Intergenerational Persistence and Ethnic Disparities in Education

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Introduction

What should we make of the influence that children’s family of origin exerts on their educational achievement and attainment? And, how do we assess the educational success of children from immigrant minorities relative to children of ethnic majority origin? These two questions and the nexus between them form the motivating concern of this thesis.

The reproduction of social (dis)advantage from one generation to the next is a topic of longstanding sociological interest and intimately bound up with liberal ideals of equal opportunity. Parents with greater skills and resources are able to invest in their children in numerous ways, and countering this imbalance is a key objective for education policy in many countries. Since education is an important determinant of outcomes throughout the life course, inequalities that emerge at this stage will have major repercussions not only for equality of opportunity, but also for more instrumental objectives such as social cohesion or economic efficiency.

Similar concerns underlie the study of ethnic differentials in education. In Sweden and other countries, increased diversity following a period of sustained net immigration has brought new challenges to the study of educational disadvantage. The groups of most acute concern in the education system are not the same as they were thirty or forty years ago. Here, the picture is complex in that the story is not uniformly one of minority disadvantage, and conclusions might differ depending on the outcome studied or the strategy of analysis chosen. Our understanding is also hampered by the fact that we often have a remarkably poor grasp of the home conditions that these children come from.

In studying how educational trajectories differ by social background, a common approach has been to distinguish a number of discrete classes based on the occupation and employment status of parents in the household (Erikson 1984). This is not the only index of a family’s social standing imaginable; others include parents’ education, income, wealth, various con-
tinuous indices of occupational status, or composite measures drawing on these and other items such as home possessions. A popular if controversial measure has been the number of books in the home, and study II offers a critical examination of this proxy on conceptual and empirical grounds.

In principle, these various measures come with different bundles of resources that may assist children in different ways throughout the life course. In practice, such processes are hard to disentangle due to the fact that status measures are correlated both internally and with personal attributes of parents that remain unobserved. Consequently, it is often reasonable to treat them as manifestations of a common underlying dimension of advantage. The first half of the thesis takes this as a given and asks which such measures are most empirically reliable. study I makes a qualified case for relying on information about parents’ occupation, especially when children are surveyed. study II goes on to dissect the classical measurement model underlying most efforts to undo the impact of observational errors, in the context of the widely used books-at-home proxy for social background.

Further challenges arise when conventional status measures are brought to bear on immigrant populations, where they threaten to conceal as much as they reveal. These concerns are laid out in the second half of the thesis. Current occupation could be a weak indicator of class culture insofar as immigrants are likely to have suffered downward social mobility, or may be out of the labour force altogether. study III asks whether educational attainment can be relied on to provide more valid information about the class origins of minority parents. It distinguishes an absolute and relative dimension of education and estimates ethnic achievement gaps adjusting for each. The findings from this study are then followed up in theoretical

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1 Certain models also presuppose a given scale of measurement. Continuous measures are required by the influential path analytical approach pioneered by Duncan (1966, cf. Wright 1934) and by the research program on status attainment that grew from it (Blau and Duncan 1967, Sewell, Haller, and Portes 1969, Sewell and Hauser 1975, Jencks, Crouse, and Mueser 1983).

detail in study IV, which examines immigrants’ own perceptions of their standing in society.

COMPARATIVE EDUCATIONAL INEQUALITY

Within the Swedish context, early contributions to the study of social reproduction in education were made by Gunnar Boalt (1947). In his dissertation, Boalt studied how social selection played out at the transition between different stages in the schooling system, and found a lingering influence of social class background that diminished at higher transitions (cf. Mare 1980). Political interest in the issue fueled further investigations into this area, in the form of Härnqvist’s (1958) governmental report on the untapped ‘pool of talent’ (begåvningsreserven). In the United States, a commissioned report by James Coleman and associates (1966) became a classic in the field, together with works by Jencks and coauthors (1972, 1979). Similar motivations lay behind Erikson and Jonsson’s (1993) seminal investigation which later led to an influential book, Can Education Be Equalized? (1996a), and numerous other publications (Erikson and Jonsson 1994a, 1998, 2002, Jonsson and Erikson 2000, 2007).

One key interest of studies in this area is comparative: we want to know whether the strength of intergenerational persistence in education and other stratification outcomes is particularly pronounced in certain kinds of societies over others (Breen and Jonsson 2005). A presumption is that equalisation of living conditions and expanded opportunities for further education should cause the influence of social origin on education to diminish over time. This pattern has at times proven difficult to detect, to the extent that claims of little trend or variation have been recurrent (Shavit and Blossfeld 1993). A trend toward equalisation is, however, well documented for Sweden (Erikson and Jonsson 1996a, Rudolphi 2013) and has more recently been established for several other countries (Breen et al. 2009, 2010).

Still, it remains an issue of contention whether widening access to education represents a real change in the underlying transmission patterns or merely a shift to more subtle forms of stratification (Lucas 2001, Gerber and Cheung 2008). Hällsten (2011) documents an important ‘horizontal’ dimension of inequality within higher education in Sweden: students from underprivileged homes on average opt for programmes of shorter duration, less prestige, and lower return in the labour market (cf. Erikson and Jon-
sson 1994b). Only studying the progression to a given level of education then, could mask substantial heterogeneity within that level. In France, Ichou and Vallet (2011) show that equalisation of access to the *baccalauréat* appears to have been offset precisely by such horizontal stratification.

