The Department of Sociology Working Paper Series | no 35

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ISSN 2002-7729 | Department of Sociology

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Abstract: Intergenerational transmission of socio-economic standing, SES is widespread. This is often measured as education, occupation, and income. We analyze how these dimensions contribute to intergenerational mobility, both independently as well as in their overlap, and add wealth as a fourth dimension. We use Swedish administrative registers, which contain unusually rich measures of these SES dimensions over individual's lives for both parents' and children's generations. We calculate sibling correlations to get the total effect of family background and then decompose by SES dimension and their overlaps. We find that: (1) the four dimensions of SES can explain up to 50 percent of the family background effect; (2) most of the SES effect for all children's outcomes except wealth, belongs to the overlap of parent's education, occupation and income; (3) over and above parent's education, occupation and income, wealth adds another 5 percentage points of explanation for children's education, occupation, and income, which is on a par with the largest of the net contributions of parent's education, occupation, and income; (4) in a comparison of relative contributions, parents' wealth underlies 15-20 percent of the total SES effect for children's education, occupation and income, 35 percent for children's income and 80 percent for children's wealth; (5) wealth moderates intergenerational reproduction in other dimensions: The wealthiest have higher rates of reproduction in children's occupation, income, and wealth. We conclude that wealth is an important but also a unique dimension of social stratification.

Keywords: Wealth, SES, intergenerational, intergenerational transmission, education, occupation, income

Introduction

Individuals life chances are to a large extent structured by their parents' socio-economic standing, SES. SES refers to a position within a hierarchical social structure, and is often measured by education, occupation, and income. These dimensions are different indicators of social standing, which would be imperfect as single measures of the totality of SES, and because SES inequality is not necessarily unidimensional, each resource might reflect different types of intergenerational transfer(s). Transfers in education is often understood as involving skills and ability, transfers in occupation to involve professional skills, social contacts, and status, while income involve transfer of monetary resources.[1]

Recent years have witnessed a surge of interest into wealth as a further dimension of social inequality and social mobility (Spilerman 2000; Killewald, Pfeffer and Schachner 2017). This interests stems from that wealth is a distinct resource that taps permanent and more polarized forms of inequality, either if this is unspent income (Modigliani 1988) or resources passed on from previous generations (Kotlikoff and Summers 1981). Recent evidence are in favor of the latter perspective, and suggest that wealth positions are persistent across generations in both the U.S. (Pfeffer and Killewald 2016) and Sweden (Adermon, Lindahl and Waldenström 2015), two context that are otherwise markedly different in their economic and welfare state configurations.

However, the role of wealth for intergenerational transmission processes in other outcome dimensions is less documented. In their analysis of status attainment Blau and Duncan (1967, p. 191) argued that that the measurement dimensions of SES were not crucial to the overall intergenerational transfer, even though the importance of different factors depends on specification. This is because all the standard dimensions of SES, that is education, occupation and income, are very highly correlated (Lazarsfeld 1939). Education,

[1] Perhaps needless to say: measurement of these factor does not identify the underlying mechanisms.

occupation and income all have in common that they are dimensions of labor market careers, i.e., where education determines the entry position, occupation gauges the overall rank in that system, and income summarizes the economic returns. However, wealth is different because there is not necessarily a strong link to labor markets, largely because wealth arises by bequests and inter vivo transfer across generations (Adermon, Lindahl and Waldenström 2015; Boserup, Kopczuk and Kreiner 2018), or generally as returns on investments (of prior wealth). Adding wealth to the attainment model would thus potentially reveal new forms of inequality, not just change the balance between the existing ones. Most studies on wealth influences in intergenerational research on other dimensions than wealth itself is focused on discovery, i.e. to document any wealth effect net of other SES dimensions (Rumberger 1983; Conley 2001; Hällsten and Pfeffer 2017), but has mainly disregarded if wealth adds new unique variance to explain the outcome, or how the wealth association overlaps with other SES dimensions.

Our paper fills this gap. We analyze how the wealth of parents, together with their education, occupation, and income, explain the outcomes of children in the same dimensions. We also asses if wealth causes inertia in in other dimensions, as if the wealthy are more able to reproduce their levels of education, occupational standing, or income across generations. We use contemporary Swedish register data that allow precise measurement of these concepts in both generations. For intergenerational studies, Sweden is together with other Scandinavian countries a conservative test case since intergenerational dependencies in labor market outcomes tend to be lower than in most other countries (Björklund et al. 2002; Corak 2013). Education may be an exception since some estimates suggests that Sweden is rather closer to the middle of the distribution of intergenerational correlations (Hertz et al. 2007; Pfeffer 2008).

The dimensionality of SES

The work on intergenerational transmission of SES is voluminous. The definition of SES has varied across studies and over time, causing large difficulties in summarizing the key findings in the field (Jaeger 2007). In principle, one can contrast two approaches: the univariate and the composite approach (Bollen, Glanville and Stecklov 2001). In the univariate approach, SES is seen as capturing an underlying one-dimensional factor, but is often measured by different indicators. An important foundation of this perspective is the early finding of Lazarsfeld (1939) that different indicators of SES could be used interchangeably; they produced essentially the same outcomes. Studies that give primacy to a certain factor, such as social class (e.g, Erikson and Goldthorpe 1992), do also in part belong to this univariate view. The composite approach is instead linked to the status attainment tradition (Blau and Duncan 1967). In the original Blau and Duncan model, SES was measured as education and occupation. In the Wisconsin model (Sewell, Haller and Portes 1969), income was added, among other things. One classical finding from this model is that father's occupational status is more associated with son's occupational status, and father's earnings with son's earnings, than associations across the dimensions (Hauser 1972; Hauser, Tsai and Sewell 1983). Findings like this suggest that SES is not reducible to a one-dimensional measure.

Current literature has begun to decompose SES into dimensions, by analyzing the separate contributions of education, occupation and income. In a literature review of the usage of SES indicators in health and fertility studies Bollen, Glanville and Stecklov (2001) find that a composite perspective on SES is clearly dominant both in terms of conceptual treatment and by including multiple measures of SES. These results echo the previous finding Durkin et al. (1994) that multiple measures of SES are essential in establishing the importance of SES on health outcomes.

Whether there are independent effects of SES dimensions with mutual controls varies across studies. Not all studies include all the three standard dimensions of education, occupation and income. Bukodi and Goldthorpe (2013) and Bukodi, Erikson and Goldthorpe (2014) find independent effects of occupation (measured as social class) and education, but do not consider income. Among those that include all dimensions, some studies show evidence of independent effects of all three dimensions (Jaeger 2007; Torssander and Erikson 2009; Erikson 2016; Thaning 2018), while others find that at least some of the SES factors has no substantial independent effects, most often income (Andrade 2016; Erola, Jalonen and Lehti 2016; Hällsten and Pfeffer 2017), but also education (Mood 2017). Of course, this depends on the outcome dimension and these studies are very heterogeneous in that regard, ranging from health to the standard SES dimensions.

Another strand of the literature focuses on the occupational dimension in separating the effects of nominal social class from continuous social status, among other things, following Weber's original distinction (Chan and Goldthorpe 2007).[2] Some studies find independent effects with mutual controls (Bukodi and Goldthorpe 2013; Bukodi, Erikson and Goldthorpe 2014; Erikson 2016), although other studies provide more mixed results. For example, Torssander and Erikson (2009) found that class has independent effects on mortality only for men and social status has an independent effect only for women.

