

# Pathways from origins to destinations: Stability and change in the roles of cognition, private schools and educational attainment

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## Abstract

While much attention has been devoted to measuring levels of social mobility over time, less attention has been given to the possibility of changing pathways to social mobility. This paper examines pathways from social origins to socio-economic destinations in midlife for two British cohorts, born in 1958 and 1970 respectively, using Structural Equation Modelling (SEM). We address the roles of cognitive attainment, private schooling and educational attainment in mediating the link between social origins and destinations. Have these mechanisms become more or less important over time, in a context of structural change in the state schooling system and educational expansion? We find that private schools displayed greater academic selectivity and an increased link to high levels of educational attainment for the younger cohort. Essentially, private schools adapted to changing circumstances, becoming more academically selective and less socially selective, and more focused on educational credentials. Childhood social origins were less strongly linked to childhood cognitive scores in the younger cohort, but cognitive scores were also more weakly linked to educational attainment for this cohort. We also find a decreased association between social origins and educational

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attainment for the younger cohort. While the finding that educational inequalities weakened over this time period is positive, the lack of a corresponding reduction in the overall link between social origins and destinations suggests that reducing educational inequalities was not sufficient to increase social mobility when accompanied by countervailing changes in the role of private schools.

#### KEYWORDS

education, longitudinal, private schools, social class, social mobility

## 1 | INTRODUCTION

This paper asks whether the educational pathways to social mobility and reproduction have changed over time, comparing two cohorts born in 1958 and 1970. These cohorts experienced substantial educational expansion and change, and findings comparing their social mobility chances have generated debate. We assess the roles of cognitive scores, private schools and educational attainment, broadly defined.

The question of how social advantage and disadvantage are passed down from parent to child is a central concern for sociologists and policymakers alike. Education is the dominant factor in explaining the link between social origins and destinations (Halsey, Heath, & Ridge, 1980). But educational attainment is itself the outcome of a set of social processes. Social class differentials in cognitive test scores emerge early and continue to develop during childhood and beyond (Feinstein, 2003; Fogelman & Goldstein, 1976). It is sometimes assumed that cognitive scores are a pure reflection of genetic endowment, and strong claims have been made for the role of cognition in mediating the link between social origins and destinations (Marks, 2013). Recent work, however, shows a stronger role of educational qualifications compared to childhood cognitive scores in explaining the link between parental social class and achieved social class (Betthäuser, Bourne, & Bukodi, 2020). In this paper, we conceptualize childhood cognitive attainment primarily as a determinant of educational attainment, though it may also have an independent association with occupational attainment. We are able to determine the changing role of cognition, and determine whether it is becoming increasingly important in mediating the origins-destinations relationship as Marks suggests.

Private schools have historically been seen as an important conduit to educational and occupational success within the British context. Certainly, private schools remain an important part of the class reproduction strategies of the British elite (Reeves, Friedman, Rahal, & Flemmen, 2017). Private schools are also seen as providing a route to the most prestigious courses and institutions within higher education. Whereas much research has focused on the question of whether structural changes within the state school sector affect social mobility (Boliver & Swift, 2011; Lunt & Furlong, 2020), the potentially changing role of private schools in this regard has had less attention. Private schools may adapt their wares to reflect the fact that higher levels of educational attainment are increasingly necessary to demonstrate academic distinction (Green, Machin, Murphy, & Zhu, 2011).

Education is the main vehicle for both social reproduction and social mobility (Torche, 2015). In an increasingly credentialist society, we may expect that the link between educational attainment and socio-economic destinations should be increasing over time (Goldthorpe, 2014), but there is not consistent evidence to support this, and in fact some evidence suggests the opposite (Jackson, Sui, Hebert, Church, & Blair, 2009). The question of whether the link between socio-economic origins and educational attainment has strengthened, weakened or remained

constant also remains contested (Breen, Luijkx, Müller, & Pollak, 2009; Shavit & Blossfeld, 1993). Galindo-Rueda and Vignoles (2005) find a decreasing role for childhood cognition and an increasing role for family income in predicting educational attainment in BCS70 compared to NCDS. Blanden et. al. (Blanden, Goodman, Gregg, & Machin, 2004; Blanden, Gregg, & Macmillan, 2007) have suggested that the fall in income mobility among sons can be explained in part by growing inequalities in educational attainment according to family income, in particular a strengthening of the relationship between family income and access to higher education. However, other evidence suggests little change in socio-economic inequalities in educational attainment over time (Boliver, 2011; Iannelli, Gamoran, & Paterson, 2011).

When addressing educational inequalities over time, we need to consider the consequences of educational expansion. Educational expansion is typically expected to be accompanied by an increase in educational “meritocracy” or at least in credentialism (Collins, 1979). The sociological theories of Maximally Maintained Inequality (MMI) (Raftery & Hout, 1993), and Effectively Maintained Inequality (EMI) (Lucas, 2001), state that, as education systems expand, and access to any given level of education becomes near-universal, inequalities will be maintained via access to the next level (MMI), or via status distinctions within a given level (EMI). So, for example, if inequalities in access to a university degree diminish, their role will be displaced by differentials in access to high status universities and courses. Given the expansion of higher education, it is vital to take into account stratification within broad categories of attainment, such as completing a university degree (Boliver, 2011).