Seeking to contrast different stratification regimes, sociologists routinely estimate an equation where some measure of academic success is regressed on one or a set of proxies for the family’s socio-economic status (see *study i, ii, and iii*). If family background thus measured turns out to have greater predictive power in one context than in others, this is typically referred to with the blanket term ‘inequality of opportunity’ (e.g., Breen and Jonsson 2005). But the relationship between parameters estimated in intergenerational models and the political ideals that motivate them is hardly obvious. The moral status of intergenerational persistence depends less on its strength than on *why* children of academically successful parents tend to enjoy a higher probability of success (Swift 2004, Jencks and Tach 2006).

One crucial distinction noted already by Boalt (1947) is that between social differences generated by school performance on the one hand, and those generated by the inclination to remain in education conditional on previous performance, on the other. Following a terminology that Boudon (1974) popularised drawing on Girard and Bastide (1963), these respective processes are sometimes labelled ‘primary’ and ‘secondary’ effects of social origin (Erikson et al. 2005, Jackson 2013). The distinction is illuminating because partly different processes are likely to underlie each. In the Swedish context, it is estimated that close to two thirds of social class differences in educational careers are accounted for by differential school performance (Erikson and Rudolphi 2010). Given the power of achievement differences in generating educational inequalities, understanding their sources is of some importance.

**Origins of achievement differentials**

The Coleman report on *Equality of Educational Opportunity* famously concluded that “schools bring little influence to bear on a child’s achievement that is independent of his [sic] background and general social context” (Coleman et al. 1966: 325). The backdrop of this reasoning is that most variance in academic performance occurs within schools rather than between them; in Sweden at the turn of the millennium this figure was well
above 90%, although it has dropped slightly in the last decade (Erikson 1994, Östh, Andersson, and Malmberg 2013). While part of this within-school variability reflects purely idiosyncratic differences between students, or classroom-specific influences such as that of a particular teacher, much of it traces its origin to the family. The shared family background of Swedish siblings explains about 50% of the variance in school grades and this has been stable over time (Björklund, Lindahl, and Sund 2003).

The relatively low proportion of variability between schools does not by itself imply that they have little import in generating social inequalities. To make this argument, we must also assume that on average schools works to reduce, rather than magnify, social differences between students. At the time of Coleman’s writing this was not a given; see Bowles and Gintis (1976) for a dissenting view. By now, there is considerable evidence to substantiate this belief (Raudenbush and Eschmann 2015). The finding that achievement differences by social background emerge well before school entry suggests as much (Feinstein 2003, Bradbury et al. 2015). So, too, does the fact that social differences grow faster during summer holidays when children are not in school (Heyns 1978).

Traditionally, sociologists have been wont to attribute family resemblance to early childhood socialisation while acknowledging (often in passing) that parents also contribute to the genetic makeup of their children. One way to assess the weight of the social environment is to study the influence that adoptive parents have on children to which they are not biologically related (Björklund, Lindahl, and Plug 2006, Holmlund, Lindahl, and Plug 2011). Typically, associations between parental education and children’s outcomes shrink to about half their size when this is done. Another source of information is the correlation between biologically unrelated children reared together, reflecting the proportion of variance explained by all environmental factors that step-siblings share. Whereas the biological sibling correlation in IQ and school grades is around 0.50, estimates for

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3 For earlier applications of this approach, see Corcoran, Jencks, and Olneck (1976), Hauser and Mossel (1985), and, on Swedish data, Erikson (1987).

4 On the contrary, the amount of variability observed between schools might overstate their causal importance if students are not randomly allocated across them. Brännström (2008) reports that a limited number of individual-level covariates suffice to explain more than 70% of between-school variance in present-day Sweden.
non-related siblings tend to range between 0.25 and 0.35 (Bouchard 1996, Plomin and Spinath 2004).

These figures are lower than for biologically related family members, yet large enough to suggest that the environment matters. What does this influence consist of? That which first springs to mind is perhaps various forms of cognitive and verbal stimulation in the home (Hart and Risley 1995, Lareau 2003, Jæger and Breen 2016). Existing evidence of the relevant socialisation processes tends to be rather anecdotal, so this is an area that cries out for further research.

A separate type of explanation that has gained increasing prominence consists of aspects of ‘nurture’ that cannot readily be characterised as socialisation: childhood nutrition, experience of stressful life events, and exposure to various toxins fall in this category (Evans 2006, Evans and Kim 2013, Takeuchi et al. 2016). Recent research has attempted to locate such processes to the childbearing period, through maternal stress or inferior nutrient intake and its impact on foetal development. For example, Aizer and coauthors (2016) compare siblings exposed to different levels of cortisol (a stress hormone) while in utero and find differences in IQ, health, and attained education. It remains an open question whether biological-environmental factors such as these can account for a meaningful part of the intergenerational transmission of advantage.

The sociological investedness in environmental causation can be contrasted with findings from twin and other family studies in behavioural genetics. In its canonical form, this research calculates correlations in a trait separately for fraternal and genetically identical twin pairs. Assuming, among other things, no assortative mating and that the environments shared by one twin type is no more alike than that of the other, twice the difference between the two correlations is an estimate of the population

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5 As an aside, sibling correlations also include a number of influences not directly attributable to parents, including that which siblings exert on each other. The finding that siblings who are closer in age resemble each other more is suggestive of such influence but might also be the result of time-varying parental resources, exposure to more similar school settings, etc. (see Sundet, Eriksen, and Tambs 2008, and, for contrary evidence, Conley and Glauber 2008, Björklund, Hederos, and Jäntti 2010).

6 Other studies have examined effects of family deaths (e.g., Class et al. 2011) or natural disasters (e.g., Torche 2011), arguing that unborn children exposed to these events experienced inferior outcomes as a result of maternal stress.
variance accounted for by genetic likeness, also called heritability (Goldberger 1979). Reviews of this research have repeatedly claimed to find that family environment explains only a negligible part of important outcomes such as IQ in adult age (Turkheimer 2000, Polderman et al. 2015). How can these views be reconciled?