Other parts of the literature has taken up the idea of resource specificity as previously documented by Hauser (1972) and Hauser, Tsai and Sewell (1983). For contemporary Sweden, Thaning (2018) compares parents education, occupation and income as explanations of children's outcomes in the same dimensions and finds that intergenerational transmissions

[2] It should be noted, however, that class and status are derived from the same underlying source, i.e., occupational categories of finer detail (e.g., ISCO-88). They are in essence different scaling of the same data, which makes it hard to disentangle their independent effects (Bihagen and Lambert 2018). In principle, the use of the direct source information, such as micro-classes (Weeden and Grusky 2005) or some optimized scaling (Hällsten and Pfeffer 2017), breaks down the class and status distinction. Yet, the findings of e.g., Chan and Goldthorpe (2007) has very high face validity.

are strongest in the same dimension of SES, i.e., that parents' educational advantage primarily fosters educational advantage, and the same for occupation and income. Hence, one can expect that resource specificity will be prominent in the reproduction of inequality over the various dimensions of SES.

Some literature also make a divide between the cultural and economic dimensions of SES — generally between the clusters of education/occupation vs. income/wealth. SES in these two axes tend to structure different hierarchies of power distribution (Weber 1946), as well as patterns of cultural consumption and different forms of lifestyles (Bourdieu 1984). According to this line of reasoning, the cultural axis is more related to accomplishment in high status culture, the economic axis is more focused on monetary success. Piketty (2018) has also shown that educational and economic elites tend to adapt different political preferences over time. Furthermore, children's choices of different types of education (and thus career paths) corroborate the contrast between these two axis pf parents' SES (Hällsten and Thaning 2018). Overall, this could reflect a difference in sets of norms, conventions, lifestyles, and values between the two axes. Finally, there is a literature that focuses on other aspects of parents than SES. For example, Björklund, Lindahl and Lindquist (2010) add parental involvement in schoolwork, parenting practices and maternal attitudes to a sibling models and finds that this brings the explanatory power up from one-quarter with SES only to nearly two-thirds. For the purposes of this paper, parental practices is beyond the scope, not least due to the inherent problems of measuring these dimensions.

Overlaps in SES dimensions

Another question is the degree of overlap between dimensions. Education is typically a precondition for an occupational career and in turn income rewards. At the same time, many highly educated may work in high status jobs but get low pay, and some may not work at all.

This suggest that the overlap is far from perfect. The looser the relation between the SES dimensions, the more would the separate dimensions add independently of each other. However, most studies rarely discuss the overlap. Furthermore, it is hard to compare across studies that do address overlaps since there is no standardized methodology for its calculation. Two recent studies however target the overlap more directly. Erola, Jalonen and Lehti (2016) find that income, education, and class overlap to a very large extent in explaining children's occupational attainment. As they argue, this gives some leeway for using SES measures interchangeably (Lazarsfeld 1939). Erola et al (2016, Table A1) find that the overlapping dimensions of all three dimensions (education, occupation, income) together with the commonality of education and occupation are the most important overlaps when considering fathers' SES. For mothers, the overlap of the three is the most important. Mood (2017) conducts a similar type of analysis, but for children's earnings. She too finds that most of the explained variance in children's earnings are found in the overlap of covariates, especially in the same nexus of education, occupation and income (Mood 2017: Table 5). We will address the degree of overlap with our methodology, which we discuss further below.

In sum, the limited previous studies on this topic suggest that it is the whole nexus of education, occupation and income that explains most of the variance in children's earnings. We will expand the focus beyond just education, occupation, and income by adding wealth as a fourth dimension of SES.

Wealth and SES

The current literature on SES dimensionality is clearly characterized by the absence of a focus on wealth. The most intuitive role of wealth is that is taps monetary resources; it allows for purchasing goods and services. However, wealth can also involve intergenerational transfers in cultural and cognitive terms. Pfeffer (2010) and (Pfeffer and Hällsten 2012) discuss the

insurance function of wealth, and Hällsten and Pfeffer (2017) discuss the normative functions of wealth (see also Spilerman 2000; Spilerman and Wolff 2012).

There is a growing empirical literature on wealth and its role in intergenerational processes, claiming that wealth matters over and above the other SES dimensions. There is ample evidence that wealth in prior generations are associated with children's educational outcomes (Conley 2001; Orr 2003; Morgan and Kim 2006; Belley and Lochner 2007; Pfeffer 2011; Torche and Costa-Ribeiro 2012; Hällsten and Pfeffer 2017). The effects on later parts of individual's careers are less studied, however. Rumberger (1983) shows an independent association of parental wealth with children's earnings, and wealth. Pfeffer (2011) and Pfeffer and Hällsten (2012) find independent associations for parental wealth on children's education, and occupation. Mood (2017) shows an independent association of parental wealth for children's earnings. Using z-score transformations for both earnings and wealth, Mood states that the parental wealth association is half of the parental earnings association. Pfeffer and Hällsten (2017) show an independent wealth association for children's earnings and also monthly wages.

For wealth itself, recent studies has shown two and three generation wealth persistence in the US (Pfeffer and Killewald 2017), whereas research from Sweden by Adermon, Lindahl and Waldenström (2015) shows that the persistence of wealth is limited to two generations. An important finding, however, is that children's wealth is to the largest degree explained by parental wealth, and not explained by other SES dimensions. Recent evidence from Denmark suggest that most of young individuals wealth is the result of transfers from parents (Boserup, Kopczuk and Kreiner 2018).

Bringing wealth into the discussion on decomposition of SES is also important since very much of family background effects, i.e., as captured by sibling correlations, are unobserved, which of course differ over outcomes. For example, Erola, Jalonen and Lehti

(2016) show that parents' education, occupation and income explain around 50 % of the sibling correlation in children's occupational status in Finland, but Andrade (2016) finds that education, occupation and income explains only 20 % of sibling similarities in income in Denmark.

Finally, wealth is also potentially a strong moderator of intergenerational transmissions in other dimensions. Wealth signifies elite status, and elites typically employ extraordinary effort to maintain their privilege over time. Economies are constantly changing and poorly invested wealth holdings may be lost in a generation. It is likely that top wealth holders will strive for inertia, which might involve activation of non-monetary mechanisms such as pushing investment in skills and asserting normative pressure to increase ambitions etc. Some research shows that the very wealthy are successful in maintaining their social advantage also in other outcomes such as income (Björklund, Roine and Waldenström 2012), or school grades, cognitive ability, years of education and occupational prestige (Hällsten 2014), or wealth itself (Pfeffer and Killewald 2016).

Materials and methods

We use Swedish register data and define cohorts born in 1930 to 1939 as the parental generation. We match these to their children using the multigenerational register based on medical birth records (Statistics Sweden 2010) and require that there are at least two children above age 35 in our last year of data in 2012 (i.e., cohorts born <1973). The mean age of children in 2012 is 50, with a range between 36 and 67, thus born between 1945 and 1976. We have strived to measure each SES dimension as exactly as possible in order to not confound their contribution. This is important since measurement error in one dimension is likely to exaggerate the role of other SES factor, since they are highly correlated (Kelley 1973).

We measure education from the 1985 census and onwards, which means that parents must be alive to their 46th up until 55th birthday, depending on birth year. We measure the highest attained level of education of both parents and children, and code this to year of education equivalents. For parents, we also supplement this with a measure of expected earnings for very detailed degrees (Hällsten 2010) so that we measure education in two dimensions. This measure will capture variations related to field of study, which has important implications in the Swedish context (Hällsten 2013). Consequently, we will be able to (rightfully) allocate variance belonging to parental education that else would have been caught by occupation or income.