Despite the importance of education as a route to occupational success, a substantial sociological literature claims to show a direct influence of social origins, net of education, both in Britain and internationally (Bernardi & Ballarino, 2016; Gugushvili, Bukodi, & Goldthorpe, 2017). This “direct effect of social origins” (DESO) has become a stylized fact within sociology. In previous work, (Sullivan, Parsons, Green, Wiggins, & Ploubidis, 2018) we have shown that there is no direct effect of social origins on access to top social class occupations in midlife for the 1970 British Cohort Study (BCS70) once a more refined approach to the measurement of education is taken. This raises a number of questions. Is the absence of a “DESO” effect in our analysis specific to the fact that we considered a particular socio-economic outcome, namely attainment of a top social class position at age 42? And is the finding specific to the 1970 cohort?

Questions of measurement are enormously important to debates on social mobility and social reproduction. Results can vary greatly according to how one measures social origins and destinations. Influential research by Blanden and her colleagues has reported that rates of relative income mobility declined in the United Kingdom between the 1958 and 1970 birth cohorts (Blanden, Goodman, Gregg, & Machin, ; Blanden et al., 2004). These findings have been criticized on various grounds, including the level of missing values and the quality of the measures used (Gorard, 2008). The findings sparked debate with Goldthorpe and his colleagues, who find no change in relative social mobility when social class rather than income is taken as the measure of socio-economic position (Goldthorpe & Jackson, 2007). Erikson and Goldthorpe (2010) argue that the measurement of childhood family income data in NCDS is problematic, and, more importantly, a substantial problem of measurement error inherent in “one-shot” measures of income. If this measurement error has increased between the two cohorts, then any apparent decline in social mobility could be artefactual rather than real. Erikson and Goldthorpe (2010) shows that the difference in results is driven by the weak correlation between childhood income and both education, social class and earnings outcomes in NCDS. In subsequent work using four cohorts, Bukodi, Goldthorpe, Waller, and Kuha (2015) continue to find no evidence of falling social mobility, yet note that the policy consensus on social mobility appears undented by additional evidence. Blanden, Gregg, and Macmillan (2013) counter that social class is a poor proxy for permanent income, and instead reflects “job autonomy and wider social capital”. As such, they reassert that the decline in “social mobility” (by which they mean income mobility) is genuine.

It is possible of course that findings regarding both income and social class are valid, and that levels of social mobility vary according to the measurement of socio-economic status that is favoured in a particular analysis. Traditionally, economists have preferred earnings, while sociologists have favoured social class. Stronger social

origins effects on income rather than social class might be expected for example, due to income inequalities within social classes (Friedman, Laurison, & Miles, 2015). However, the possibility of measurement error must also be taken seriously.

While the British Cohort Studies have limitations in terms of assessing changing levels of social mobility over time (Buscha & Sturgis, 2018), the uniquely rich childhood data contained in these data sets makes them ideally suited to consider pathways between childhood circumstances and later outcomes. In this paper, we examine pathways from socio-economic origins to midlife destinations for women and men in two British cohorts. We take a multidimensional view of social origins. We present analyses for earnings, but have carried out identical analyses on social class outcomes, to identify whether there are major differences in findings according to the particular outcome. We also investigate the sensitivity of our findings to different treatments of social origins. The role of “non-cognitive” or “soft” skills has been analysed extensively elsewhere (Blanden et al., 2007; Green, Parsons, Sullivan, & Wiggins, 2017; Gugushvili et al., 2017; Jackson, 2006) and we do not seek to address this here. Our focus is on educational pathways to socio-economic destinations, whether a direct effect of social origins remains for either cohort, and whether the roles of social origins, cognition, private schooling and educational attainment have changed over time. By taking a multidisciplinary and multidimensional approach to unequal origins and destinations, we are able to shed new light on an area of enormous policy importance which has become mired in unhelpful disciplinary battles.

## 1.1 | British education in historical context

The British state school system pre-1965 was academically selective. An examination towards the end of primary school (the 11-plus) determined access to selective grammar schools, and children who failed the exam (around 80%) typically attended “secondary modern” schools. “Comprehensivisation” (the process of moving towards all abilities schools) meant that most children in the 1958 cohort (60%) attended comprehensive schools. However, many of these schools were newly formed, and some were simply secondary moderns which had been re-named as comprehensives. By the time the 1970 cohort was at secondary school, in the 1980s, the comprehensive system was well established, with 81% of the cohort attending comprehensives.

Private schools, which had been arguably threatened by grammar schools, were steadily declining in pupil numbers in the 1960s. By the middle of the 1970s, however, they had not only survived political pressure for their abolition, they were reinforced by the politically induced demise of the “Direct Grant” schools—highly selective, academically successful schools that were funded partly through fees and partly by government (Green & Kynaston, 2019). When closed, most of these chose to join the private sector. Moreover, across the sector many private schools responded to the increasing importance of academic qualifications in the labour market by increasing their focus on academic attainment (Green et al., 2011; Rae, 1982). By the 1980s they were in a position to take advantage of the decline of grammar schools, by providing an academically selective education for those able to pay, even if they also lost some of their previous business in 11-plus failures from affluent families. Fees were rising above inflation, and with them the resources at their disposal. Numbers were also beginning to recover steadily, so that private secondary school uptake was broadly stable between the two cohorts. Meanwhile, state schools faced particular difficulties during the 1980s due to education cuts under the Thatcher government (Gillard, 2020).

British school leavers in both cohorts had access to means-tested maintenance grants, paid for by the state. All universities were public, and none charged tuition fees. University entrance requirements were largely based on the examination grades achieved by the applicant. Higher education institutions were divided into universities and polytechnics (the latter being lower in status) until 1992. British universities were and remain highly stratified according to academic selectivity.