It is important to recognise that a larger environmental component is usually found when traits are measured at younger ages (Plomin et al. 1997, Bouchard 2013), for more specific competencies such as verbal fluency (Bouchard 1998, Nielsen 2006), and for complex social outcomes such as years of schooling (Branigan, McCallum, and Freese 2013). It is also possible to criticise these studies based on their assumptions. For example, if genetically identical twins are treated more similarly, heritability estimates will conceal a component of environmental origin. On the other hand, if assortative mating takes place – meaning, spouses overlap genetically more than the average random pair of individuals – the influence of genotype will be underestimated by this design.

Attempts to test these simplifying assumptions tend to find that the standard results are surprisingly robust (e.g., Björklund, Jäntti, and Solon 2005), so dismissing this research out of hand will not do. A more serious limitation of heritability estimates lies in their interpretation. Heritability being a purely descriptive concept, it is open to the standard concern of omitted explanatory factors. That is to say, heritability estimates include not only the direct influence of genes (if, indeed, such a thing exists), but also passive, evocative, and active gene–environment correlations. It is important to see that this is not a shortcoming of the empirical studies, but a caveat to their interpretation.

Sociologists could arguably do much more to untangle the complex web of causation at the interface of biological and social inheritance, and this is an area that is likely to see considerable development in the future (Freese 2008, Freese and Shostak 2009, Conley, Fletcher, and Dawes 2014, Conley 2016, Nielsen 2016). An often overlooked point is that while genes may be highly predictive for individual outcomes, they will explain a large fraction of inherited educational advantage only if the same genetic variants predict educational success across two or more generations. Yet the evidence uncovered by Flynn (1987, 2012) of historical gains in some cogn-

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7 For more detailed expositions of these problems, see Goldberger (1979), Jencks (1980), Bowles and Gintis (2002), Manski (2011), and Stenberg (2013).
nitive domains coupled with stagnation in others suggests that society demands different skills of each generation and molds them thereafter, which would lessen the role of genes in the intergenerational transmission of status.

Incidentally, Flynn’s discovery is also highly suggestive of the potency of long-term environmental exposure as a cause of group differences in intellectual achievement, by demonstrating the immense gains that some populations have experienced in recent history. Consider the remarkable fact that in the three decades between 1952 and 1982, Dutch cohorts gained $1\frac{1}{3}$ of a standard deviation on Raven’s Progressive Matrices, an intelligence test not unlike that used in Study I and III of this volume (Flynn 1987: 172). IQ is, by construction, a normally distributed trait so this would imply that the Dutch cohort of 1982 scored on average at the 90th percentile of the 1952 distribution. Dickens and Flynn (2001) present a model that reconciles an environmental explanation for these secular changes with high estimates of individual heritability.

**WHICH TRAITS DO SCHOOLS REWARD?**

While most human traits are passed on from parent to child to some degree, not all of them can be expected equally relevant for explaining stratification in education. A crucial question is therefore which specific attributes are rewarded by teachers and by the institutional structure of schooling. The types of abilities that are believed to be rewarded in school range from intelligence, through behavioural skills and traits, to the ability to master aspects of a highbrow or majority culture conducive to teacher approval.

Intelligence is often claimed to be the most important predictor of achievement and, indeed, IQ tests were first developed by Alfred Binet for the purpose of predicting academic success (Neisser et al. 1996). Despite an extensive and at times heated debate on the cohesion and utility of intelligence as a concept, there is little doubt that whatever it is that common IQ tests measure, it has substantive predictive power for a range of life outcomes (Jencks et al. 1979, Sternberg, Grigorenko, and Bundy 2001). A recent meta-analysis puts the average correlation with school grades at 0.54, corrected for sampling and measurement error (Roth et al. 2015). Arguments about causality aside, this dependence still leaves more than two
thirds \((1 - 0.54^2 = 0.71)\) of the variance unexplained, so it is clear that intelligence alone cannot explain how well a child will perform in school.\(^8\)

Skills that might explain the remainder are often grouped together under the slight misnomer ‘noncognitive’, but are perhaps better described as aspects of character or personality. Bowles and Gintis (1976) were early to argue that traits such as “agreeableness, extroversion, work orientation, emotionality, and helpfulness” would be relevant to consider in the social stratification process (p. 135, cf. Jencks et al. 1979). A relatively large literature has sprung up on this topic since (see Farkas 2003, Bowles, Gintis, and Groves 2006). In spite of some fervent advocates (Cunha et al. 2006, Heckman, Stixrud, and Urzua 2006), it is reasonable to say that for the most part, this literature has failed to deliver fully on its initial promise. Probably the main exception is conscientiousness – the disposition to plan ahead and exert sustained effort – associated with academic grades to an extent approaching that of intelligence in some studies (Poropat 2009).\(^9\)

Mood, Jonsson and Bihagen (2012) use one of the more complete measures of personality employed in any large-scale study to decompose the correlation between fathers’ years of schooling and that of their sons. Their inventory is from the Swedish military enlistment and draws on assessments by professional psychologists in four different dimensions: sociability, perseverance, engagement, and emotional stability. These character traits together account for about 5% of the father-to-son education correlation, to be compared with a corresponding 37% for cognitive ability in their analysis. There are some caveats here. Noncognitive traits are arguably harder to measure which could lead to underestimation.\(^10\)

Moreover, IQ is far from perfectly transmitted across generations. Bouchard and McGue (1981, in Bowles and Gintis 2002) report intergenerational correlations in the range 0.42 to 0.72, where the higher figure refers to estimates averaging over more than one parent or sibling. Björklund, Hederos, and Jäntti (2010) report a father-to-son correlation of 0.35 in Swedish enlistment data.