Occupation is measured from two sources of data: the centennial and quintennial censuses 1960-1990 and the occupation registers 1985. The former contains self-reports, whereas the latter is built on employer reports of occupation. We code these to Treiman's prestige scores (SIOPS) (Treiman 1977) using standard conversion tools (e.g., Ganzeboom and Treiman 1996), and take the highest observed score across the career. In a landmark reference, Hauser and Warren (1997) argue against using prestige to represent occupation and instead suggest to use occupational education (an average measure of education by occupation) as this appear to have the largest significance, not least for intergenerational transfers. However, their analysis was entirely focused on how to scale occupation and therefore failed to consider competing SES factors. Hällsten (2018) shows that occupational education to a larger degree than other measures captures the influence of parents' education (and thus the intergenerational transfer of education). With controls for other dimensions of parents' SES, the scale that stand out to have the strongest intergenerational component is indeed occupational prestige. Moreover, since our aim is to capture as much variation related to occupations as possible, we also include EGP social class (Erikson and Goldthorpe 1992) coded from the same sources, separately for mother and fathers.

For income, we use disposable income, i.e., with government transfers and after tax deductions. Our income data stretches back to 1968, which means that we can observe something close to life-time income for parents. For children, their earnings will typically be mid to the late career, but some studies suggest this is fairly representative of permanent income (Böhlmark and Lindquist 2006). [3]

For wealth, we use the wealth register that existed from 1999 until 2007 when the Swedish wealth tax was abolished. The register is based on tax data that is essentially self-reported but subject to legal responsibility (and possible prosecution for tax fraud). However, the Swedish tax authority did not necessarily collect detailed information on wealth if the person was not holding wealth above a certain threshold. For this reason, the data between 1999 and 2007 is augmented with information that is independently collected data from banks and estate registers without censoring. All types of estate are rated at their market value (rather than some nominal tax value). Utilizing the wealth register however means that the oldest parent must be alive to at least their 69th birthday. For parents, we compute the average of net worth in the available years (1999-2007) to reduce measurement error. For children, we use the average of wealth in 1999-2007 as the outcome.[4]

We combine the information on mothers and fathers into a measure of parents' SES by taking averages or by using separate father and mother measures (i.e., we do not use the ad hoc dominance strategy of taking the highest value across parents). We follow the procedure of Thaning and Hällsten (2018), where different operationalizations of SES is evaluated against their capacity to explain benchmark sibling correlations in order to find the most

[3] We have also used (pre-government) labor earnings as an alternative measure. In permanent form, i.e., taking averages across all observed years in ages 18-65, this is highly correlated with permanent disposable income (around .9). The substantive results are very similar, but not identical, with this measure.

[4] A limitation is that parent's wealth and children's wealth is measured simultaneously. We have used an alternative measure based on tax data from 1981 to 1989 (i.e., mid-life wealth for parents). In this period, around 45 % of households report a net worth above zero each year. By using an average of wealth in these years we get very similar results as those displayed in below.

optimal operationalization of parents' SES. For education and occupation, taking averages was as good as mother and father specific measures. For income, we also took averages. For wealth, separate mother and father specific measures provided the strongest measure.

The scale of SES is another important consideration. Our preferred specification measures SES in relative ranks using the cumulative distribution function (except for EGP, which is categorical and specified with dummies). Previous research has shown that the rank specification is a more adequate functional form since intergenerational transfers appear more linear in ranks than in other transforms (Chetty et al. 2014). The rank transform also minimizes attenuation and life-cycle biases (Nybom and Stuhler 2017), and account for varying distributions between generations. Moreover, the extreme skew of wealth is problematic for most standard transforms, while the rank transform appears to be the most suitable metric (Killewald, Pfeffer and Schachner 2017). For sensitivity analyses, we also measure SES in standard metrics, i.e. as years of education, prestige scores, log income and the inverse-hyperbolic sine, IHS, of wealth (as opposed to the log transform, the IHS can accommodate zeroes and negative values, Johnson 1949). We estimate all models for mixed siblings (both brothers and sisters). Such correlations tend to be somewhat smaller than, in turn, brother correlations and sister correlations, since gender imposes some homogeneity. We however control for gender in all models.

Methods

In order to estimate the impact of various dimensions of SES on intergenerational transfers, we use sibling correlations as a benchmark. Sibling correlations provide an omnibus measure of the impact of family (and neighborhood) background on children's outcomes. There is a rich literature on sibling correlations in earnings in the US (see Solon 1999, section 3) but also in Scandinavian countries (e.g., Björklund et al. 2002). There are many studies of sibling

correlations in education(see Sieben, Huinink and de Graaf 2001; Björklund and Jäntti 2012), and a smaller literature on occupational measures (e.g., Hauser, Sheridan and Warren 1999; Conley and Glauber 2005). For wealth, the literature is very small, with some notable contributions (e.g., Conley and Glauber 2005; Wiborg and Hansen 2018). There is of course also a much larger intergenerational literature of parent-child correlations that document sizable transfers across generations with different magnitudes for all dimensions (but which captures only smaller portions of family background).

With sibling correlations as a benchmark, we then asses to what extent observed SES of parents can explain this sibling correlation. Empirically, we use a multilevel regression model where sibling *i* is clustered to family *j*, with family and individual level errors (u and e respectively): [5]

(1) $Y_{ij} = \beta_0 + \boldsymbol{\beta X_{ij}} + u_j + e_{ij}$,

where $\boldsymbol{X_{ij}}$ defines the vector of independent variables. The sibling correlation is the relative share of the family variance to overall error variance (also known as the intra-class correlation, ICC):

(2) $\rho = \frac{\sigma_u^2}{\sigma_u^2 + \sigma_e^2}$,

The sibling correlation shows the total family effect, which allows us to decompose the variation further. In the baseline model, where we estimate the overall sibling correlation, we use only standard controls for gender as well as birth year, and include no SES measures. Our

[5] All singletons are dropped in the analysis, since they do not contribute to the estimation of the intraclass correlation. Solon et al. (1991) suggest that including singletons, which may sometimes be used to better estimate the family variance component, carries the risk of introducing outlier biases. We also base our estimation on mixed siblings since sex-specific models strongly reduces the sample. However, our experience is that the overall transmission patterns do not depend on sibship gender (Thaning 2018).

aim then is to estimate how various SES dimensions explain the sibling correlation. The most straightforward way to do this is to add SES dimensions into $\boldsymbol{X_{ij}}$ in (1), and record the reduction of the sibling correlations (Mazumder 2008). This is the gross contribution of the given SES in explaining the total family effect. However, since SES dimensions are highly correlated we use a jack-knife technique to isolate their unique contributions. First, we use all measures of SES in what we call a full model and estimate the sibling correlation, we then remove the factor of interest and measure how the sibling correlation increases (i.e., via the difference in its variance component: $\Delta\sigma_u^2 = \sigma_{u,jack-knife}^2 - \sigma_{u,full}^2$). This increase is the unique portion that the SES dimension of interest adds. We convert this to percent of the baseline sibling correlation, which we denote the net contribution. We proceed by doing this for each dimension in turn. Importantly, this contribution cannot stem from any other dimension of SES that is already controlled, which allows us to answer to what extent wealth, and other SES dimensions, explain a unique amount of the variance in the process. It should be noted that the parts of SES that overlap and thus is truly shared over dimensions will not be attributed to any of the dimensions; the net contributions do not add up to 100 %. We therefore also makes some further decompositions with combinations of SES dimensions, e.g., the total impact of education and occupation, or any other combination.[6] In this way we can get a complete decomposition: all the net components (including the overlaps) will sum up to the sibling correlation, and all the net components that involve e.g., education will sum to the gross contribution of education.

