | 136.815** |
| | (3.273) | (2.860) | (4.681) | (4.110) | (7.014) | (5.246) | (8.833) | (6.619) | (12.474) | (9.377) |
| VAR(u(0j)) | 16.495** | 7.219** | 18.103** | 9.777** | 47.822** | 13.147** | 37.754** | 9.368 | 38.789** | 10.190 |
| | (2.748) | (2.249) | (4.260) | (3.349) | (7.136) | (4.327) | (8.366) | (5.467) | (11.877) | (7.876) |
| $R^2$ family level | 0.523 | | 0.559 | | 0.540 | | 0.598 | | 0.578 | |
| **Sample** | | | | | | | | | | |
| N individuals | 12,443 | 12,443 | 6,167 | 6,167 | 4,031 | 4,031 | 2,573 | 2,573 | 1,594 | 1,594 |
| N families | 7,766 | 7,766 | 4,169 | 4,169 | 2,887 | 2,887 | 1,960 | 1,960 | 1,266 | 1,266 |

*Notes:* Unstandardized results of MSEM sibling models, with *p < .05; **p < .01. Standard errors between brackets for residual variances at each level. To increase readability of the table, we display no standard errors for the coefficients.

**Table 5**
Comparisons of the total ICC across life-stages.

| | ICC total | S.E. | C.I. 5th percentile | C.I. 95th percentile |
|---|---|---|---|---|
| First job | 0.190 | 0.016 | 0.159 | 0.221 |
| Age 25 | 0.222 | 0.024 | 0.175 | 0.269 |
| Age 30 | 0.395 | 0.027 | 0.342 | 0.448 |
| Age 35 | 0.348 | 0.036 | 0.277 | 0.419 |
| Age 40 | 0.344 | 0.050 | 0.246 | 0.442 |

*Notes* * The ICC and its S.E. are computed from the model-estimated parameters (Mplus), with ICC ($\rho$) = $\sigma^2_{u0}$ / ($\sigma^2_{u0}$ + $\sigma_e^2$).

parents live in the GRD before 1990, with the results being robust to this sample selection (Table A1 in the Supplementary materials). In addition, we performed gender-specific analyses. These showed that both males and females encounter an increase in the overall impact of family and community effects after career-entry. However, this trend turns between ages 35 and 40 for females, while for males, the overall family impact remains stable and even increases somewhat after the age 35 (Figure A1 in the Supplementary materials).[9] We also replicated our models including cohort dummies, with the results not changing considerably after this inclusion (Table A2 in the Supplementary materials). The results are thus robust to trends in occupational status. Moreover, two checks were performed to investigate how the decreasing sample size across life-course stages influences the results. First, to check whether life-course changes in family-impact emerge due to cohort differences, the analyses have been replicated using a sample solely including cases for which occupational information is available on all life-stages (N = 1169 individuals). Second, the MSEM sibling models have been replicated using the full sample (N = 12,443 individuals), with missing values on the dependent variables being corrected using Full Maximum Likelihood (FIML). Both options lead to slightly different results compared to our main findings, but the increasing trend in total and indirect (and to a lesser extend direct) family impact up to ages 30–35 remains visible (Table A3 and A4 in the Supplementary materials). The small (and insignificant) decrease in the intra-family correlations after this life-stage is also robust to these sample selections.

## 5. Conclusion and discussion

In this paper, we examined whether the influence of the family on occupational status fluctuates when studying different points across individuals' lives. Two arguments are discussed, namely from *resource* and *signaling* theories. They provide opposing hypotheses on direct and indirect family effects. Whereas resource theories hypothesize increasing family effects across the life-course, signaling theories propose decreasing family effects. By studying sibling similarities in occupational status across several ages, we were able to examine whether the overall impact of family environment effects – direct and indirect – increases or decreases over the life-course.