To what extent effort is a stable or context-dependent characteristic is an interesting question that appears not to have been fully resolved. Some theories of educational stratification tend to treat it as a matter of autonomous choice (e.g., Breen 1999), and if so, the question of motivation that has received extensive coverage in psychological literature arguably becomes pivotal (see Ryan 2012).

A crucial omission of this study and others drawing on conscription records is of course any data on women. Apart from the fact that girls mature earlier there is little to suggest that psychological processes of intellectual achievement differ substantially for men and women (cf. Hyde 2005, Halpern 2013). The supply of

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eration is that they might be more malleable than intelligence and therefore hold more promise as a target for policy interventions (cf. Holmlund and Silva 2014).

The 'cultural capital' hypothesis of educational inequality is most closely associated with French sociologist Pierre Bourdieu (1977), but has, as a testament to the evocative nature of his theorising, taken on many different interpretations in the literature (Lamont and Lareau 1988, Lareau and Weininger 2003). The core argument is that familiarity with attributes of a dominant culture will allow children of privileged origin to master the curriculum with relative ease.

A strong form of this hypothesis would posit that such cultural familiarity is irrelevant for the actual tasks that schooling is supposed to prepare for. To my knowledge, there is no compelling evidence to back up this notion, at least not beyond the French case that Bourdieu describes (see Kingston 2001 for a review). In fact, in the Swedish system, teachers appear to grade students from academically weak backgrounds more leniently, not less (Klapp Lekholm and Cliffordson 2009), discrediting the notion of cultural bias. A weaker form of the cultural capital thesis (cf. Swidler 1986) allows substantial overlap with the same types of skills sought after in the labour market. Arguably, this brings us into the territory of the various traits discussed earlier and strips the theory of much of its distinctive flavour.

Needless to say, there are various ways that parents can help their children to achieve in school over and above any endowed ability: by encouraging them, setting goals and norms, monitoring their progress, assisting in school work, advising them to strategically distribute effort, etc. (Erikson and Jonsson 1996b). Much of what parents do to set norms and monitor behaviour may also occur in concert with the wider community, something occasionally referred to as ‘social closure’ (Coleman 1988). Together with the influence that students exert on each other, these community effects are sometimes captured under the umbrella term ‘social capital’ (Mouw 2006, cf. Coleman 1988).

noncognitive traits like attention and work ethic seems to differ considerably by gender, however, and is a leading explanation of women’s outperforming males in school grades and educational attainment across the industrialised world (see Buchmann, DiPrete, and McDaniel 2008, Bertrand and Pan 2013).

11 Not to be confused with the more common usage of this term for attempts of a social or economic clique to secure advantages by engaging in exclusionary or monopolistic behaviour (Weber [1922] 1978, Weeden 2002).
Because of these and other processes, it is clear that school grades reflect more than raw ‘ability’ – even if some literature tends to treat grades as more or less interchangeable with scores on cognitive tests designed to stand free of the curriculum. As an ability measure, grades are both broader and narrower than cognitive tests. Broader because they reflect a wider palette of skills, including discipline and the exertion of sustained effort over time; narrower because they capture only a subset of students’ potential that has been more or less consciously directed at school success. At the same time, it is difficult to draw a sharp line between the two, as even the purportedly most ‘culture-free’ test contains a component of familiarity with context and habitual learning (cf. Resnick 1987, Saxe 1988).

THE ANATOMY OF EDUCATIONAL CHOICE

Regardless of what underlies social class differences in educational performance, they are likely to persist as long as the family remains the unit of primary socialisation. This makes it interesting to focus on the part of educational success not accounted for by performance, namely secondary effects. Here, explanations of a slightly different kind are called for. Some early influential studies in sociology pointed to cultural differences transmitted across generations, or class-specific values or orientations (Hyman 1953, Kohn 1959, Sugarman 1966). This is certainly in line with recent suggestive evidence that parents may encourage their children to pursue actual occupational destinations qualitatively similar to their own (Jonsson et al. 2009, for a critique see Erikson, Goldthorpe, and Hällsten 2012).

In contrast, quantitative sociology of more recent vintage has been at pains to point out that observed attainment differentials could result from rational decision making under differences in actual or perceived costs and benefits of academic education (Boudon 1974, Jencks, Crouse, and Mueser 1983, Gambetta 1987, Erikson and Jonsson 1996b, Goldthorpe 1996, Breen and Goldthorpe 1997, Morgan 2005). For example, the model of Erikson and Jonsson (1996b) stipulates that the student’s evaluation of a given educational track will be subject to an assessment where the derived utility is the product of the subjective probability and the expected benefits of successful completion of that track, discounting associated study costs. There are a number of mechanisms that could lead expected utilities to differ by social background.
First, the economic costs of prolonged education will differ depending on the extent to which parents are able to provide support during the studies. Although direct costs of education are fairly minimal in the Swedish context, indirect costs associated with living expenses and foregone earnings during studies may be considerable. Second, psychological costs in terms of effort as well as the probability of successful completion might differ depending on whether parents are able provide qualified help with school work. Third, the benefits of education could differ if social connections provided by parents are instrumental in translating an attained degree into outcomes in the labour market (e.g., finding a job). Fourth, students from privileged backgrounds may have more accurate information about the costs or benefits of academic education, or more detailed knowledge about the education required to reach a given destination, leading them to make more informed choices.