Results

[6] When we decompose by overlapping dimensions, we cannot use the jack-knife procedure straight off. For example, the joint contribution of education and occupation must be taken net of the individual contributions of education and occupation. For any higher level factor (e.g., education, occupation, income), all lower order terms must be netted out (e.g., [education, occupation], [education, income], [occupation, income], as well as the individual dimensions education, occupation, income). We conduct these decomposition by running models with all combinations of parents' SES.

Table 2 displays the bivariate correlations for children's and parent's resources. Examining the rank scale correlations we find that the associations between children's resources vary quite dramatically. Education and occupation display high correlations (.59) and occupation relative income is also substantial (.38) together with income and wealth (.30). However, the relationship between children's education and the economic resources (income and wealth) are negligible (less than or equal to .15), as is the association between occupation and wealth (.17).

The correlations among parent's resources are higher. We find that the correlation between parental education and occupation as well as income is between .6 and .7. The association between parental occupation relative income also shows about the same strength. The paternal wealth correlation vis-à-vis education, occupation, and income ranges from .2 to .3. The corresponding maternal wealth associations are somewhat higher, around .3. Mother's and father's wealth display quite a substantial similarity of .39. Correlations in standard metrics show the same patterns, but with slightly weaker associations. By and large, this suggest that even though the SES dimensions go in the same direction; this is far from an unidimensional model. [7]

Table 3 and 4 presents results of our analysis in in rank scale. We find small differences across the rank and standard metrics except for wealth, where the ranks transform makes for a better representation (i.e., stronger explanatory power).

Children's education

[7] Whether SES transmission is truly unidimensional can also be tested within a structural equation (SEM) framework by letting the SES dimensions for parents and child be defined by their respective latent variable (plus an error), and then estimating the correlation between the latent variables. We have attempted such a model, but our analyses clearly show that such a parsimonious model does not fit the data. To achieve some reasonable fit requires that a number of covariance terms between measurement across generations are added, not least those that represent resources specificity (e.g., Parents' education <-> Children's education), but also many other terms.

The unadjusted sibling correlation, or gross sibling similarity, in children's education is about .38. This means that 38 percent of individuals' variation in education is explained by family background, regardless if we observe such factors or not. The estimate is very close to estimates reported elsewhere for comparable cohorts (Björklund and Jäntti 2012).
When all observable factors of families are accounted for, the sibling correlation decreases to about .23, which suggests that we are able to explain about 40 percent of the total family effect. The "Add" column displays the estimated sibling correlation when we control for each of the SES dimensions separately. Controlling for parent's education gives us a sibling correlation of .265. The difference between the unadjusted sibling correlation and the "Add" estimate is the gross contribution of any dimension to the total family effect. This is given in the gross column (.376 – .265 ≈ .112). Dividing the gross estimate with the unadjusted sibling correlation (and multiplying by 100) then corresponds to the gross percentage contribution for each dimension, which for education is 29.7 percent. The gross contribution is, however, of lesser interest to us since parts of it can be due to other omitted SES dimensions.

As a contrast, the jackknife column shows the sibling correlation estimates for a full model minus the given dimension, for education this is .246. We use this to arrive at the unique contribution of each dimension, which we denote the net contribution. We take the difference between the jackknife estimate and the full model (which includes the dimension that is missing in the jackknife estimate) given in the adjusted column (.246 – .266 ≈ .02). Accordingly, this is shown in the net column, which then is divided by the unadjusted estimate (and multiplied by 100) to get the relative net contribution expressed in percent. The net contribution of parental education in explaining children's education then is 5.4 percent.

When we compare the net contributions in explaining children's education, we find that parental education gives the highest unique contribution. Interestingly, the second highest is parent's wealth contributing with 4.9 percent. The reduction attributed to parental income

alone is virtually nonexistent, while occupation explains 2.3 percent. However, it is evident that the sum of the net contributions is far from the total contributions of SES, which was roughly 40 percent. This is because a lot of the remaining contributing components are in the overlaps between various SES dimensions. We thus further decompose the sibling correlation by estimating overlapping components. The strongest overlap by far is the one produced by parental education, occupation, and income, which explains 9.3 percent of the total family effect. We can give a substantive interpretation to these findings: this is the part of parents' education, which is utilized in the labor market through an occupation, which also gives an income, i.e. it is not surprising that this is the most important overlap. In contrast, the net contribution of education, i.e., without overlaps, is what stems from education that is not traded for any occupational career or income, and the net contribution of occupation is those attainments that influence children's education and have arisen without the help of parent's education.

The second most important overlap is between parental education and occupation, resulting in a 7.5 percent contribution. This is followed by the fourth order overlap, i.e. between all four dimensions, which explains 5.2 percent of the family effect in children's education.[8] The other two and three way intersections are all quite unimportant for children's education.

Comparing the gross contributions with the net contributions, there is clearly a vast discrepancy. For example, a considerable amount of the overlapping dimensions show gross explanatory contributions of over 30 percent, but unique explanatory power of roughly 1 percent or lower.

Children's occupation

[8] Note that the sum of all net-estimates are equal to the difference between the unadjusted and the adjusted sibling correlations.

For children's occupational attainment, displayed in the lower panel of Table 3, we find that the unadjusted correlation is .279. Few if any have examined sibling correlations in occupational prestige in Sweden, but Conley and Glauber (2005) report a considerably higher estimate for the US. Social mobility is thus much higher in occupational prestige than in years of education. The full model returns a sibling correlation of .144, which suggests that we can account for about 48 percent of the variation with observed SES. Examining the unique net contributions, the most important dimensions in explaining children's occupation are parental occupation (4.1 percent), on par with the influence of parental wealth (4 percent), while education also matter substantially (3.2 percent). Wealth again explains a considerable amount of unique variance in children's occupation. However, the overlaps show the largest contributions: the three order intersection between education, occupation, and income is yet again the single most important dimension, explaining 13.7 percent of the total family effect. The intersection between education and occupation explains 7.8 percent and the overlap of all of the dimensions roughly corresponds to 6.6 percent.

Children's income

For children's income, displayed in table 4, the unadjusted sibling correlation is about .2, which is much lower than for education and occupation. Few previous studies has assessed disposable income and instead focused on labor earnings, but our estimate is on a par with such estimates for mixed siblings (Björklund and Jäntti 2012). The fully adjusted correlation is .14, which means that we can explain only 30 percent of the total family effect, which is less than for children's occupation and education. This is estimate is not far from previous results that exclude wealth as parent's SES (Björklund, Lindahl and Lindquist 2010), Income is, in other words, more influenced by factors outside the family of origin than the other outcomes, but also more affected by unobserved factors in the family. The most important net

contribution of a single dimension is that of parental wealth (5.6 percent), which is on a par with the influence of parents' income (5.4 percent). The second order overlap between wealth and income matter to some extent (2.9 percent), although the influence of the intersection between occupation and income is stronger (3.4 percent). For the third order overlaps, we find that the education, occupation, and income intersection shows a considerable contribution of 5.2 percent. The overlap between all of the dimensions brings about a 4.9 percent reduction in the sibling income correlation.

In sum, we see rather clear differences compared to children's education and occupation: not surprisingly, income itself, and overlaps that include income, are more central here, whereas income played a more marginal role for children's education and occupation other than through overlaps. Wealth is also a central dimension. The results suggest a divide between purely economic factors and those that involve human and cultural capital.