Our findings show that the *direct* family impact on occupational success slightly increases between career-entry and age 30, while irregularly declining thereafter. This indicates that early differences in family resources might influence career success beyond labor market entry, but that this association becomes less important at later career-stages. This direct path comprises a small share of the total family-level variation in occupation and the changes between life-course stages are rather small. Neither the resource nor the signaling theory can therefore be confirmed without caution (DiPrete & Eirich, 2006; Weiss, 1995). The relationship between family origin and occupation primarily runs *indirectly* via education. This indirect effect increases from career-entry up to the occupation at age 35, stabilizing thereafter. Signaling theories explicitly hypothesize that families' indirect impact is largest when entering the labor market, as employers do not yet have other productivity signals to select upon next to education (Ferrer, 2005). In contrast, our findings on the indirect family impact indicate that human capital returns partly arrive at later career stages, making later occupations more strongly related to family background. Only after the child's position on the labor market stabilizes, employers seemingly start selecting on other productivity signals. This implicates that the signaling theory has not been supported based on our findings, while the resource theory has been partly supported.

In relation to our research question, we can conclude that the total impact of our broad measure of – direct and indirect – family effects in status attainment is not restricted to early career stages, but only starts declining after individuals have been active on the labor market for a while (with this decrease not being statistically significant). This hints that social origin affects individual career success beyond labor market entry, increasing the impact of early differences in family resources across individuals' lives (DiPrete & Eirich, 2006). It is likely that *resource* and *signaling* mechanisms are both at play. Individuals with more parental resources continue to profit from those in terms of occupation as they get to later life-stages, with this effect mainly running via the child's education (Bourdieu, 1984; Dannefer, 2003). Nevertheless, the profit in occupational success turns after the child's position on the labor market stabilizes. After that, family resources stabilize in importance, and employers increasingly select on more direct signals, such as worker productivity or employment records, which are – at least partly – unrelated to the family of origin (Ferrer, 2005; Weiss, 1995).

As the analyses do not directly test the two proposed theoretical mechanisms, alternative explanations should be considered. First, the *stabilizing and slightly decreasing role* of the family after the ages 30–35 can also be interpreted as the result of neighborhood and sibling peer effects playing a smaller role at later life-stages (as was previously suggested, see Section 2.4). Moreover, the stabilization can be interpreted as ceiling effects. This would comply with career mobility studies, which suggested that a state of *occupational maturity* is reached around this age (Barone & Schizzerotto, 2011; Hillmert, 2011). The decreasing effect of family background is then not due to changes in the signaling strategy of employers, but due to the immobility in occupational status when one's position on the labor market stabilizes. Second, there are also alternative explanations for the *increasing trend* found in families' impact. Earlier occupations may be less related to the family background than later occupations because young adults often start their career in temporary jobs, still experimenting with their job interests (Mayer, 2009). In addition, the increase could be due to *counter-mobility*, meaning that individuals, in particular those from high status families, do not start at the position of their parents, but enter the labor market via lower status positions (Allmendinger, 1989). Those from a higher social origin are, nevertheless, more likely to experience upward mobility over the life-course. Finally, the German *vocational system* should be considered when interpreting the findings. It is characterized by strong schooling inequalities and promotes the labor market value of educational credentials. This may explain why our findings indicate that families' influence runs almost entirely via education.

A few additional findings are noteworthy to discuss. The impact of our broad measure of family and community effects in occupational status seems to increase after career-entry, being highest when individuals have been active on the labor market for some years. At this peak, 39.5 percent of the variance in occupational status is at the family level, which is rather low compared to earlier findings, which suggested it to be ~50 percent (Schnitzlein, 2014). As studies on sibling

[9] The gender-specific analyses are calculated on same-sex sibling dyads. This strategy could underlie the somewhat counter-intuitive gender-findings. Our main analyses show that family impact decreases after age 30. Yet, in the gender specific analyses, brother-brother dyads and sister-sister dyads become more similar in occupational status over the life-course, with this trend turning only after age 35 for sister-sister dyads. The small decrease in family impact we found between ages 30 and 35 in our main results is probably driven by the decreasing similarity in occupational status for brother-sister dyads between those life-stages.