## 2 | METHODS

The National Child Development Study (NCDS) follows the lives of 17,000 people born in England, Scotland and Wales in a single week of 1958 (Power & Elliott, 2006). Also known as the 1958 Birth Cohort Study, it collects information on physical and educational development, economic circumstances, employment, family life, health behaviour, well-being, social participation and attitudes. Since the birth survey in 1958, there have been nine further “sweeps” of all cohort members at ages 7, 11, 16, 23, 33, 42, 44, 46, 50 and 55. The BCS70 follows the lives of more than 17,000 people born in England, Scotland and Wales in a single week of 1970 (Elliott & Shepherd, 2006). Over the course of cohort members’ lives, the BCS70 has collected information on health, physical, educational and social development, and economic circumstances among other factors. Since the birth survey in 1970, there have been nine surveys (or “waves”) at ages 5, 10, 16, 26, 30, 34, 38 and 42 and most recently age 46. Both NCDS and BCS70 data sets are available to bona fide researchers via the UK Data Service.

Our analysis draws on the status attainment tradition (Blau & Duncan, 1967), and we use Structural Equation Modelling (SEM) in order to assess the pathways between childhood origins and adult destinations. This approach is advantageous because we are interested in questions of mediation—what are the mechanisms or processes which underlie the link between origins and destinations?

Our samples for both cohorts are those men and women who had a full set of birth characteristics, information on whether they attended a private or state funded school at age 16, and occupation and/or gross hourly pay information at age 42. We first imputed the data to handle attrition and item nonresponse, adopting a chained equations (sequential) approach (White, Royston, & Wood, 2011) under the assumption of “missing at random” (MAR), which implies that the most important predictors of missing data are included in our models. In order to maximize the plausibility of the MAR assumption, we also included a set of auxiliary variables in our imputation model. All reported analyses are averaged across 20 replicates based upon Rubin’s Rule for the efficiency of estimation under a reported degree of missingness across the whole data of around 0.20 (Little & Rubin, 1987/2002). The imputation and SEM analyses were carried out in MPlus version 8 (Muthén & Muthén, 1998–2010). Descriptive statistics were carried out in Stata Version 15.1 (Statacorp, 1985–2017). For NCDS, our analytical sample size is 6,693 (pay) and 7,517 (NS-SEC); for BCS70 6,136 (pay) and 7,102 (NS-SEC).

### 2.1 | Variables and operationalization

The categorization and frequencies of the variables included in our models are presented in Table 1.

The SEM approach allows us to use latent variables which incorporate a range of measures. For example, our social origins variable includes parental social class, income and education. A disadvantage of this approach is that it does not allow one to look “under the hood” at the components of the latent variable, in order to determine, for example, whether parental education, social class, or income is a more important driver of child outcomes—an approach which is clearly fruitful and which we have employed elsewhere (Sullivan et al., 2018). Building on this past work, what we seek to do here is exploit the more elegant models which the latent variable approach allows us to construct, in order to allow broad comparisons between two cohorts.

#### 2.1.1 | Socio-economic destinations

We present the results of analyses of earnings at age 42 in full. We also carried out supplementary analyses of social class outcomes (NS-SEC; Rose & Pevalin, 2005) as a sensitivity check.

**TABLE 1** Descriptive statistics for men and women in the 1958 and 1970 cohorts

	NCDS		BCS70	
	Men	Women	Men	Women
<i>Outcomes (42)</i>				
% Professional/Managerial occupation	21.3	7.2*	19.3	10.8*
Gross hourly wage (mean) <sup>1</sup> [deflated to 2016 prices]	£19.85	£13.20*	£18.78	£13.42*
<i>Family socio-economic status (SES)</i>				
Social class (Registrar General) <sup>2</sup> (%)				
I	5.0	4.7	6.1	5.6
II	14.9	14.1	18.4	18.3
IIINM	12.3	11.4	30.3	31.3
IIIM	48.5	49.4	30.8	29.4
IV or V (inc. not in work)	19.3	20.4	14.4	15.4
Age mother left full-time education <sup>3</sup> (16+)	25.1	25.3	37.8	37.4
Age father left full-time education (16+)	26.9	25.5	36.8	38.6
Family income <sup>4</sup>				
<i>Education</i>				
Childhood cognition (mean factor score)	0.01	0.08*	0.07	0.04
% at private school (16)	7.2	6.1	6.5	5.8
No. of A-C O Level/Grade 1 CSE passes [mean]	2.2	2.4	2.2	2.5*
% English A-C O Level/Grade 1 CSE pass	20.4	31.1*	37.8	48.1*
% Maths A-C O Level/Grade 1 CSE pass	30.0	23.6*	37.7	34.3*
No. of A Levels (A-E grades)				
None	76.8	79.0	82.3	79.2*
1 or 2	12.2	12.5	6.7	8.5
3+	11.0	8.5*	11.0	12.3
Highest qualification (42)				
None	17.8	14.5*	22.4	17.5*
Level 1	16.1	14.4	8.9	7.6
Level 2	34.9	40.0*	28.1	30.5
Level 3	8.4	9.6	5.1	4.8
Level 4 or 5 <sup>5</sup>	22.8	21.5	35.5	39.5
Subject of degree				
No degree	86.3	87.9	77.2	75.5
OSSAH	4.6	7.4*	9.1	14.9*
STEM	6.1	3.1*	9.4	5.3*
LEM	2.9	1.6*	4.4	4.4
N (100%)	3,905	3,612	3,529	3,573

<sup>1</sup>Sample size smaller for gross hourly pay [NCDS: men = 3,543, women = 3,150; BCS70: men = 3,108, women = 3,028;<sup>2</sup>Based on father's occupation, captured at birth for both cohorts;<sup>3</sup>Parents' age at leaving full-time education was captured at age 16 in NCDS and at birth in BCS70;<sup>4</sup>In NCDS family income is entered as deciles from lowest to highest, in BCS70 it is a seven category variable, again from lowest to highest. It does not make sense to compare this measure descriptively. Income is recorded at age 16 in NCDS and age 10 in BCS70;<sup>5</sup>This category includes NVQ Level 4 to 6 qualifications other than a degree or higher degree;\*Differences by sex statistically significant at  $p < .05$ .