Children's wealth

Finally, we have come to children's wealth, also displayed in table 4. We find that the sibling correlations are quite high, about .34. This suggests much lower mobility than for income, and on a par with education. This estimate is higher than the (highest) one found by Wiborg and Hansen (2018), despite that data are for similar cohorts, but they assess wealth at younger ages and also examine a different wealth measure (gross wealth).[9] The estimate is also higher than the one reported by Conley and Glauber (2005) for the US, also by different measurement and methodology. The adjusted correlations are .21, which means that our SES measures can explain 37 percent of the variance in wealth. Parental wealth clearly matter the most for children's wealth attainment, with a net contribution as high as 25 percent. Of the other singular dimensions, neither parents' education nor income show any substantial

[9] Our measure for gross wealth yields a sibling correlation very close in magnitude, but that is slightly stronger, and thus even more distant to Wiborg and Hansen's estimate.

influences, although parental occupation contributes with 2.2 percent. Perhaps somewhat surprisingly, the overlap between occupation and wealth contributes in explaining children's wealth with 5 percent. The other second order intersection that matter, although less so, is income/wealth, which is associated with reductions of about 2 percent. Finally, the overlap between all dimensions corresponds to a 2.4 percent contribution, which is the lowest compared to the contribution of this component for other outcomes. Children's wealth is thus mainly explained by parental wealth, with little influence of other dimensions.

In summary, our results suggest a pattern where children's education has a similar intergenerational process as children's occupational status, which in turn is different to transmission of inequality in income and wealth. Although income and wealth has some similarities, wealth is clearly the most disparate case. Considering the unique contributions, wealth serves as an essential direct transfer for each outcome; being the most or second most important contributor of the net influences of the four singular resources. Finally, the most important intersection for children's education, occupation, and income is precisely the overlap between parental education, occupation, and income. However, this overlap literarily does not contribute at all in explaining children's wealth attainment. Hence, the results suggest that wealth is a special kind of SES dimension: it is a resource that largely predicts its own intergenerational process and is not influenced by factors that are essential for the other SES dimensions. Nevertheless, it do spill over and structure transmission in other outcome dimensions.

The relative importance of SES

One limitation of the decomposition into net components is that the large degree of overlaps provides little information on the relative composite importance of different SES dimensions. One way to address this is to conduct a so called Shapley or LMG decomposition (Shapley

1953; Lindeman, Merenda and Gold 1980; Mood 2017). The idea here is to add the factor of interest as a control and examine how much of the total family effect it explains. In order for this to be net of other dimensions, we run models with all combinations of the other SES resources, and examine the average contribution. [10] These averages are directly comparable as they are controlled or adjusted in the same way. We normalize these to sum to 100 % and display their relative percentages in Table 5. We display this both for the preferred rank scaling and for standard metrics. The effect of functional form is again nicely summarized here: wealth is poorly operationalized with the IHS function, and explain more in rank form. In general, we find strong evidence of resource-specific transfers, i.e. where children's education is best explained by parents' education, children's occupation by parents' occupation, and so on. The decomposition replays the distinction between education/occupation and income/wealth clusters. What is striking, however, is that parental wealth contributes some 1/5 to education and occupation, 1/3 to income and more than 4/5 to wealth itself. This reinforces the notion that wealth has important spillovers, even though it follow its own unique intergenerational transmission logic.

Moderation effects of SES

To examine moderating effects of each parental SES, we divide the dimensions into quantile groups (q_1 to q_5) and calculate the sibling correlation for each outcome. However, to account for homogeneity in (sub)samples (i.e. the quantile groups), which tend to push down sibling correlations (Solon 1989), we rescale each sibling correlation to maintain the corresponding

[10] For example, for education, we run X models where we add education to 7 models that contain, (1) occupation, (2) income, (3) wealth, (4) occupation and income, (5) occupation and wealth (6) income and wealth, and (7) occupation, income and wealth. The decomposition is using information already displayed in Table 3 and 4.

population level variance.[11] It is these adjusted sibling correlations that are shown in Figure 1. We also display sibling correlations without this modification in Figure A1.

For children's education, the sibling correlations over each quintile group for all parental dimensions are quite similar, generally clustered around 0.3 or 0.35. The exception is the top group, which display higher sibling similarities over all parents' SES. The correlation is here close to or above 0.4. In other words, being exceptionally advantaged in any of the parental dimensions increases intergenerational transfers of children's education, or alternatively, reduces social mobility in this dimension.

Sibling correlations in children's occupational attainment are generally more similar across the quantile groups. A difference here is that children coming from more advantaged families in terms of parental education, income, and occupation have the same sibling correlations as those of less advantaged parents. In contrast, the wealthiest parents in the top quintile group have much higher sibling correlations. Wealth thus stand out as factor that decreases occupational mobility.

For children's income and wealth, we find quite similar patterns in that high parental wealth decreases mobility, and that no other SES dimension have such a moderating effect. This is despite that the sibling correlations tend to go down over quantile groups.

In sum, belonging to the top quintile in parental wealth increases the sibling correlation for all children's outcomes, compared to the other quintile groups. However, for children's education all top quintile groups decrease mobility. Since low social mobility from advantaged positions means that privilege is reproduced across generations, having wealthy parents seem to reduce the risk of social demotion considerably. This is in line with ideas about parental wealth having non-monetary effects, e.g., acting as a form of insurance (Pfeffer and Hällsten 2012) or via norms (Hällsten and Pfeffer 2017).

[11] Hence, following the calculation: $\rho\ (adj)_{quantile} = \rho_{quantile} * [Var(Y)_{quantile}/Var(Y)]$.

Zooming in on top wealth holders

In Table 6, we conduct a further analysis of the top quantile in parents' wealth by decomposing it into three subgroups: the 80-95th percentiles, the 95-100th percentile and the 99-100th percentiles. For education, occupation and income, there is a tendency that the sibling correlations increase in the top, but this tendency is quite weak. The results displayed in Figure 1 for the top quantile are thus representative for these dimensions. For wealth, however, we find a strong gradient even within the top quantile group. The sibling correlation in the top quantile group is just .32, but for the lowest 15 percentiles in Q5, it is actually somewhat lower (.27). In the top 5 percentiles, on the other hand, it increases to .42 and in the top 1 percentile, it reaches extreme levels of social reproduction (.68). In, conclusion, top wealth decreases mobility in occupation and income (and education, but so did all SES dimensions), but for wealth itself, this influence is further concentrated to the top of the distribution.

Family size and civil status

Table A2 brings our attention to some characteristics of wealth mobility: to what extent it varies by family size, and civil status of parents. One could expect that since wealth transfers is mostly monetary (Adermon, Lindahl and Waldenström 2015; Boserup, Kopczuk and Kreiner 2018), as opposed to cultural or cognitive transfers, circumstances that affect transferable values should impact on the sibling correlation in wealth. One example is that having more siblings would mean lower transfers, since the cake is divided on more heads. This is indeed that case: the sibling correlations in wealth tend to go down somewhat with family size. This pattern does not exist for the other SES dimensions. One could also expect that if parents were separated, this can reduce sibling correlations in wealth simply because a

familial split is costly, and may also make non-kin compete for resources (e.g., half sibling in the new marriage, the new partner, or the new partner's own children). In sum, with separated parents, there may be fewer resources left for transfers. This expectation is also corroborated in Table A2. The sibling correlation in wealth for separated parents is lower than in other family types. The highest sibling correlation is observed for families where one parent is dead, i.e. where some wealth has already been bequeathed. One can observe some variation in sibling correlations in other outcome domains as well, i.e. a general tendency that separation is associated with lower levels of intergenerational transfer. An alternative explanation is thus that this is a select group: parents that eventually separate might have unobserved own characteristics that limits their ability to transfer SES to their children. Another explanation is that the event of separation limits the opportunities for SES transfer.