A fifth and final mechanism occupies something of a middle ground between cultural and rationalist explanations, and refers to parents' social position as an important anchor point in evaluating benefits of status attainment. Specifically, individuals are expected to be more concerned about avoiding downward social mobility than they are about pursuing upward mobility and hence their main concern should be to attain a position at least that of their parents. Although a pivotal assumption in much sociological research on class attainment (Keller and Zavalloni 1964, Boudon 1974, Erikson and Jonsson 1996b, Goldthorpe 1996, Breen and Goldthorpe 1997), this explanation also has affinities in economic prospect theory and the psychological concept of loss aversion (Kahneman and Tversky 1979), as Erikson and Jonsson note (1996b: 29). Subjective processes of status evaluation are the subject of Study IV, and implicit in Study III.

Although many studies have purported to test rational choice explanations against some more or less coherently specified alternative, considerable care must be taken if such explanations are not to lapse into tautology. This is a point elaborated by Mood (2000) who argues that the dilemma faced by rational choice theorists is that of choosing between “an unrealistic but testable theory and a realistic but untestable theory” (p. 271). The greater the number of purposes that are subsumed as rationally legitimate

12 For a comprehensive review, see Kroneberg and Kalter (2012). More recent work includes Jæger and Holm (2012), Breen, van de Werfhorst, and Jæger (2014), and Holm and Breen (2016).
‘ends’ by the theory, the more realistic it becomes but at the expense of giving it an increasingly ad hoc flavour. Mood suggests that a credible theory would have to proceed by making ends endogenous to the social context, but it is not entirely clear to what extent this preserves the rationalist credo or marks a departure from it.

The idea that class differences in educational choice are easier to level than differences in performance depends largely on the assumption that these choices are the outcome of rational, conscious thought. There might be good grounds to question this assumption. Study III shows that in the immigrant population under study, parents’ years of schooling predict children’s achievement whereas children’s aspirations are better predicted by parents’ relative place in the origin distribution of education. If this finding can be given a causal interpretation and extrapolated to the population at large (two big ifs), the upshot would seem to be that raising the average education level in one generation will raise the performance level of the next (cf. Dickson, Gregg, and Robinson 2016), but keep the class patterning of aspirations largely intact.

SCHOOL CONTEXTS AND PEER INFLUENCE

If students of different origin are systematically channeled into separate schools or tracks, interactions between them could serve to magnify social or ethnic differences. That students in the same schools, classrooms, and social circles influence each other is intuitively reasonable, and has been variously referred to as social interactions, network externalities, or peer effects (Sacerdote 2011). Empirically, such processes are notoriously hard to pin down due to a number of inferential obstacles (Angrist 2014). These include selection (are outcomes similar just because like associates with like?), the reflection problem (if influence occurred, who influenced whom?), and common shocks (is similarity due to something else entirely, such as a shared teacher?). Yet, there is a strong intuition that they should matter, as evidenced by the lengths some parents go to in order to secure ‘good’ neighbourhoods or schools for their children.

The social context is perhaps especially likely to matter for aspirations and educational choice, although surprisingly this is an area that has received less attention than corresponding influences on school achieve-

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13 Sara Roman helped draw my attention to this interpretation.
ment (Jonsson and Mood 2008, Sacerdote 2011). A considerable challenge adding to the inferential obstacles listed above is that the sign of peer effects in choice is not theoretically unambiguous.

On the one hand, being surrounded by a high-aspiring environment could serve to raise one’s aspirations, as peers’ aspirations might ‘rub off’ much like those of parents or other significant others. In progressing through formal education, students might also choose to apply to the very same institutions as their current schoolmates because they value their company or that of others like them. On the other hand, peers’ achievement could inform self-assessments by contrast so that, all else equal, being surrounded by high achieving peers makes one’s own achievements pale in comparison, putting a damper on aspirations (Erikson 1994). Social psychological literature refers to this mechanism (or rather, its inverse) as the ‘big fish, little pond’ effect (see Marsh 1987, Marsh and Seaton 2015).

Jonsson and Mood (2008) test this idea with Swedish register data on the transition to upper secondary school, comparing adjacent cohorts within the same school to account for unobserved self-selection (cf. Hoxby 2000). While their analysis indicates the presence of such a mechanism, it also suggests that it is probably too trivial in size to be of much real-world consequence: in their model, a full standard deviation in peers’ average achievement at the time of completing comprehensive education swings the probability of choosing an academic track in secondary school by a meagre 3 percentage points. Like all results in this area, however, it is one that is heavily dependent on the chosen strategy of empirical identification.

CONTEMPORARY MIGRATION AND DIVERSITY

In just a few decades, the landscape of educational inequality has changed profoundly with the advent of large-scale migration to Sweden and other developed economies. In scope, Swedish immigration rivals that of several of its neighbours: among the cohorts who completed compulsory schooling in recent years, around one in ten are born abroad. A further tenth are born in Sweden to two foreign-born parents, and somewhat fewer have one Swedish-born and one foreign-born parent (Jonsson and Rudolphi 2011). In other words, about a fourth of each cohort have either immigrated themselves or have at least one parent who did so. These figures are broadly comparable to those of more longstanding immigration coun-
tries including the US, Canada, France, Germany, and the UK (see Lessard-Phillips, Fleischmann, and van Elsas 2014).

However, Swedish immigrants stand out in two regards: a disproportionately large share have come as refugees, and they have done so from a remarkably diverse set of sending countries (OECD 2012). This has its explanations. While systematic recruitment of labour migrants from the Nordic countries and Southern Europe was widespread during the 1960s, the 1973 recession prompted policy changes that brought this practice to a halt (Jonsson 2007, Hammarstedt and Palme 2012). Since Sweden has no post-colonial ties and shares no border with a developing country, in the absence of active labour recruitment there remained few links to any particular sending country.