correlations mostly used data from earlier time-periods (Hauser et al., 1999; Sieben et al., 2001), this might indicate that intra-family correlations decrease over time, with the advantages or disadvantages related to family background declining in importance. While these results could also be due to our relatively young sample-population, our results do not indicate that the intra-family correlations will increase at an older age. A second additional finding is that the proportion family-level variance explained by traditional measures seems to increase over the life-course. This may indicate that the effect of *measured* family characteristics grows across life-stages. In addition, the effect of other *unmeasured* (family) factors explaining the resemblance between sibling might become less strong across the life-course. For instance, siblings often grow up in similar surroundings, but generally move away later in life. Our results seem most in line with this second explanation.

We end with some limitations. First, our measure of status at first occupation is taken from the first time-point at which ISEI-information is available for each respondent. This is based on the assumption that status information is only gathered for respondents that have entered the labor market. This makes the interpretation of the effects more difficult, since information might also be gathered for people that combine schooling and part-time employment during their transition to the labor market. Future studies would benefit from using a stricter indicator for status at career-entry, directly measuring individuals' first full employment. In doing so, the possibility that variations in family impact derive from the transition between education and employment can be considered more carefully.

Second, even though the German Socioeconomic Panel (SOEP) is one of the longest running panels to date, our data do not cover information on the complete life-course. A remaining question is therefore whether families' impact changes after the age of 45, when people reach a state of occupational maturity, or when individuals grow closer to retirement. This objective could be studied in future works. For instance, it might be that personal traits, such as productivity and health, become more important as people get older.

Third, we excluded those who have no information available on occupational status (ISEI) at a specific life stage. Among those excluded are therefore also those who are unemployed and those who are out of the labor force. Individuals who left the labor force for a short period of time are likely to still be included in our sample. If information was available on respondents' occupational status the prior or the following year, we used that ISEI-score instead. Still, our samples could be selective in that we automatically exclude those who leave for longer periods. The likelihood to leave the labor force also depends on family influences, but it is unclear whether this dependency is stronger or weaker than that of occupational status. Investigating this requires a different outcome variable, for example income. Such analyses could also increase our understanding of the gender differences we observe after age 30, the age at which many women temporarily leave the labor market to give birth to children. Our results suggest that the occupational status of women who are in the labor market after this crucial period is less affected by their family of origin than that of men of similar age.

For future research, our study stimulates scholars to examine similar research questions using different data sets in order to reflect on our findings and compare them to different contexts. In doing so, future works may have the opportunity to follow family effects on occupational status beyond the ages 40−45. An additional check on the family impact at age 45 suggested that the slight decrease we found in family impact between ages 30–40 may continue, leading to a considerably lower family impact at age 45 (total ICC = 0.242). However, as the sample for age 45 is small (N = 996) and prone to selectivity, more research is needed to add any confidence to these conclusions. In addition, future research could direct more attention at the inter-relationships in occupational status *between* life-stages. Even though our findings indicate that occupational inequalities temporarily increase after career-entry, the family impact at later career-stages could still primarily run via the child's first occupation (Hillmert, 2011). It could therefore be fruitful to investigate whether status differences weaken or enhance across the life-course when respondents' prior occupations are taken into account. In addition, future studies could investigate to what extent the ages considered in this study represent different life-course stages that individuals' encounter as regards personal growth, experiences, or family planning. This paper has taken a specific theoretical viewing point, as argumentation on life-course variation in family impact is solely directed at one dimension, namely the child' professional career. One could also focus on other characteristics that are specific to these ages.

To conclude, since families' impact on occupational success does not seem to be restricted to the child's career-entry, our findings indicate that early differences in family resources could lead to accumulating advantages or disadvantages on the labor market. The stratification literature should therefore not solely focus on status transfers at first occupation. As recent studies have indicated that family resources are becoming more unequally distributed within western populations (Dannefer, 2003; Schnitzlein, 2014), social inequalities might consistently be reinforced over the course of individuals' lives.

## Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.rssm.2021.100643.

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