## 2.1.2 | Social origins

Much past work on income mobility is restricted to considering fathers and sons, though this has recently been extended to consider families (Belfield, Crawford, Greaves, Gregg, & Macmillan, 2017). A unidimensional approach to the measurement of social origins, using data solely on family income or on social class, may be problematic. Single measurements may be error prone, especially where historical measurements were captured using fairly crude and “lumpy” grouped single indicators. It is also problematic given that neither income nor social class is the only important source of childhood advantage. We know, for example, that parental education is a more powerful predictor than income of children's educational outcomes (Sullivan, Ketende, & Joshi, 2013). Taking a multidimensional approach to social origins minimizes the problems due to measurement error on any single variable (Everitt, 1984), and allows us to construct a latent variable reflecting childhood family socio-economic resources in the round. This latent variable is defined by four indicators:

### *Social class*

(Registrar General) based on father's occupation at the birth survey. The categories are: I “Professional/Managerial”, II “Lower managerial” III<sub>nm</sub> “skilled non-manual” III<sub>m</sub> “skilled manual” IV “partly skilled” and V “unskilled” which also includes the small numbers who were not in work.

### *Family income*

captured at age 16 in NCDS and age 10 in BCS70. In NCDS both monthly and weekly gross income was collected and banded into nine categories, in BCS70 weekly gross income was collected across seven categories in BCS70. An overall gross weekly amount was calculated for NCDS and divided into deciles.

### *Parental education*

Mother's and father's age at leaving full-time education (captured at age 16 in NCDS, and at birth for BCS70).

## 2.1.3 | Cohort member's education

The British cohort studies allow us to track the pathways to educational inequalities in a uniquely rich and refined way, taking into account early cognitive development, schooling, school qualifications and later qualifications.

## 2.1.4 | Cognition

Both NCDS and BCS70 cohort members took a thorough battery of cognitive tests, towards the start of primary schooling (age 5/7) and towards the end of primary schooling (age 10/11; Hill, 2005; Parsons, 2014). This latent variable is defined by seven cognitive scores in NCDS and 13 cognitive scores in BCS70. These tests capture reading, mathematics, verbal and non-verbal reasoning. We combine the full set of test scores at 5/7 and 10/11 in order to provide a rich measure of cognitive attainment by the end of primary school.

NCDS age seven tests: Southgate Group Reading Test; Copying Designs Test; Human Figure Drawing (Draw-a-Man) Test; Problem Arithmetic Test (Goodenough, 1926; Harris, 1963; Pringle, Butler, & Davie, 1966; Southgate, 1962).

NCDS age 11 tests: General ability; NFER Reading Comprehension; NFER Arithmetic (Douglas, 1964; Shepherd, 2012).

BCS70 age five tests: Copying Designs; English Picture Vocabulary; Human Figure Drawing (Draw-a-Man); Complete a Profile; Schonell Reading Test (Brimer & Dunn, 1962; Goodenough, 1926; Harris, 1963; Rutter, Tizard, & Whitmore, 1970).

BCS70 age 10 tests: Shortened Edinburgh Reading Test; Friendly Maths Test; Pictorial Language Comprehension Test; Spelling Dictation task; British Ability Scales (BAS) comprising two verbal subscales (Word Definitions and Word Similarities) and two non-verbal subscales (Recall of Digits and Matrices) (Elliott, Murray, & Pearson, 1979; Godfrey Thompson Unit, 1978; Hill, 2005).

### 2.1.5 | Secondary school

Whether a private (fee paying) or state school was attended at age 16.

### 2.1.6 | Qualifications

Much previous work on the origins-education-destinations triangle uses relatively crude measures of educational attainment based on the highest broad level of qualifications achieved. This may understate the importance of education as a predictor of occupational outcomes, since differentiation within each level may be consequential for later outcomes, for example, degree holders are differentiated by field of study. Treating educational attainment as a detailed set of variables could lead to an overly complex and intractable model, hence we overcome this using the latent variable approach.

The latent qualifications variable includes the following:

- Public examination passes at age 16 (O levels), both the number of passes and whether the cohort member has a pass in English and in mathematics.
- Examination passes at 18 (A levels).
- Highest academic qualification by age 42 (NVQ level).
- For degree level qualifications, field of study divided into three broad areas in line with previous literature (Walker & Zhu, 2013): STEM (Science, Technology, Engineering, Maths), LEM (Law, Economics, Management) and OSSAH (Other Social Sciences, Arts and Humanities).

## 3 | RESEARCH QUESTIONS

1. Have there been changes in the pathways mediating the relationship between socio-economic origins and destinations between the 1958 and 1970 cohorts? Specifically, have there been changes in the roles of: cognitive scores, private schools and educational qualifications?

2. Are there direct effects of social origins for either cohort, above and beyond the mediators listed above?

3. Are the results sensitive to a range of different measures of socio-economic origins and destinations?

## 4 | ANALYSIS

Table 1 shows descriptive statistics for men and women in the 1958 and 1970 cohorts.