Immigration did not stall when labour recruitment did, and refugee migration soon came to the fore. Among the first groups to arrive post-1973 were political refugees who fled Chile following the coup d’état that year. Common origins thereafter include the Middle East including Iran, Iraq, Lebanon, Syria, and Turkey; the former Yugoslavia; as well as a number of East African countries including Ethiopia, Eritrea, and Somalia (Statistics Sweden 2014). The eastward EU expansion has led to a slight upturn in labour immigration, but this has not eclipsed migration for asylum and subsequent family reunification reasons which reached a new spike with the Syrian refugee crisis beginning in 2011 and hitting Europe in earnest from 2015.

Some of these newcomer ethnic minorities have arrived from sending countries that differ substantially from the receiving society in social and demographic makeup. As a consequence of these differences – and other difficulties, including language barriers or discrimination in the labour market – they tend to face considerable hardships and are often disproportionately concentrated toward the bottom rungs of the socioeconomic ladder. An important question is to what extent this disadvantage will persist beyond the first generation, or conversely, to what extent the children of immigrants can expect to rise above the initially disadvantaged position of their parents in the new country.
A PUZZLE ABOUT MINORITY ASPIRATIONS

Like children of native-born parents in disadvantaged economic circumstances, the children of low-status immigrants tend on average to achieve lower test scores and grades in school (Schnepf 2007, Jonsson and Rudolph 2011, Heath and Brinbaum 2014). This is perhaps not unexpected, however objectionable. Even for the second generation who were born and grew up in the host country, parents continue to play an immense role and whatever factors may have impeded their integration will to some extent transmit to their children (Hällsten and Szulkin 2009). Limited language proficiency, lack of institutional knowledge, or inferior social and economic resources could limit the degree of support that they are able to provide. Moreover, immigrants may live in areas of concentrated disadvantage, with poorer school quality and more disruptive environments (Szulkin and Jonsson 2007).

However, the parallel seems to stop there: studying the residual part of educational careers – secondary effects – the decisions of minority youth fail to conform to preconceived notions. In contrast to the pattern for social class differentials, we find that their poorer performance is often compensated for by a higher likelihood to pursue academic education net of achieved grades (Jonsson and Rudolph 2011, Heath and Brinbaum 2014). This remains something of a puzzle, and among the explanations that have been proposed for it are: the strength of parents’ social networks in ethnic communities; avoidance of blue-collar ethnic discrimination; underestimation of the obstacles to academic success; or some latent ‘ambition’ or ‘drive’ determining both parents’ migration decision and their children’s aspirations.

Prevailing explanations of this ‘immigrant optimism’ (Kao and Tienda 1995) refer mostly to experiences that are minority-specific. But before assuming that the motivational forces acting on these groups fundamentally differ from those of the majority, we should preferably appeal to social mechanisms of a broader kind. One possibility is that the pattern arises from school segregation and the ‘small pond’ mechanism described ear-

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14 It is also possible that minority students receive lower grades because of discrimination. Previous studies from the Swedish context if anything seem to suggest the opposite (Lindahl 2008, Klapp Lekholm and Cliffordson 2009), although recent evidence is somewhat mixed (Hinnerich, Högl, and Johannesson 2015, Hinnerich and Vlachos 2016).
Precisely because they are concentrated to schools where aggregate achievement is lower, the average minority student may see themselves as having relatively higher ability than if surrounded by more privileged peers. If we are to believe Jonsson and Mood (2008), however, this mechanism is probably not weighty enough to explain much.

Another possibility is that students act not on their current grades but on a knowledge of their own potential, and grades might underestimate that potential among minority children. Suppose that achievement is hampered by factors such as language difficulties, potential family trauma, poor school environments, or stress due to acculturation and economic marginalisation. If these students expect to perform better when placed in more favourable circumstances, ‘overshooting’ in relation to their current grades is only an appropriate response. While this explanation is appealing, evidence offered in study III actually seems to run counter to it. Research also shows that minority children report higher average levels of psychological well-being than their majority peers (Mood, Jonsson, and Låftman 2016), contradicting the notion of underperformance attributable to stress.

A more promising explanation refers to parents’ social standing before migration, which we typically cannot observe (Feliciano 2005, Ichou 2014). If parents have suffered downward social mobility in relocating, it is natural to expect that their children will aspire for positions commensurate to those that their parents have abandoned. Unfortunately, existing large-scale survey data do not shed much light on this issue, but the two closing studies attempt to test this conjecture in a roundabout fashion. Under the assumption that countries differ more in terms of average education level than in the underlying system of class stratification, immigrants’ relative place in the education distribution at origin will act as a rough proxy for their prior social status. study III and IV confirm that this aspect of education is indeed of consequence for immigrants’ perceptions of their place in the social status order and the level of aspiration that they transmit to their children.

Regardless of the source of these high aims, they are of first-order importance for educational policies; as Jackson (2012) notes, they serve to suppress ethnic differences in educational careers which would have been much larger had minority students made the same decisions at a given level of achievement as their majority peers. This poses an interesting dilemma

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15 I thank Helena Holmlund for this suggestion.
for policy-makers who might seek to curtail social class differentials by reducing the influence of aspirations on educational choice. Imposing policies that select more heavily on proven aptitude might achieve this aim, but only at the expense of increasing ethnic differentials which are suppressed by the very same aspirations. In a recent study, Dollman (2016) ingeniously illustrates this drawing a German policy experiment.