Discussions

We find that wealth is a disparate dimension of SES; not much alike education, occupation, or income. In intergenerational transfers, wealth shows a very distinct pattern in that children's wealth is strongly influenced by parent's wealth, but also that parental wealth shows a spillover influence in explaining children's education, occupation and income.

While most of the transfers in education, occupation, and income is explained by the overlap of parents' education, occupation, and income, this overlap explains merely nothing of children's wealth. Moreover, wealth moderates intergenerational transfers in other dimensions: the wealthiest also tend to have lower mobility (or higher reproduction) rates in occupation and income, as well as in wealth itself. Wealth is thus the most "sticky" of all the dimensions considered.

The main reason for this wealth disparity compared to other SES dimensions is, most likely, because of the looser connection to the labor market. While education, occupation, and

income (or at least the earnings part of income) constitute the very fabric of selection, sorting and reward processes of labor markets, wealth operates partly outside this process. Much wealth is transferred over generations through means of bequests and inter vivo transfers (Adermon, Lindahl and Waldenström 2015; Boserup, Kopczuk and Kreiner 2018), and without any form of acquired human capital. The other SES dimensions require physical transmissions conditioned on biological predispositions, processes of socialization, training of capacities, and cultivation of social networks etcetera.

Omitting wealth from studies of intergenerational transmission will miss an essential component of inequality. Our main results suggest that just the singular net influence of parental wealth on the conventional SES measures ranges from 4 to 6 percent, which is on par with the highest explanatory components for these outcomes. In a relative comparison, we find that parental wealth contributes to explaining children's education, occupation, and income between 18 to 35 percent. In fact, parental wealth actually do matter more than parental income for children's educational and occupational outcomes. Furthermore, parental wealth is more important for children's income than parental education and occupation. These are serious empirical arguments suggesting that wealth should be included in intergenerational inequality studies.

Concerning the other SES factors, we find that children's education and occupation are structured in similar ways, i.e. that parental income is a rather unimportant dimension and the overlap between parental occupation and education is central. However, income is both different and similar to occupation and education. First, as previously mentioned all the three dimensions are strongly related to the overlap between parental education, occupation, and income. Nevertheless, the dimensions differ in the sense that parental education and occupation in themselves are rather negligible for children's attainment in income. Instead the

economic dimensions of both wealth and income itself matter considerably more for children's income.

Following the results from the Shapley decomposition we also corroborate some prior results that suggests resource-specificity, i.e. that transfer in the same parental dimension as the child outcome matter most (Hauser 1972; Hauser, Tsai and Sewell 1983; Thaning 2018). This pattern is even stronger for the added wealth dimension, but also holds for education, occupation, and income.

In this paper, we have extended the study of wealth beyond the initial phase of merely discovering independent wealth influences on various outcomes. We have done this primarily by analyzing asymmetric transmission patterns over distributions, assessed SES overlaps in detail, but also by evaluating how wealth operates as wealth intergenerational resource among the conventional SES dimensions. By establishing wealth as a unique SES dimension, we thus continue the important work by Erola, Jalonen and Lehti (2016) and Mood (2017) in highlighting and decomposing the overlap between different SES dimensions. The quantification and finding, in the present study, that both wealth and overlaps play a fundamental role in intergenerational inequality adds to our understanding of the complexity of socioeconomic background.

In conclusion, we have corroborated previous literature in that wealth matters in the intergenerational transmission process, but have qualified that wealth also brings in new explained variance that plays a very special role in those processes. Wealth should be considered as integral to SES together with education, occupation and income; we might as well denote these as the "big four" of SES and intergenerational inequality.

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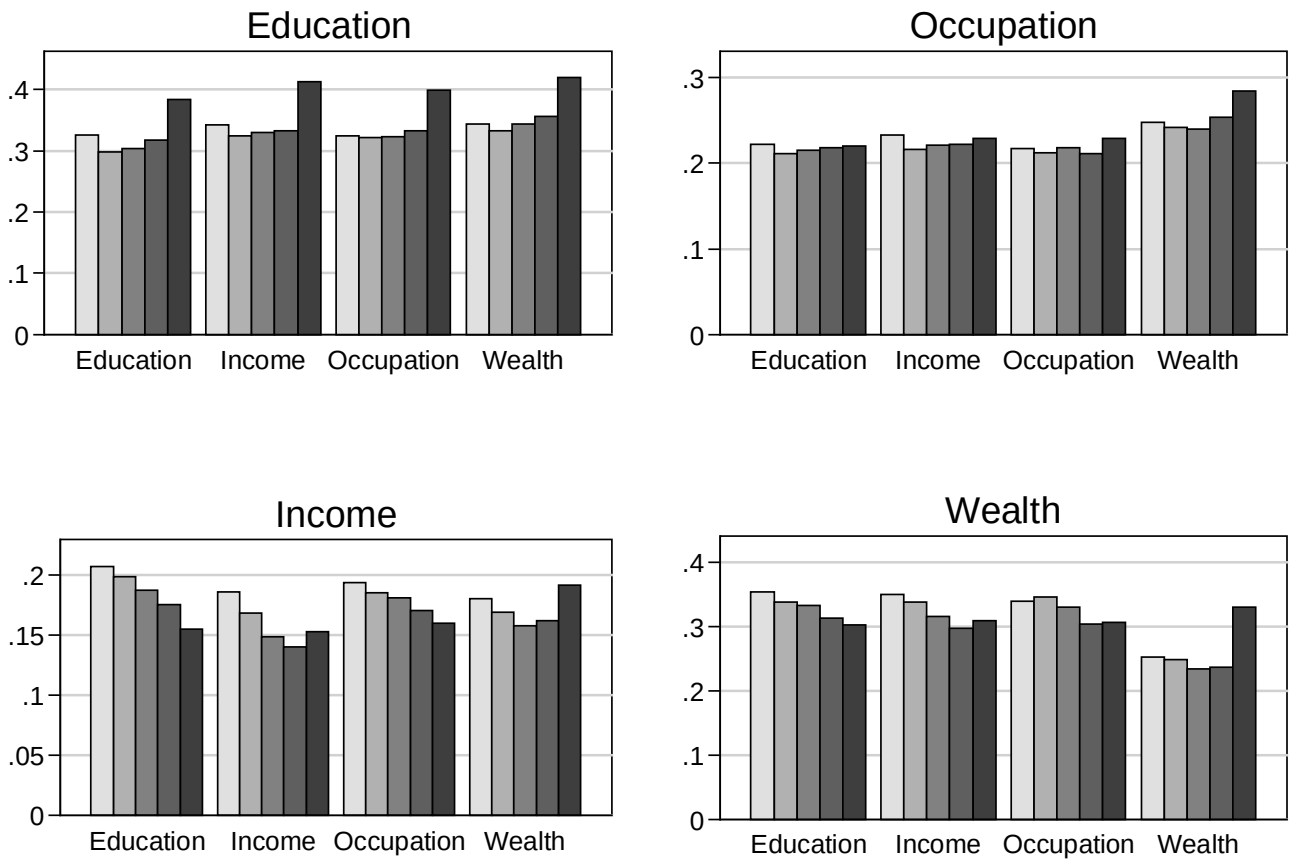

Figure 1. Moderation effects of SES.