The profile of childhood socio-economic position was more favourable for the more recent cohort than for the earlier cohort. The parents of 1970 cohort members were less likely to fall into the lowest social class categories

and more likely to have been over 16 when leaving full-time education compared to the parents of 1958 cohort members.

BCS70 cohort members achieved substantially higher levels of educational qualifications than NCDS cohort members. For example, 12% of NCDS women gained a university degree, compared to 25% of BCS70 women, and 14% of NCDS men gained a degree compared to 23% of BCS70 men. For both cohorts, female cohort members received lower hourly pay than men, and were less likely to be in professional or managerial occupations by age 42 than men.

We present a series of structural equation models for women and men in each cohort. These analyses use latent variables to capture social origins, cognitive attainment and educational qualifications. These variables have been tested for cross-cohort measurement invariance. The individual variables load as predicted on the underlying latent variables in both cohorts.

Figure 1 shows the analysis for women in the 1958 cohort, and Figure 2 shows the same model for women in the 1970 cohort. For ease of interpretation, the size of the coefficients is reflected in the width of the arrows, as well as being stated on the diagram.

SEM builds upon a path analytic approach which explicitly recognizes the distinct temporal ordering in our data where the interplay of key variables conveys the connections from social origins to destinations and are best thought of as a “pictorial representation of associations” (Wright, 1934) or path analysis (Duncan, 1966, 1975). In the diagrammatic summaries that capture our final models (Figure 1 through 4) ellipses represent latent variables and rectangles those that are directly observed: that is, school-type and pay. The paths are lines connecting key variables where arrows indicate dependency between the origin variable and its destination. In this way, variables can be simultaneously independent and dependent in an overall structure which consists of inter-connected associations. So, taking Figure 1 as an example, social origins have a direct influence on childhood cognitive performance. Cognitive performance also has a role as a “pivotal variable” which may be associated with ability at entry

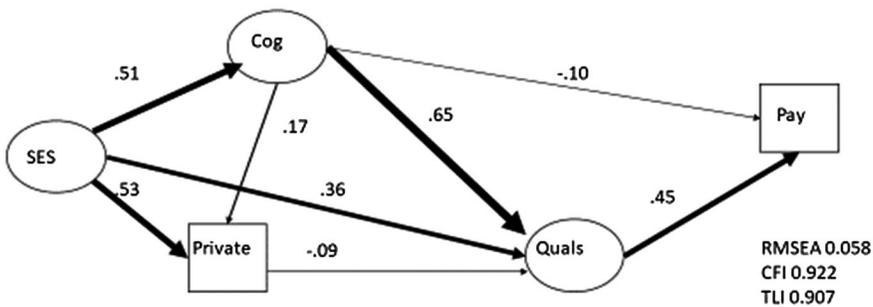


FIGURE 1 1958 Women

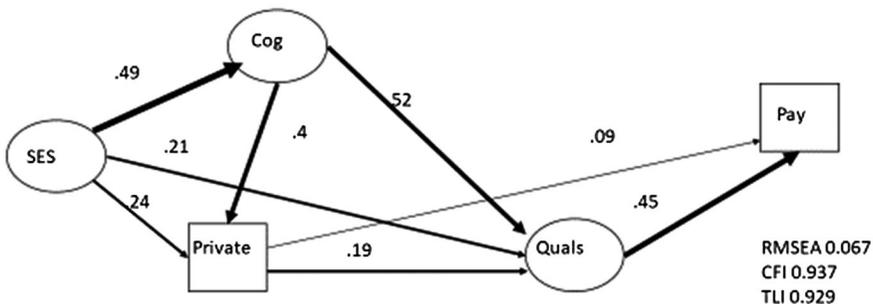


FIGURE 2 1970 Women

to private school, subsequent acquisition of educational qualifications and pay at age 42 years. Thereby, “social origins” acts indirectly via cognitive performance. In a similar fashion the path diagram shows indirect routes via attendance at private school at secondary level and the attainment of educational qualifications. Put more formally our models test the extent to which cognitive performance, schooling, educational qualifications mediate a direct connection between social origins and destinations (Jose, 2013), and whether or not there is evidence of a direct effect between social origins and destinations over the lifespan from birth to age 42 years. For an exemplary illustration of our methodological approach see (Kiernan & Huerta, 2008).

In order to assess the overall goodness of fit of our statistical models we have employed three criteria namely, “root mean square error” (RMSEA), “comparative fit index”, (CFI) and “Tucker Lewis fit index”, (TLI) where the following cut-offs would normally be regarded as “good fit”: RMSEA < 0.05, CFI > 0.90 and TLI > 0.90. Where these criteria are not all strictly met we have not abandoned the results if they provide “close fit” and inform our substantive judgements (Lai & Green, 2016).

Figure 1 shows a strong association between childhood social origins and childhood cognitive scores for women born in 1958. These cognitive scores in turn strongly predict educational qualifications, which in turn strongly predict pay. SES also has a direct influence on educational attainment, over and above the indirect influence via cognition. Women with higher childhood SES were more likely to attend private schools at 16, as were women with higher cognitive scores, but this did not improve their educational attainment. There is no direct (unmediated) pathway from social origins to earnings at 42. Turning to the 1970 women (Figure 2), the pattern of pathways from origins to destinations is broadly similar, though a key difference is that private schooling at 16 is more weakly associated with childhood SES for this cohort, and now positively associated with increased educational attainment. We also see that, for the 1970 compared to the 1958 women, childhood cognitive scores are a weaker predictor of educational attainment, and there is a weaker direct pathway from childhood SES to qualifications.

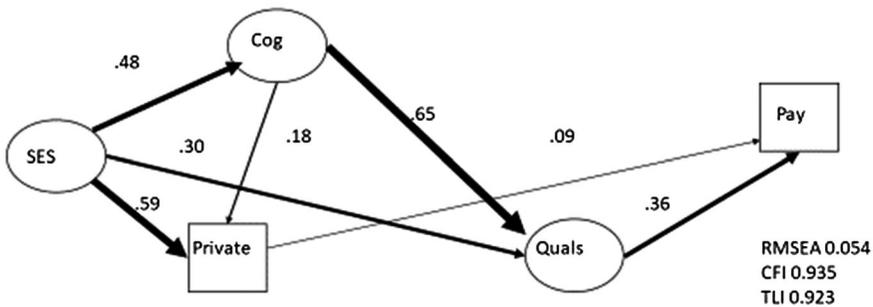


FIGURE 3 1958 Men

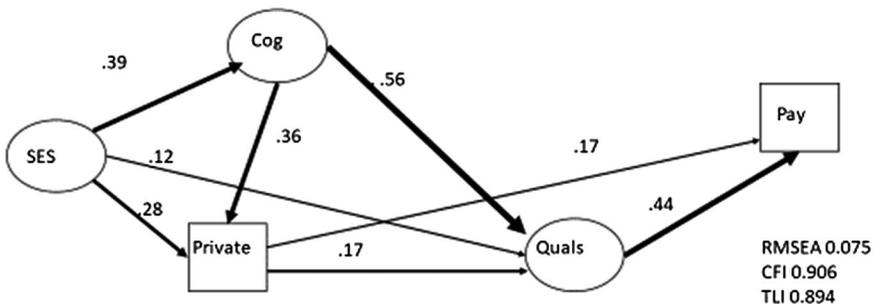


FIGURE 4 1970 Men

The results for men are presented in Figures 3 and 4. The pathways presented for the 1958 men are notably similar to those for the women, despite the large difference in average pay between men and women. High childhood SES strongly predicts attendance at a private school, but attendance at a private school does not predict qualifications. However, for men, private schooling did have a significant direct positive influence on pay. As with women, qualifications were the key predictor of earnings, and the most important pathway from childhood social origins to midlife earnings goes via childhood cognitive scores and educational attainment. Turning to the 1970 cohort men, we see again that, just as with the women, the role of private schools has changed between the two cohorts, with childhood SES becoming a weaker predictor, and cognitive scores a stronger predictor, of attending a private school and private schooling becoming a powerful positive predictor of educational qualifications. A further cross-cohort change for the men is that childhood SES is a less powerful predictor of childhood cognitive scores for the 1970 cohort than for the 1958 cohort, and, as with the women, cognitive scores are a less powerful predictor of educational attainment. The direct pathway from childhood SES to qualifications is also weakened in the 1970 cohort. There is still no evidence of a direct effect from SES to adult pay.

Figure 5 summarizes the significant cross-cohort changes in diagrammatic format. The decreased link between childhood origins and cognitive scores is statistically significant for men only, but all other changes are statistically significant for both sexes. The link between cognition and qualifications and the direct link between SES and qualifications are both weakened in the 1970 cohort. The link between childhood SES and private schooling is reduced, while the link between earlier cognitive scores and private schooling, and between private schooling and qualifications, are increased. There is no change between the cohorts in the link between qualifications and earnings.

Table 2 shows the total direct and indirect effects for the origins-education and origins-destinations links. Cross-cohort changes which are statistically significant at the .05 level are highlighted in bold. We see a marked and statistically significant decrease in the total relationship between social origins and educational attainment for both sexes. However, we see no marked or statistically significant change in the total relationship between social origins and earnings in midlife for either men or women. Therefore, despite the importance of education in determining pay, a decrease in educational inequalities has not led to an increase in social mobility.

These findings stand in contrast to the influential findings by Blanden and her colleagues referred to in the introduction. Blanden et al. find a decrease in social mobility, driven by an increase in educational inequality. It is important to understand what drives these differences. Therefore, alongside the results using our latent measure of childhood socio-economic status, we present the equivalent results using the component parts of the SES variable: family income, social class and parental qualifications. For income, our results are in line with Blanden et al. The link between childhood income and adult earnings is stronger for the 1970 than for the 1958 cohort for both sexes. The income-education link also strengthens, particularly for women (the cross-cohort increase is statistically significant for women only). For childhood social class, we find no change in the link with midlife pay for either sex. The class-education link declines for the 1970 cohort, significantly so in the case of men. For

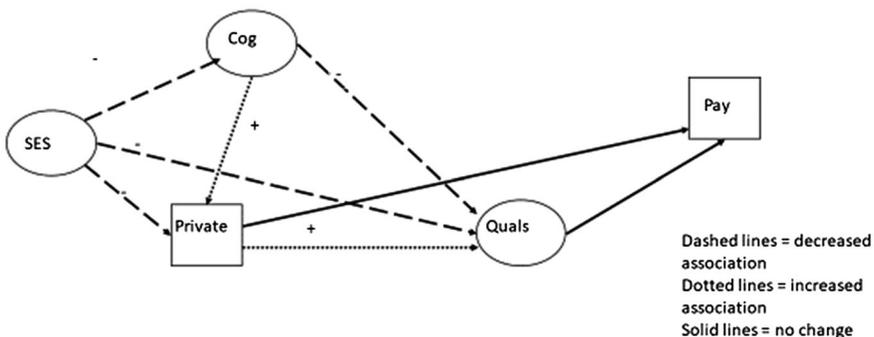


FIGURE 5 Summary of changes between 1958 and 1970 cohorts

TABLE 2 Summary of total direct and indirect effects

	SES-qualifications		SES-Pay		Income-qualifications		Income-pay		Class-qualifications		Class-pay		Education-qualifications		Education-pay	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
NCDS																
Direct	0.300	0.363	-0.027	-0.008	0.057	0.063	0.028	0.002	0.114	0.146	-0.014	-0.011	0.242	0.316	-0.030	-0.002
Indirect	0.315	0.272	0.289	0.265	0.190	0.165	0.111	0.093	0.305	0.276	0.194	0.175	0.318	0.280	0.261	0.246
Total	<b>0.615</b>	<b>0.635</b>	<b>0.263</b>	<b>0.258</b>	<b>0.247</b>	<b>0.228</b>	<b>0.137</b>	<b>0.095</b>	<b>0.419</b>	<b>0.421</b>	<b>0.180</b>	<b>0.165</b>	<b>0.560</b>	<b>0.597</b>	<b>0.231</b>	<b>0.245</b>
BCS70																
Direct	0.122	0.206	-0.008	-0.035	0.030	0.024	0.039	0.030	0.030	0.085	-0.024	-0.017	0.108	0.197	-0.001	-0.025
Indirect	0.297	0.336	0.25	0.294	0.258	0.285	0.180	0.168	0.288	0.295	0.210	0.212	0.276	0.312	0.224	0.266
Total	<b>0.419</b>	<b>0.542</b>	<b>0.242</b>	<b>0.259</b>	<b>0.287</b>	<b>0.309</b>	<b>0.219</b>	<b>0.198</b>	<b>0.317</b>	<b>0.380</b>	<b>0.186</b>	<b>0.195</b>	<b>0.384</b>	<b>0.509</b>	<b>0.223</b>	<b>0.242</b>

Note: Bold indicates significant cross-cohort difference at the .05 level.

TABLE 3 Summary of total direct and indirect effects (Class as outcome)

	SES-qualifications		Income-qualifications		Income-NS-SEC		Class-qualifications		Class-NS-SEC		Education-qualifications		Education-NS-SEC		
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
NCDS															
Direct	<b>0.292</b>	<b>0.368</b>	-0.037	0.050	0.059	-0.001	0.036	<b>0.113</b>	0.149	-0.026	-0.095	<b>0.237</b>	<b>0.318</b>	-0.080	-0.040
Indirect	0.318	0.258	0.230	<b>0.195</b>	<b>0.167</b>	0.164	0.125	0.304	0.267	<b>0.277</b>	0.260	<b>0.318</b>	0.269	<b>0.388</b>	0.336
Total	<b>0.610</b>	<b>0.627</b>	0.193	0.245	<b>0.226</b>	0.162	0.161	<b>0.417</b>	0.417	0.251	0.165	<b>0.555</b>	<b>0.587</b>	<b>0.308</b>	<b>0.296</b>
BCS70															
Direct	<b>0.131</b>	<b>0.239</b>	-0.038	0.032	0.035	-0.005	-0.011	<b>0.041</b>	0.100	0.012	0.006	<b>0.117</b>	<b>0.206</b>	-0.038	-0.106
Indirect	0.282	0.277	0.286	<b>0.260</b>	<b>0.277</b>	0.195	0.181	0.273	0.280	<b>0.205</b>	0.204	<b>0.266</b>	0.259	<b>0.238</b>	0.251
Total	<b>0.413</b>	<b>0.516</b>	0.220	0.291	<b>0.312</b>	0.190	0.170	<b>0.314</b>	0.380	0.217	0.210	<b>0.383</b>	<b>0.464</b>	<b>0.201</b>	<b>0.145</b>

Note: Bold indicates significant cross-cohort difference at the .05 level.

parental education, we again find no cross-cohort change in the origins-destinations link. The link between parental education and offspring qualifications declines for the 1970 cohort, with a particularly marked decline for men.

The findings of a stable association between origins and destinations, and declining educational inequality, are robust to a range of measures of social origins: social class, parental education and a latent SES measure incorporating income as well as social class and education. Only the sole use of family income to capture childhood social origins suggests a different story. These findings are in line with Erikson and Goldthorpe (2010), who suggest that Blanden et al.'s finding of reduced social fluidity and increased educational inequality is sensitive to measurement error in the single measure of family income at age 16 in NCDS. We find that the associations between origins and destinations are strongest when using the latent SES measure, for both outcomes, suggesting that this measure captures inequality in social origins more powerfully than any of its constituent parts taken separately.

We have also run a sensitivity analysis using social class (NS-SEC) as the outcome at age 42. These results are not directly comparable to the results for pay, as NS-SEC is a categorical variable, and we treat it as binary: social class 1 versus all other classes. The results are shown in Table 3. The broad pattern of results across the two cohorts is similar to the results we saw with pay as the outcome, with stable associations between childhood family income and NS-SEC at 42, and social class of origin and NS-SEC at 42. A notable difference is that the association between parental education and social class at 42 is stronger for the 1958 cohort than for the 1970 cohort, whereas, with pay as the outcome, there was no cross-cohort difference. The results for the childhood SES variable (which includes parental education) reflect this to some extent, with a stronger association between parental education and NS-SEC at 42 for men in the 1958 cohort than in the 1970 cohort.

## 4.1 | Discussion

The finding that socio-economic origins have weakened as a predictor of cognitive scores, and that cognitive scores have weakened as a predictor of educational attainment may reflect changes in the educational system experienced by the 1958 and 1970 cohorts. As selection declined with the move to comprehensive (all abilities) secondary schools, both advantaged families and primary schools may have placed less emphasis on the ability to pass multiple-choice style tests. Therefore, while the tests used to assess the cohort members were low-stakes, the removal of the high-stakes 11-plus test, potentially alongside corresponding changes in primary school pedagogy and curricula, may have been a factor in reducing social differentiation in test scores.

Previous studies, including those using the cohorts we analyse here, have typically found a "direct effect of social origins" (DESO) net of education. In previous work, we found that the influence of social origins on social class destinations is fully mediated by a comprehensive range of educational variables (Sullivan et al., 2018). In the current paper, we have shown that this finding also extends to the 1958 cohort, and applies to earnings as an outcome as well as social class.

We find that the role of private schools has changed, although the proportion of young people who attended private secondary schools stayed roughly constant between the two cohorts. Private schools became more academically selective and less socially selective between the two cohorts. We find that private schools have increased their impact on their pupils' educational attainment. This finding complements and is consistent with the work of Green et al. (2011) who find an increasing link between attending a private prep school (at age 10/11) and pay. This suggests that private schools responded effectively to both a changing labour market and a changing state school system, with the move towards comprehensivisation leaving a gap in the market for academically selective schools (Green & Kynaston, 2019).

Our findings are more optimistic than some of the previous literature, in that we find a decrease in the direct link between social origins and educational qualifications, and no increase in the link between social origins and destinations. An important conclusion is that measurement matters a great deal in statistical analysis. Researchers and policymakers may often assume that one indicator of a construct such as socio-economic status is broadly

equivalent to another, and yet this may not be the case. Where this leads to contradictory findings, the choice of variable clearly matters. This may be due to differences in the meaning of the underlying constructs, for example, income versus social class, or it may simply be due to measurement error in a particular observation, especially if it happens to be measured in a crude or otherwise problematic way. A multidisciplinary perspective allows us to move beyond our preferred traditional disciplinary measures in favour using a set of measures or a composite measure where appropriate.

While the finding that the direct link from social origins to educational outcomes has weakened over time appears encouraging, the lack of a corresponding reduction in the overall link between social origins and destinations suggests that reducing educational inequalities is not sufficient to increase social mobility. Our results point to the counterbalancing effect of the private schools becoming, between the cohorts, both more selective, and more successful in their association with better educational qualifications. This change could be expected from the combination of the enhanced academic orientation and increasing resources of private schools, together with the boost to their numbers from Direct Grant Schools.

Our findings regarding intergenerational change diverge in important ways from some of the existing findings in the literature in two important respects.

First, we find no change in the link between social origins and destinations between the 1958 and 1970 cohorts—in other words, no fall in social mobility. This places the findings in line with Goldthorpe and his colleagues and not with those of Blanden and her colleagues. In order to investigate whether previous apparently conflicting results were due to the choice of outcome variable, we have presented results using earnings as well as social class as the outcome. We have carried out supplementary analyses treating social class as the outcome, and found a broadly similar pattern of results, with no indication of an increased association between origins and destinations. This suggests that what drives the previous result that income mobility has fallen (whereas social mobility is steady) is not the use of income as the outcome, but rather the use of childhood income as the sole indicator of socio-economic origins.

Second, whereas both Galindo-Rueda and Vignoles (2005) and Blanden et al. have identified an increase in the link between parental income and educational attainment between the 1958 and 1970 cohorts, we find a weakening of the link between socio-economic origins and educational attainment. In contrast, our finding that the link between cognitive scores and educational attainment has weakened is in line with Galindo-Rueda and Vignoles (2005).

What should we make of these contrasting findings? It could be that the role of parental income in determining educational and socio-economic outcomes has increased while the role of other indicators of socio-economic origins has weakened or stayed constant. However, it is also possible that the changing results regarding income simply reflect measurement error in the childhood income variables. In that sense, results using a wider range of measures of socio-economic origins can be seen as a robustness check of the findings that use parental income alone.

Our finding that socio-economic inequalities in cognitive scores have weakened for men cannot be compared directly to past studies which have combined results for both sexes. However, our results are consistent with Galindo-Rueda and Vignoles' (2005) finding that test scores improved in BCS70 for the bottom end of the distribution (though they did not directly examine whether socio-economic inequalities in test scores were reduced). Our findings are also consistent with Connelly and Gayle's (2017) finding of a significant positive interaction term between being a member of the 1958 cohort and higher social class status when predicting childhood cognitive scores.

A limitation of the current study, is that, as for all social science research, the findings apply to a specific time and place. The fact that social mobility has been stable when comparing the 1958 "baby boomers" and 1970 "generation X" does not imply that it will remain stable for subsequent generations. The dramatic increase in economic inequalities that occurred during the 1980s, accompanied by weaker social provisions, including the introduction

of fees for higher education, may have implications for overall rates of social mobility, and also for the relative importance of particular pathways between origins and destinations.

A conclusion for policy is that structural changes in the state education system, accompanied by countervailing changes in the role played by private schools, will not necessarily lead to any change in rates of social mobility. Both left and right wing commentators on reforms such as the phasing out of selective schools within the state sector and the expansion of higher education might be surprised at the apparent imperviousness of rates of social mobility over time to such measures. This could indicate more broadly that the faith placed by many policymakers internationally in the potential to raise social mobility via changes in school structures and increases in higher education participation may be misplaced.

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## DATA AVAILABILITY STATEMENT

Both NCDS and BCS70 datasets are available to bona fide researchers via the UK Data Service.

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