TROUBLES WITH PROXY VARIABLES

As is widely recognised, estimated associations in education between one generation and their offspring are, for the most part, not causal but rather reflect the transmission of unobserved characteristics that are in turn predictive of educational success (Holmlund, Lindahl, and Plug 2011). Conceptions about equality of opportunity differ, but reasonable ones hold that at least some of the traits that parents transmit to their children should legitimately be allowed to exert an influence on academic success (Jencks and Tach 2006). Because it is difficult to imagine a world where children’s outcomes bear no resemblance to their parents’ status, it is equally hard to say what would constitute an ideal degree of persistence or fluidity in this respect.

The comparative perspective offers a way around this awkward moral ambiguity, by studying relative differences across countries or historical time and attempting to unravel the mechanisms behind them. Unfortunately, there are a number of reasons why model parameters might differ that have little to do with the extent to which educational institutions systematically work to the benefit of one group over another. As is set out in detail in STUDY II, when making inferences from estimated parent-child associations to the relative degree of opportunity, we are forced to assume that the parental background proxies tap into the same unobserved traits, and do so equally well across the spectrum of geographical or historical contexts. Prima facie there are no good grounds to believe that this is the case. This is a problem that is underappreciated, but nevertheless one which permeates the field.

It is probably uncontroversial to say that, as a rule, contemporary Western societies differ less in occupational composition than they do in the configuration of educational institutions and system of academic degrees. It is therefore notable that, in STUDY I, when the more reliable (and arguably,
more comparable) proxy of occupational status is used, socio-economic gradients in student achievement appear considerably more similar across countries than when parental education is substituted. Study II offers similar caution with regard to the common books-at-home proxy. Because low-achievers tend to underestimate the amount of books in the home, associations will tend to be larger in countries where most families have a home library if only because there is more for students to underestimate.

There is a long line of thought in social stratification research claiming that most variation in intergenerational associations may actually be attributable to such perturbations and methodological artifacts. In scholarship on class mobility, this notion goes back at least to Featherman, Jones, and Hauser’s (1973: 340) conjecture that once marginal distributions in status measures have been netted out, the underlying mobility processes should be similar across “industrial societies with a market economy and a nuclear family system.” More recently, Grätz and coauthors (2016) have compiled estimates of sibling correlations in cognitive outcomes from several countries, detecting little in the way of meaningful cross-country variation (but see Branigan, McCallum, and Freese 2013).

ERRORS-IN-VARIABLES AND BEYOND

Because the so-called classical measurement error model is a recurrent concern in several of the essays, it might be helpful to outline it here. Suppose that a researcher is interested in estimating a population relationship of the type:

\[ y_i = \alpha + \beta x_i + \epsilon_i \] (1)

Here \( y_i \) is the regression outcome (e.g., student achievement), \( x_i \) is a proxy for social origin, \( \alpha \) and \( \beta \) are unknown parameters to be estimated, and \( \epsilon_i \) is a well-behaved error term. The ordinary least squares (ols) estimator for \( \beta \) in Equation 1 above is:

\[ \hat{\beta} = (X'X)^{-1}X'y \]

According to Richard Breen (2007: 2369–70), since its formulation “many publications have been devoted to testing this hypothesis, the majority of which have found support for it.” One notable example is Erikson and Goldthorpe (1992).

The equivalent expression in matrix form is \( \hat{\beta}_{\text{OLS}} = (X'X)^{-1}X'y \), where \( \hat{\beta}_{\text{OLS}} \equiv (\hat{\alpha}, \hat{\beta}) \) is a parameter vector containing the estimated intercept and slope, and \( X \equiv (1, x) \) includes a vector of 1’s to allow for the former. As explored in Study II,
\[
b_{\text{OLS}} = \frac{\text{cov}(x_i, y_i)}{\text{var}(x_i)} = \frac{(n-1)^{-1} \sum_i (x_i - \bar{x})(y_i - \bar{y})}{(n-1)^{-1} \sum_i (x_i - \bar{x})^2}
\]

(2)

Unable to observe \(x_i\) we instead observe an error ridden measure \(z_i = x_i + u_i\). Ignoring mismeasurement and naively substituting \(z_i\) for \(x_i\) in Equation 1 above, the consequence is that we are led to estimate:

\[
y_i = \alpha + \beta z_i + (\epsilon_i - \beta u_i)
\]

(3)

It is well known that under the assumptions that \(x_i, u_i, \epsilon_i\) are joint normal with mean and covariance matrices \((\mu_X, 0, 0)\) and \(\text{diag}(\sigma_X^2, \sigma_u^2, \sigma_\epsilon^2)\), the result is one of attenuation: the estimate will be downwardly biased in magnitude, the more so the larger the error (e.g., Greene 2003: 84–86). One familiar expression for this bias is:

\[
\text{plim } b_{\text{OLS}} = \beta \left[ 1 - \frac{\sigma_u^2}{\sigma_X^2 + \sigma_u^2} \right]
\]

(4)

where \(\sigma_X^2\) is the variance of the unobserved true regressor and \(\sigma_u^2\) is the variance of the observation error, as in study \(i\). This classical errors-in-variables model is usually the starting point for discussions of measurement error. But how plausible are its assumptions? In many sociological applications, one of them cannot hold for the simple reason that the regressor is categorical (or more generally, bounded). For instance, we may want to compare educational outcomes between children whose parents differ in social class or educational level, or from immigrant and non-immigrant origin, and these are variables that are categorical or bounded in nature.

If so, there will be a nonzero covariance of the measurement error with the true values if only because individuals in the top category can only report accurately or underreport whereas the reverse holds for those in the bottom category. Even so, the net effect is still typically one of attenuation if we are willing to retain the assumption of zero covariance between the

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Sections 2.3 and 2.5, and Appendix 3.A of study \(iii\), this framework offers very flexible opportunities to move beyond the classical bivariate case.