Note: The bars represent the unadjusted sibling correlation in children's outcomes across quantile groups in parents' SES. The color describes quantile groups, from low (Q_1, light) to high (Q_5, dark). The estimates are calibrated to reflect population level variance in each quantile, i.e., $\rho(adj)_j = \rho_j[Var(Y)_j/Var(Y)]$.

Table 1. Descriptive statistics.

	Mean	(SD)	Min	Max	Count
Children's SES					
Years of education	12.36	(2.31)	6	19	561,038
Occupation (SIOPS)	49.41	(11.63)	13	78	561,038
Log income	4.89	(0.38)	-2.8	9.4	560,979
Wealth (IHS)	3.18	(5.28)	-11.2	13.2	552,857
Parents' SES					
Years of education	9.63	(3.05)	6	19	561,038
Occupation (SIOPS)	45.11	(9.81)	17	78	561,038
Log income	5.49	(0.31)	3	9	561,038
Father's wealth (IHS)	5.66	(3.85)	-12.5	13.9	561,038
Mother's wealth (IHS)	5.17	(3.68)	-10.1	13.6	561,038
Parents' education value	0.5	(0.29)	0	1	561,000
Father's class					
Unskilled manual	0.06				560,245
Skilled manual	0.20				560,245
Routine non-manual	0.07				560,245
Lower service	0.19				560,245
Upper service	0.24				560,245
Self-employed professionals	0.01				560,245
Entrepreneurs	0.15				560,245
Farmers	0.09				560,245
Mother's class					
Unskilled manual	0.31				561,038
Skilled manual	0.07				561,038
Routine non-manual	0.16				561,038
Lower service	0.17				561,038
Upper service	0.12				561,038
Self-employed professionals	0.00				561,038
Entrepreneurs	0.08				561,038
Farmers	0.05				561,038
Missing	0.04				561,038

Table 2. Correlations in SES for parents and children.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Rank scale										
	Children's									
(a)	Years of education	1.00								
(b)	Occupation (SIOPS)	0.59	1.00							
(c)	Income	0.15	0.38	1.00						
(d)	Wealth	0.13	0.17	0.30	1.00					
	Parents'									
(e)	Years of education	0.41	0.33	0.10	0.11	1.00				
(f)	Occupation	0.37	0.34	0.13	0.13	0.66	1.00			
(g)	Income	0.33	0.31	0.20	0.13	0.58	0.63	1.00		
(h)	Father's wealth	0.24	0.19	0.12	0.30	0.23	0.24	0.27	1.00	
(i)	Mother's wealth	0.26	0.22	0.14	0.32	0.29	0.30	0.33	0.39	1.00
Standard metric										
	Children's									
(a)	Years of education	1.00								
(b)	Occupation (SIOPS)	0.60	1.00							
(c)	Log income	0.16	0.37	1.00						
(d)	Wealth (IHS)	0.07	0.12	0.24	1.00					
	Parents'									
(e)	Years of education	0.42	0.35	0.09	0.07	1.00				
(f)	Occupation (SIOPS)	0.38	0.34	0.12	0.09	0.71	1.00			
(g)	Log income	0.32	0.31	0.20	0.09	0.58	0.62	1.00		
(h)	Father's wealth (IHS)	0.17	0.13	0.09	0.21	0.13	0.13	0.15	1.00	
(i)	Mother's wealth (IHS)	0.19	0.16	0.10	0.23	0.19	0.20	0.20	0.30	1.00

Table 3. Sibling correlations in children's education and occupation with different adjustments for parents' SES in rank scale.

	Sibling correlation		ΔSibling correlation						
Children's outcome	Unadjusted	Adjusted	Parental SES component	Add	Jack-knife	Gross	Gross %	Net	Net %
Education	0.376	0.226	Education	0.265	0.246	0.112	29.7	0.020	5.4
			Occupation	0.272	0.234	0.105	27.8	0.009	2.3
			Income	0.310	0.226	0.066	17.6	0.000	0.1
			Wealth	0.323	0.244	0.054	14.2	0.018	4.9
			Edu#Occ			0.130	34.5	0.028	7.5
			Edu#Inc			0.120	31.8	0.002	0.5
			Edu#Wlth			0.139	36.9	0.001	0.3
			Occ#Inc			0.111	29.5	0.003	0.7
			Occ#Wlth			0.128	34.0	0.004	1.1
			Inc#Wlth			0.093	24.8	0.002	0.6
			Edu#Occ#Inc			0.132	35.2	0.035	9.3
			Edu#Occ#Wlth			0.150	39.9	0.004	1.0
			Edu#Inc#Wlth			0.142	37.7	0.002	0.6
			Occ#Inc#Wlth			0.130	34.6	0.003	0.7
			Edu#Occ#Inc#Wlth			0.150	39.9	0.020	5.2
Occupation	0.279	0.144	Education	0.185	0.153	0.094	33.9	0.009	3.2
			Occupation	0.173	0.155	0.106	38.0	0.011	4.1
			Income	0.204	0.146	0.075	27.0	0.002	0.7
			Wealth	0.235	0.155	0.044	15.6	0.011	4.0
			Edu#Occ			0.119	42.7	0.022	7.8
			Edu#Inc			0.110	39.3	0.002	0.7
			Edu#Wlth			0.114	41.0	0.001	0.3
			Occ#Inc			0.114	41.0	0.007	2.6
			Occ#Wlth			0.122	43.8	0.003	1.1
			Inc#Wlth			0.093	33.4	0.003	1.0
			Edu#Occ#Inc			0.124	44.5	0.038	13.7
			Edu#Occ#Wlth			0.133	47.7	0.003	1.1
			Edu#Inc#Wlth			0.124	44.3	0.001	0.5
			Occ#Inc#Wlth			0.126	45.3	0.003	1.1
			Edu#Occ#Inc#Wlth			0.135	48.4	0.018	6.6

Note: See Table 1 for case counts.

Table 4. Sibling correlations in children's income and wealth with different adjustments for parents' SES in rank scale

	Sibling correlation		ΔSibling correlation						
Children's outcome	Unadjusted	Adjusted	Parental SES component	Add	Jack-knife	Gross	Gross %	Net	Net %
Income	0.199	0.139	Education	0.177	0.139	0.022	10.9	0.000	0.0
			Occupation	0.167	0.140	0.032	15.8	0.001	0.7
			Income	0.153	0.149	0.046	23.1	0.011	5.4
			Wealth	0.169	0.150	0.030	15.3	0.011	5.6
			Edu#Occ			0.033	16.4	0.000	0.1
			Edu#Inc			0.047	23.4	0.000	0.2
			Edu#Wlth			0.041	20.8	0.000	0.0
			Occ#Inc			0.049	24.7	0.007	3.4
			Occ#Wlth			0.049	24.7	0.001	0.6
			Inc#Wlth			0.059	29.5	0.006	2.9
			Edu#Occ#Inc			0.049	24.8	0.010	5.2
			Edu#Occ#Wlth			0.050	24.9	0.000	0.2
			Edu#Inc#Wlth			0.059	29.6	0.001	0.3
			Occ#Inc#Wlth			0.060	30.3	0.001	0.7
			Edu#Occ#Inc#Wlth			0.060	30.2	0.010	4.9
Wealth	0.337	0.213	Education	0.325	0.213	0.012	3.4	0.000	0.0
			Occupation	0.304	0.221	0.032	9.6	0.007	2.2
			Income	0.323	0.214	0.013	4.0	0.000	0.1
			Wealth	0.221	0.297	0.116	34.4	0.084	24.8
			Edu#Occ			0.034	10.1	0.000	0.0
			Edu#Inc			0.016	4.6	0.000	0.0
			Edu#Wlth			0.116	34.5	0.000	0.1
			Occ#Inc			0.039	11.7	0.000	-0.1
			Occ#Wlth			0.123	36.5	0.017	5.0
			Inc#Wlth			0.116	34.4	0.006	1.7
			Edu#Occ#Inc			0.040	11.9	0.000	0.0
			Edu#Occ#Wlth			0.123	36.6	0.002	0.5
			Edu#Inc#Wlth			0.116	34.5	0.001	0.3
			Occ#Inc#Wlth			0.123	36.6	-0.002	-0.5
			Edu#Occ#Inc#Wlth			0.124	36.8	0.008	2.4

Note: See Table 1 for case counts.

Table 5. The relative importance of SES components using Shapley/LMG decomposition.

	Parents…			
Children's…	Education	Occupation	Income	Wealth
Rank scale				
Education (years)	39.4	29.4	8.8	22.5
Occupation (SIOPS)	29.8	36.9	15.7	17.6
Income	4.6	16.2	44.0	35.1
Wealth	0.7	13.0	2.3	84.0
Standard metric				
Education (years)	46.7	29.3	9.1	14.8
Occupation (SIOPS)	34.8	38.2	15.5	11.5
Log income	5.1	17.0	58.4	19.5
Wealth	1.3	15.6	3.0	80.1

Table 6. Moderation effects of SES: sibling correlations in top quantile group.

	Sibling correlations [a]			
Children's…	Q_5 (P80-P100)	P80-P95	P95-P100	P99-P100
Education (years)	0.42	0.40	0.46	0.48
Occupation (SIOPS)	0.29	0.27	0.31	0.28
Income	0.19	0.16	0.22	0.26
Wealth	0.32	0.27	0.42	0.68

Note: The figures represent the unadjusted sibling correlation in children's outcomes across quantile and percentile groups in parents' SES. [a] The estimates are adjusted for differences in population variances in each quantile, i.e., $\rho(adj)_j = \rho_j[Var(Y)_j/Var(Y)]$.

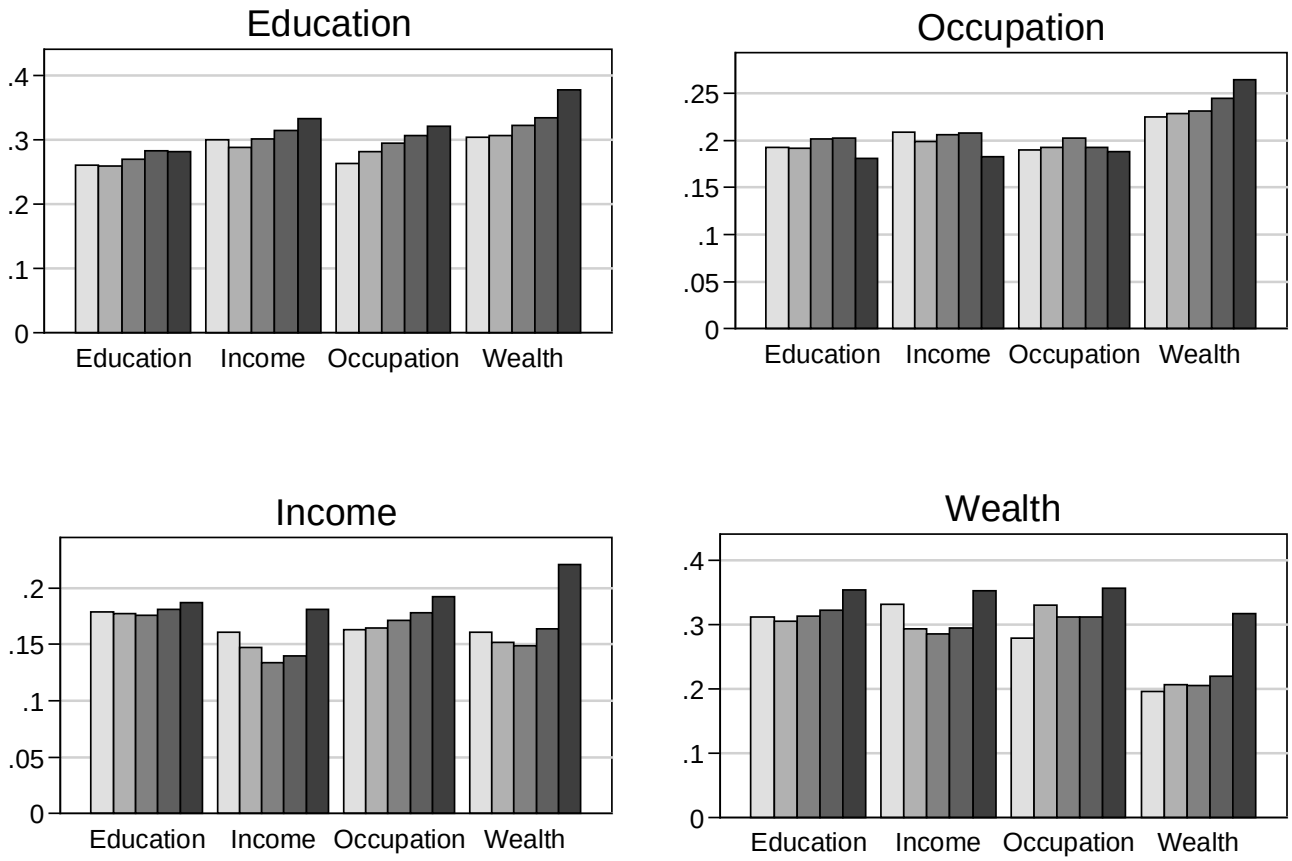

Figure A1. Moderation effects of SES without adjustment for variance differences across quantiles.
Note: The bars represent the unadjusted sibling correlation in children's outcomes across quantile groups in parents' SES. The color describes quantile groups, from low (Q_1, light) to high (Q_5, dark).

Table A1. Case selection.

No. cases after selection on…	No. Individuals
Parents cohort cut (mother born 1930-39)	953,245
Only biological parents	942,499
Any parent alive by 1999	921,786
Both parents alive by 1999	701,806
Parents SES missing	667,252
Drop singletons	589,423
Drop emigrated or dead children	585,951
Drop age below 35 in 20127	568,630
Drop singletons (reapplied)	561,044

Note: Any deviations from the last figure to the estimated model are due to further internal missing on outcomes.

Table A2. Moderation effects of SES: sibling correlations by family size and parents' civil status.

	Family size		
Children's…	2	3	4+
Education (years)	0.37	0.38	0.38
Occupation (SIOPS)	0.27	0.27	0.28
Income	0.19	0.19	0.20
Wealth	0.35	0.32	0.31

	Parents' civil status			
Children's…	Separated[a]	Separating[b]	Cohabiting/ married	One parent dead
Education (years)	0.34	0.39	0.38	0.37
Occupation (SIOPS)	0.27	0.26	0.28	0.29
Income	0.18	0.22	0.20	0.21
Wealth	0.29	0.33	0.34	0.35

Note: The figures represent the unadjusted sibling correlation in children's outcomes across quantile and percentile groups in parents' SES. The estimates are calibrated to reflect population level variance in each quantile, i.e., $\rho(adj)_j = \rho_j[Var(Y)_j/Var(Y)]$. [a] Separated refers to parental separation before measuring wealth, [b] Separating refers to changes during the period measurement of wealth in 1999-2007.

The Department of Sociology Working Paper Series

Stockholm University, 106 91 Stockholm, Sweden
www.su.se | info@su.se | ISSN 2002-7729

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