18 Another extreme, as Wooldridge (2001: 73–74) notes, is that the observation error \(u_i\) is correlated with \(x_i\) but uncorrelated with \(z_i\). This type of error occurs naturally when using group averages of an unobserved regressor, and will cause little or no systematic bias (Berkson 1950, Hyslop and Imbens 2001).
error and the regression residuals (Aigner 1973). For the case of a binary regressor, denote the misclassification probabilities \( \omega_{10} \equiv P(x_i = 1 \mid z_i = 0) \) and \( \omega_{01} \equiv P(x_i = 0 \mid z_i = 1) \). In this case:

\[
\text{plim } b_{\text{OLS}} = \beta [1 - \omega_{10} - \omega_{01}]
\]  

Since \( \omega_{10} \) and \( \omega_{01} \) are probabilities, they are either positive or zero and the bias is again downwards in magnitude, save the case where more than half of the sample is misclassified. In this event, the two probabilities sum to a number greater than one, the total attenuation factor becomes negative, and the sign on the estimated coefficient will be opposite that of the true coefficient (Bollinger 1996).

While useful for building intuition, at the end of the day these are peculiar special cases that are unlikely to hold exactly in any given empirical application. In study I this type of model is accepted as a reasonable approximation\footnote{study II speculates that low achievers may exaggerate their parents’ education, which would lead to further downward bias. Applying the decomposition method from this study to the data of study I actually confirms this, and reveals that systematic error accounts for almost a third of the total bias in regression estimates using student reports on parental education.} albeit with an extension to the multivariate case, whereas study II and III more explicitly examine departures from it. In particular, study II questions the notion that the error \( u_i \) is unrelated to the unexplained part of the outcome \( \varepsilon_i \), necessary for all analytical methods of bias correction in linear and nonlinear models alike (Chen, Hong, and Nekipelov 2011). study III assumes a similar scenario but focuses instead on the bias that will result in conditional estimates for a categorical third variable, immigrant background, when a control is used that may systematically under- or overestimate origin status in certain groups.

This volume

The four essays in this volume are self-standing and numbered roughly in the order they were conceived, but nevertheless they loosely follow a logical sequence that can be described as follows.

study I takes its departure from a canonical regression in the literature, of child test scores on two different social background proxies – parental occupation and education – and compares estimates by data col-
lected from children, parents, and registers. It focuses on misreporting and non-response in survey reported data and the impact they have on the size of estimated associations. Under conventional assumptions, both problems are expected to bias associations downwards. A contrasting analysis using register data with high reliability and near-complete coverage confirms these expectations. The study also shows how bias can be mitigated by carefully choosing which sources and variables to draw on. Because non-response is most serious in parent-reported data, and misreporting so in child reported data, relying on occupation which is relatively reliably reported even by children limits the extent of bias. Another important result is that estimates of the cognitive gap between children of native-born and immigrant parents appears surprisingly robust to these problems.

STUDY I showed that noisily measured background proxies will typically bias associations toward the null. A similar argument applies to validity: if the variables measured are poorly related to the constructs they proxy for, associations are likely to be attenuated. This suggests that proxies that show large associations with the outcome are to be preferred, because of supposed higher reliability and/or validity. STUDY II shows how this reasoning breaks down when the conventional assumptions are not met. The case under study is the number of books at home, a proxy that has grown in popularity precisely because of its large associations, especially when reported by young children. I show that much of these associations are explained by systematic errors; not only do students from bookish homes achieve higher, but high achievers bring more books into the home, and are better informed about their home libraries. This inflates estimates relative to other predictors, and makes findings prone to distortions and spurious results.

STUDY III revisits the social and ethnic disparities from STUDY I, and asks what use we have of imperfect social background proxies in comparing educational outcomes along ethnic lines. Often, we are interested in holding constant aspects of the home environment and assess net (dis)advantages associated with immigrant origin or belonging to a particular ethnic group. Such studies usually control for immigrant parents' education in absolute terms, ignoring a key aspect: how this education compares relative to that of the population at origin. Here I demonstrate that relative education is a better predictor of attitudes to education, occupational aspirations, and transition to academic tracks, while it does little to explain students' cog-
itive or language achievement. Contrary to the results on misreporting and non-response, then, the choice of which proxies to include and how to scale them may matter for the conclusions reached.

Study III illustrated the importance of considering immigrants’ place in the sending society when studying their host country integration. Study IV develops this argument in theoretical detail and takes issue with dominant theories of immigrant self-selection. Instead of attributing the often remarkable achievements of these populations to a diffuse ‘drive’ particular to immigrants, it speculates that successful social and economic assimilation often results from a desire to make up for social status that has been lost in resettling. To test this argument, we analyse the subjective economic well-being of immigrants in twenty countries of destination. In line with theoretical expectations, those higher educated by origin country than host country standards turn out to make more dismal assessments of their current social status and financial situation which could be one explanation for their apparent determination to overcome disadvantage.

While each study draws on insights from the preceding one(s), they also address separate problems and speak to partly different audiences. Study I seeks to reestablish a concern with measurement that was a prominent feature of status attainment research in the 1970s and early 1980s but that seems to have fallen, momentarily at least, by the wayside. Study II is written primarily with applied education researchers in mind, but also speaks to a wider debate on proxy based inference that leans heavily on the classical assumptions. Study III and IV both address the literature on intergenerational status transmission at the heart of this thesis, but they also tap into a separate debate on immigrant ‘selectivity’ – how migrants differ from non-migrants – and how this might impact their host country assimilation. Study IV also draws on a rich sociological tradition of research on social comparison processes and relative deprivation.


We refer to the following sources for further reading:


