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Intra-generational social mobility and educational qualifications

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Abstract

The relation between intra-generational social class mobility of parents and their children's subsequent educational qualifications, and the implications of this relation for educational stratification, is explored by fitting statistical models to data from two UK longitudinal datasets: one based on the UK Census (ONS LS) and the 1970 birth cohort study (BCS70). Children whose parents are upwardly mobile gain higher educational qualifications than their peers in their class of origin, but obtain lower qualifications than their peers in their class of destination. The reverse pattern is observed for the downwardly mobile. These results mirror those obtained for the relation between adult intra-generational social mobility and a number of widely used measures of health. The implications of the findings for different explanations of the social class gradient in educational attainment are examined. The findings provide greater support for theoretical explanations of educational inequalities that are based on differences in economic circumstances between social classes than they do for explanations based on social class variations in the levels of cultural capital and aspirations. This conclusion is strengthened by the fact that the overall pattern of results from these analyses is unchanged after statistically controlling for levels of parental education. The findings also have methodological implications for measuring the social class gradient in attainment and qualifications.

Keywords: Educational qualifications; Social class gradient; Intragenerational mobility; Longitudinal data; Cultural capital; Rational action theory

1. Introduction

The association between occupational social class and educational attainment is well-established and robust across societies and over time: on average, children from working (or manual) class backgrounds do less well on school tests and have lower educational qualifications than their middle class peers (Ball, 2010; Shavit & Blossfeld, 1993). Moreover, there is a social class gradient in that the mean levels of attainment rise with each rung of the social class ladder. What is much less clear is why this gradient exists: which features of class background lead to differences in educational attainment?

One way of exploring the plausibility of different pathways between parental social position and children's educational attainment is to examine the consequences of change in family circumstances. There are very few studies that have done this explicitly. In this paper, we use longitudinal data to examine a young adult's level of educational qualifications in the light of whether they experience a change in their parents'

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social class during their years of schooling. By doing so, we change the focus of research from the mediators of static family circumstances to the comparison of children's attainment between socially mobile and socially stable families. Much sociological investigation has been devoted to inter-generational social mobility (between the social class of parents and adult children). These studies usually assume that social class does not change across the first part of the life course. There is a small body of research (e.g. Akee, Copeland, Keeler, Angold, & Costello, 2010) that has examined the effects of changes in family income (not social class), finding that increases in income have some influence on educational progress at the lower end of the income scale, but the effect is negligible for middle and higher income families (Bratti, 2002; Crosnoe & Cooper, 2010). Changes in parental social class are likely to be associated with changes in family income. We are, however, arguably in a better position to understand the link between family circumstances and educational outcomes if we focus on the broader changes implied by changes in parental social class rather than just on the one dimension of short-term changes in family income.

A potentially important issue arising in studies of intra-generational social mobility is "gradient constraint". Gradient constraint is the tendency found in many health studies for measures of health among the socially mobile to lie between the average levels found in their social classes of 'origin' (i.e. at age a_1) and 'destination' (i.e. at age a_2; $a_2 > a_1$) (Bartley & Plewis, 1997, 2007; Blane, Harding, & Rosato, 1999; Langenberg, Hardy, Kuh, Brunner, & Wadsworth, 2003; Power, Manor, & Li, 2002). Can we expect to observe similar effects when investigating educational qualifications rather than health as the outcome? In health studies, the presence of gradient constraint can be interpreted as showing that downward social mobility by those in poor health, and upward mobility by those in good health, is not a cause of the well-known social inequalities in health. On the contrary, if there were no social mobility, health inequalities would in fact be greater than those observed in cross-sectional studies (Sacker, Clarke, Wiggins, & Bartley, 2005).

The paper proceeds as follows: The next two sections discuss the theoretical background on educational stratification, and a methodological issue arising from gradient constraint as it might affect the assessment of educational inequalities. The longitudinal data sources are then introduced along with a description of the extent of intra-generational mobility that they reveal. The statistical approach used to assess the association between social mobility and educational qualifications is then described followed by the results from the modelling. Implications of these results for understanding social class gradients are presented before the paper concludes with some remarks about the data and methods we use.

2. Theoretical background

The route to attaining educational qualifications of value in the labour market has two stages: the primary stage of reaching a minimum standard on school tests during the compulsory years of schooling and, conditional on that achievement, the secondary stage of choosing to make the transition to post-compulsory schooling. The outcomes for both these stages are socially patterned although not necessarily as a result of the same underlying processes (Jackson, Erikson, Goldthorpe, & Yaish, 2007).

Several explanations have been put forward for the relationship between social position and educational attainment. Goldthorpe and colleagues (Breen & Goldthorpe, 1997; Goldthorpe, 1996) have put forward rational action theory as a way of explaining at least some of the persistent social gradient in educational attainment. They argue that there are three factors which determine the choices of families as to where their children should aim academically, particularly after the end of compulsory schooling. The first of these is the beliefs that parents hold about the likelihood that their child will be able to attain a given level. The second is parents' expectations as to the cost of attaining that level. Lower-income families may be fearful of the potential costs of sending children to further or higher education (Destin & Oyserman, 2009). The third is parents' beliefs about the likelihood that a given level of attainment will protect their child from loss of status in comparison to his or her origins. As a result, not all pupils aim for the highest result regardless but instead adopt a course of action that seems realistic and will avoid downward social mobility. For those from more advantaged families, this means going to university. But those whose parents are members of, for example, the skilled working class, will tend to choose an educational pathway such as vocational education which they believe offers the best chance of success rather than the one – a degree, for example – which might lead to higher income and status than their parents (Goldthorpe, 1996; Hansen, 2008; Stocké, 2007).

Another set of explanations focus more directly on resources. Less advantaged social class position of the head of household is closely related to lower household income and wealth, and this may result in a number of outcomes potentially detrimental to educational

attainment (Blanden & Gregg, 2004; Huang, Guo, Kim, & Sherraden, 2010; Marks, Cresswell, & Ainley, 2006; Orr, 2003). For example, the home may be more crowded, with less quiet space for study. Local schools may be of poorer quality (Hoschild, 2003). Higher-income parents are able to buy-in private tuition in one form or another (Ball, 2010).

Another popular explanation of the persistent social gradient in educational attainment refers to differences in culture between more and less advantaged families. Based on the work of Bourdieu (Bourdieu & Passeron, 1977; Bourdieu, 1996), the cultural explanation holds that membership of a social class is accompanied by a set of values and beliefs such as placing emphasis on present rather than future benefits, preferring more to less abstract forms of art, and preferences for different types of leisure activity. Bourdieu refers to this as 'cultural capital' (Aschaffenburg & Maas, 1997; DiMaggio, 1982; Gunn, 2005). Families with high cultural capital are those where the products of 'highbrow' culture are available to children, because they are present in the home and form the focus of shared activities with children such as going to the opera, ballet and libraries (Scherger & Savage, 2010). It is expected that familiarity with the culture of the dominant social class improves the communication between teachers and pupils, and makes teachers evaluate more socially advantaged children in a more favourable light and these evaluations in turn raise attainment (Andersen & Hansen, 2012; Tramonte & Willms, 2010). There are several studies in which statistical adjustment for measures of intelligence does not eliminate the differences in educational attainment between children in different social classes, but scores reflecting the levels of cultural capital have done so (Jæger & Holm, 2007; Micklewright, 1989). These findings have been interpreted as having located the most important cause of the relationship. However, not all studies agree in this respect (Ermisch, 2008; Fergusson, Horwood, & Boden, 2008; Sullivan, 2001), and debate continues on the extent to which cultural capital may explain social inequalities in educational outcomes (Hansen & Mastekaasa, 2006; Hansen, 2008; Marks et al., 2006).

An alternative pathway is provided by family stress theory with parental stress reducing the time and energy available to encourage children to study (Crosnoe & Cooper, 2010; Haveman & Wolfe, 1995; Huang et al., 2010). Mobility between more and less advantaged social class positions might plausibly be regarded as changing the extent of family stress and thus diluting or enhancing its influence on the schooling of children.

The range of explanations (Erikson & Jonsson, 1996) about how social class differentials in educational achievement emerge can be regarded as complementary rather than competing with each other. Nevertheless, we can consider the implications of intra-generational social mobility for these different hypotheses. Firstly, according to the 'cultural' hypothesis, the aspirations of all mobile families would be expected to more closely resemble those in their destination class and hence, if aspirations are the key explanation, the qualifications of their children will be similar to those in this destination class rather than to those in the class of origin. It could even be argued that changes in aspirations precede social mobility itself. A second version of a cultural hypothesis would be that, because parents' educational qualifications obtained before having children are such a strong predictor of their social class, mobile children are likely to have access to similar levels of cultural capital as those in their origin class so, were this explanation to be of most importance, they would be expected to attain a level of qualifications that is close to the origin class rather than to their destination class. In contrast to both versions of the cultural hypothesis, the material resources hypothesis would imply that children who experience upward or downward mobility before or during their schooling would have available to them a level of economic and social resources that is an average of resources available to those in the classes of origin and destination, weighted by the duration in each of these two class positions. Consequently, if these resources – which are an important component of rational action theory – were the main driver of educational success, mobile children should attain qualifications approximately midway between the classes of origin and destination. This would be an extension of previous work on health inequality mentioned in the Introduction, showing that the result of social mobility was to reduce the social class gradient in educational outcomes.

It is, however, plausible to suppose that, relative to stable members of each social class of origin, parents in socially mobile families have somewhat better (if upwardly mobile) or worse (if downwardly mobile) qualifications. We can thus refine our analysis if we control for the level of parental education – and hence, following Bourdieu, control for cultural and educational resources. If we observe patterns of differences between the socially mobile and stable groups that are similar with and without controls for parental education then this would suggest that not all the explanations for these differences can be attributed to differences in the cultural capital available to the child. If cultural capital is the dominant explanation then we would expect that (i) the class gap between the stable groups would be reduced and (ii) the mobile groups would be closer to

their respective classes of origin once we control for parental education. In other words, we would expect the gap between the mobile groups would be greater after controlling for parental education.

3. Methodological issue

The previous section considered some of the implications for theories of educational stratification of an association between intra-generational social mobility and children's educational attainment, and the gradient constraint that might emerge from this association. We should also, however, note that the association has a methodological implication.

The most common way of assessing the social class gradient in educational qualifications is to use cross-sectional data on adults, relating their qualifications to their parents' or father's occupational position when they were about age 15. This approach is exemplified by many of the studies described in Shavit and Blossfeld (1993) but has two disadvantages: proxy data (child about parent) and potential measurement error arising from faulty recall. These problems do not arise with longitudinal studies that cover the relevant parts of the life course in that contemporaneous data about social class can be collected directly from the parents. If, however, the hypothesis of gradient constraint is supported then the social class gradient for any educational outcome of interest can be expected to vary according to the child's age at which social class is measured. The extent of this variation will then depend on whether upward mobility is more or less common than downward, and the relative proportions moving in and out of the social classes. If upward mobility is more prevalent then the social class 'churn' – with the higher social classes gaining proportionately more cases with subsequent lower educational outcomes – implies that the gradient can be expected to be steepest when social class is measured at birth and to become progressively less steep for measures of social class taken later in childhood. The results presented in Section 6.2 support this.

4. Data sources

Bartley and Plewis (1997, 2007), in their analogous studies of social mobility and health, analysed data from the UK Office for National Statistics Longitudinal Study (ONS LS) for England and Wales. It links Census of Population records for about 1% of the population (about half a million records) and covers the four Censuses between 1971 and 2001, supplemented by data on births, deaths and known migration. As the 2001 Census included a question on educational qualifications that was coded in reasonable detail, this meant that the ONS LS was also an appropriate dataset for our purposes. The strengths of the ONS LS are that the sample is large and, because of the compulsory nature of the Census, non-response is not a serious issue. Further information can be found at: http://www.ucl.ac.uk/celsius/about-the-ls (accessed 17.09.13).

In order to see whether our findings are consistent across time, we use data from two broad cohorts: those who were age zero to seven years in 1971 (and therefore 10–17 in 1981 and at least 30 in 2001, labelled ONS LS(1)) and those who were age four to seven years in 1981 (and therefore 14–17 in 1991 and at least 24 in 2001, labelled ONS LS(2)).

Because we wanted to control for parental educational attainment in some analyses (a variable not collected in the Census), we also use the 1970 British Cohort Study (BCS70). BCS70 is a continuing, multi-disciplinary longitudinal study which takes as its subjects all those living in England, Wales and Scotland who were born in 1970. BCS70 began when data were collected about the families of just under 17,200 babies born in a particular week in April 1970. They were followed up at ages five, 10 and 16 years and into adulthood. Further details about BCS70 can be found at: http://www.cls.ioe.ac.uk/page.aspx?&sitesectionid=795&sitesectiontitle=Welcome+to+the+1970+British+Cohort+Study+%28BCS70%29 9 (accessed 17.09.13).

The BCS70 cohort is nearly contemporaneous with the first of our ONS LS cohorts, thus affording a degree of replication in our analyses. The extent of non-response is a disadvantage of BCS70 (see Plewis, Calderwood, Hawkes, & Nathan, 2004 for more details); on the other hand, it is based on a relatively large single year cohort and it can be used to break down mobility by stages of childhood.

Table 1 shows the origin social class distributions and the extent of intra-generational class mobility from the two data sources. In order to maintain comparability across the two data sources, the table is based on a classification of parental social class derived from the Registrar-General's (R-G) social class schema that was used in British official statistics on births and deaths from 1951 to 2001. It has been described at different times as measuring "general standing in the community" (Office of Population Censuses and Surveys, 1970) and "educational skill group" (Office of Population Censuses and Surveys, 1980). We follow Bartley and Plewis (1997) and group classes I and II because the transition from professional to managerial status is a common event in successful careers that should not

Table 1
Distributions of social class and intra-generational class mobility (%).

Cohort		1964–1971	1974–1977	1970	1970
Study		ONS LS(1)	ONS LS(2)	BCS70	BCS70
Age range (years)		0,7–10,17	4,7–14,17	0–5	5–16
Sample size		42,548	15,615	12,151	5453
Origin[a] social class	1	24	32	18	26
	2	11	11	14	9
	3	43	38	45	46
	4	22	18	24	19
Mobility	Up	23	21	25	20
	Stable	62	63	62	66
	Down	15	16	14	14

[a] This is the social class at the younger age (BCS70) or age range (ONS LS).

be considered as downward mobility. We also group classes IV and V because it is doubtful that movement between these two classes should be regarded as a meaningful shift in an individual's social position. Consequently, we use four groups as follows:

1. Professional and managerial (R-G classes I and II).
2. Routine non-manual (R-G IIINM).
3. Skilled manual (R-G IIIM).
4. Semi-skilled and unskilled manual (R-G classes IV and V).

Two points should be noted here. The first relates to the way parental social class is operationalised for each child in the analysis. For ONS LS(1) and ONS LS(2), it is defined at each time point by the occupation of the head of household to which the child belongs, in turn determined by how and by whom the Census form is completed. For BCS70, social class is defined by the father figure's occupation if present in the household and by the mother's occupation if not, as described in face to face interviews. Hence, it is not always the case that parental social class is based on the occupation of the same parent over time. The second point is that some children – for example, 15% in ONS LS(2) in 1991 – could not be allocated to one of the above four categories: children whose social class was 'other' at any time point were omitted from all analyses. Upward mobility is defined as moves from class categories 2–1, 3–2 and 1, and 4–3, 2 and 1 with downward mobility defined in the reverse way and stability as no observed change between the two time points.

There is consistent evidence in Table 1 of mobility across the cohorts and age ranges from ONS LS and BCS70. There is more upward than downward mobility as one would expect given structural changes in the occupational distribution as manual occupations decline in importance, as indicated by the comparison between the two ONS LS cohorts, and the tendency for parents to be promoted up the occupational ladder over the life course. There is some suggestion from Table 1 that upward mobility is more marked when children are younger, as indicated by the comparison of the younger and older age ranges in BCS70. The social class distribution in BCS70 is more weighted towards the manual classes, partly explained by the inclusion of births in Scotland that is omitted by ONS LS.

The educational outcome used throughout is the highest qualification achieved:

(i) Between ages 24 and 37 for ONS LS as reported (via self-completion) in the 2001 Census.
(ii) At age 34 in 2004 for BCS70, reported in a face-to-face interview.

For both studies six ordered categories are used, ranging from no qualifications to a higher degree; the intermediate steps are similar although not identical in the two studies. The distributions of these outcomes are given in Table 2. They show a marked shift towards

Table 2
Distributions of highest educational qualifications (%).

	ONS LS(1)	ONS LS(2)	BCS70
1 (No quals.)	11	8	9
2 (Lower level school quals.)	31	19	15
3 (Middle level school quals.)	25	26	33
4 (Higher level school quals.)	10	15	9
5 (First degree)	16	26	27
6 (Higher degree)	6	7	6
n	42,548	15,615	9624

higher qualifications across the two ONS LS cohorts and higher qualifications in the BCS70 cohort compared with the comparable ONS LS(1) which is at least partly attributable to selective non-response by age 34 in BCS70.

In addition, for BCS70, we use a six-point scale of parental education defined by when each of the cohort child's parents left full-time education: a score of zero means that both parents left school before the age of 15 (4.4% of the sample) and a score of six implies that both parents entered higher education after age 18 (3.9% of the sample). The modal score (47%) was two.

5. Statistical analysis

If parental social mobility is associated with their children's qualifications in adulthood then we would expect the destination class to add to the explanation of the variance in qualifications conditional on the effect of the origin class and also, possibly, that the origin and destination classes interact in their link with the outcome. Consequently, we fit a single model that includes origin and destination class and the interaction between them.

We model the qualifications outcome in two ways:

(i) As an ordered logit (using *ologit* in STATA):

$$\log\left[\sum_{i=1}^{m}\frac{\pi_i}{\left(1-\sum_{i=1}^{m}\pi_i\right)}\right], \quad m=1\ldots M-1 \qquad (1)$$

where M is the highest category ($M=6$ here) and π is the probability of being in category i. This leads to a proportional odds model. We also considered a continuation ratio model (i.e. proportional hazards) which is often appropriate for an ordered variable like educational qualifications for which change can only take place in one direction. For these data, however, the fit of the proportional hazards model was always worse than for the proportional odds model.

(ii) As a multiple logit thus ignoring the ordering and relaxing the proportional odds assumption (using *mlogit* in STATA):

$$\log\left[\frac{\pi_m}{\pi_M}\right] \quad m=1\ldots M-1 \qquad (2)$$

There are various options for representing the origin and destination social class explanatory variables: for example, either as dummy variables or as linear terms for the main effects (assuming an equally spaced coding of one to four), and similarly for the interaction term.

We base our conclusions on predicted probabilities from the best-fitting models using the Akaike Information Criterion (AIC). In other words, we allow the data to tell us which representations of qualifications and class are the most appropriate. These goodness-of-fit statistics are given in Appendix Table A1 for the different models and take into account the assumptions about educational qualifications (as represented by Eqs. (1) and (2)) and whether or not social class is treated an equally spaced ordered variable. We see that, for both the ONS LS cohorts, the ordered category model does not fit as well as the multiple logit (implying that the proportional odds assumption is not upheld), and social class is better represented as a set of three dummy variables although little is lost by treating the interaction between the origin and destination classes as a linear effect. Hence, the model for the ONS LS data is:

$$\log\left[\frac{\pi_m}{\pi_M}\right]=\beta_{m0}+\sum_{j=1}^{3}\beta_{mj}o_j+\sum_{k=1}^{3}\gamma_{mk}d_k+\delta_m\tilde{o}_j\tilde{d}_k \qquad (3)$$

where o_j and d_k are dummy variables for the origin and destination classes respectively with class 4 as the reference category, and $\tilde{o}_j$ and $\tilde{d}_k$ are the linear components of the origin and destination classes so that δ_m are the interaction parameters.

However, the more parsimonious ordered logit (or proportional odds) model with all social class effects included as linear terms fits best to the BCS70 data:

$$\log\left[\sum_{i=1}^{m}\frac{\pi_i}{\left(1-\sum_{i=1}^{m}\pi_i\right)}\right]=\alpha+\beta\tilde{o}_j+\gamma\tilde{d}_k+\delta\tilde{o}_j\tilde{d}_k \qquad (4)$$

The predicted probabilities of having different levels of qualifications can then be obtained from the estimated coefficients in Eqs. (3) and (4).

6. Results

6.1. Predicted probabilities

We focus on the predicted probabilities of having (i) at least one qualification and (ii) either a first or higher degree for mobility between adjacent classes, and between class categories 1 and 4. Table 3 gives the results for the second ONS LS sample and Table 4 for the BCS70 sample over the first five years. We see that the destination class (note 1) and the interaction between origin and destination class (note 2) both contribute to the explanation of variation in qualifications.

The first row of Table 3 shows that the predicted probability of having a qualification in 2001 is: (i) 0.981 for

Table 3
Predicted probabilities of qualification level (standard errors; cell size), ONS LS(2).

Social class pairs	x	$x+1$	Stable social class, x	Mobility, up, $x+1$ to x	Mobility, down, x to $x+1$	Stable social class, $x+1$
A qualification	1	2	0.981 (0.0020; 3930)	0.973 (0.0037; 689)	0.964 (0.0047; 460)	0.956 (0.0057; 736)
	2	3	0.956 (0.0057; 736)	0.910 (0.0092; 409)	0.941 (0.0076; 171)	0.896 (0.0047; 3657)
	3	4	0.896 (0.0047; 3657)	0.877 (0.0082; 736)	0.853 (0.0086; 1040)	0.842 (0.0085; 1541)
	1	4	0.981 (0.0020; 3930)	0.902 (0.012; 371)	0.896 (0.015; 249)	0.842 (0.0085; 1541)
First or higher degree	1	2	0.576 (0.0076)	0.425 (0.014)	0.466 (0.015)	0.338 (0.014)
	2	3	0.338 (0.014)	0.241 (0.012)	0.270 (0.014)	0.198 (0.0060)
	3	4	0.198 (0.0060)	0.177 (0.0091)	0.169 (0.0083)	0.162 (0.0082)
	1	4	0.576 (0.0076)	0.241 (0.016)	0.290 (0.021)	0.162 (0.0082)

Notes:
1. H_0: destination (i.e. 1991) class = 0; $\chi^2 = 163$, 15df, $p < 0.001$.
2. H_0: origin by destination class = 0; $\chi^2 = 36$, 5df, $p < 0.001$.
3. Overall $n = 15{,}615$; cell sizes for 'first or higher degree' the same as for 'a qualification'.
4. Standard errors obtained using *predictnl* in STATA.

children who were in social class 1 in both 1981 and 1991, (ii) 0.973 for children who were in class 2 in 1981 and in class 1 in 1991, (iii) 0.964 for children who were in class 1 in 1981 and in class 2 in 1991, (iv) 0.956 for children in class 2 at both occasions. And the penultimate row of Table 3 shows that the predicted probability of having a first or higher degree in 2001 is: (i) 0.198 for children who were in social class 3 in both 1981 and 1991, (ii) 0.177 for children who were in class 4 in 1981 and in class 3 in 1991, (iii) 0.169 for children who were in class 3 in 1981 and in class 4 in 1991, (iv) 0.162 for children in class 4 at both occasions. The interpretation of Table 4 follows in the same way.

Tables 3 and 4 show that the predicted probabilities for both mobility groups always lie between the corresponding stable social class groups. Also, the differences between the two mobility groups are, when compared with their standard errors, generally small and not consistently in the same direction. As the results for the other ONS LS cohort (ONS LS(1)) and for the BCS70 cohort between the ages of five and 16 show the same patterns, these tables can be found in the Appendix as Tables A2 and A3. In all cases, the differences between the mobile and stable groups are more marked for mobility across non-adjacent categories. We show the results for mobility between classes 1 and 4; the results for mobility between classes 1 and 3, and 2 and 4, are essentially the same. We find that our conclusions are unaffected if we include parental age in the BCS70 models (parental age was not available in the ONS LS dataset).

Table 5 shows that the BCS70 index of parental education exhibits the same pattern with respect to social class and mobility as the children's educational qualifications in adulthood do: the mobile groups have scores that lie between the stable groups with small differences between the mobile groups. The best fitting ordinal logit models for highest educational qualification that include parental education as an explanatory variable also

Table 4
Predicted probabilities of qualifications level (standard errors; cell size), BCS70, ages 0–5.

Social class pairs	x	$x+1$	Stable social class, x	Mobility, up, $x+1$ to x	Mobility, down, x to $x+1$	Stable social class, $x+1$
A qualification	1	2	0.977 (0.0015; 1156)	0.966 (0.0019; 455)	0.962 (0.0022; 85)	0.948 (0.0024; 432)
	2	3	0.948 (0.0024; 432)	0.928 (0.0033; 130)	0.922 (0.0040; 145)	0.902 (0.0038; 2383)
	3	4	0.902 (0.0038; 2383)	0.877 (0.0054; 613)	0.867 (0.0059; 463)	0.848 (0.0080; 654)
	1	4	0.977 (0.0015; 1156)	0.922 (0.0067; 99)	0.900 (0.010; 61)	0.848 (0.0080; 654)
First or higher degree	1	2	0.609 (0.012)	0.502 (0.0095)	0.480 (0.011)	0.396 (0.0073)
	2	3	0.396 (0.0073)	0.318 (0.0078)	0.298 (0.0093)	0.249 (0.0056)
	3	4	0.249 (0.0056)	0.205 (0.0069)	0.191 (0.0067)	0.167 (0.0081)
	1	4	0.609 (0.012)	0.298 (0.018)	0.245 (0.020)	0.167 (0.0081)

Notes:
1. H_0: destination (i.e. age five) class = 0; $\chi^2 = 106$, 1df, $p < 0.001$.
2. H_0: origin by destination class = 0; $\chi^2 = 19$, 1df, $p < 0.001$.
3. Overall $n = 7425$; cell sizes for 'first or higher degree' the same as for 'a qualification'.

Table 5
Mean parental education index (standard errors; cell sizes), BCS70, ages 0–5.

Social class pairs		Stable social class, x	Mobility, up, $x+1$ to x	Mobility, down, x to $x+1$	Stable social class, $x+1$
x	$x+1$				
1	2	4.1 (0.035; 1628)	3.4 (0.045; 652)	3.1 (0.12; 132)	3.1 (0.044; 600)
2	3	3.1 (0.044; 600)	2.6 (0.068; 212)	2.7 (0.073; 257)	2.3 (0.015; 3836)
3	4	2.3 (0.015; 3836)	2.2 (0.026; 1049)	2.2 (0.027; 778)	2.1 (0.025; 1166)
1	4	4.1 (0.035; 1628)	2.5 (0.10; 135)	2.6 (0.13; 88)	2.1 (0.025; 1166)

Table 6
Predicted probabilities (standard errors; cell size) of first or higher degree, BCS70, ages 0–5, controlling for parental education index.

Social class pairs (x, $x+1$)	x	$x+1$	Stable social class, x	Mobility, up, $x+1$ to x	Mobility, down, x to $x+1$	Stable social class, $x+1$
Index = 2 ($n=3231$)	1	2	0.387 (0.015; 137)	0.353 (0.012; 78)	0.328 (0.014; 16)	0.296 (0.0085; 96)
	2	3	0.296 (0.0085; 96)	0.266 (0.0073; 62)	0.245 (0.0083; 52)	0.218 (0.0055; 1375)
	3	4	0.218 (0.0055; 1375)	0.194 (0.0072; 377)	0.177 (0.0066; 285)	0.156 (0.0065; 403)
Index = 3/4 ($n=2741$)	1	2	0.567 (0.011; 500)	0.500 (0.010; 298)	0.489 (0.012; 44)	0.426 (0.0079; 275)
	2	3	0.426 (0.0079; 275)	0.370 (0.0095; 54)	0.356 (0.0095; 68)	0.302 (0.0080; 721)
	3	4	0.302 (0.0080; 721)	0.256 (0.010; 128)	0.249 (0.0098; 121)	0.209 (0.0097; 135)

Notes:
1. H_0: destination (i.e. at age five) class = 0; $\chi^2 = 97$, 1df, $p < 0.001$.
2. H_0: origin class by parental education = 0; $\chi^2 = 8.3$, 1df, $p < 0.01$.
3. Overall $n = 7171$.
4. Transitions between SC1 and SC4 are omitted as the numbers are small.

include the origin and destination classes, and an interaction between parental education and class of origin (with the effect on qualifications of parental years of schooling less marked for lower social class of origin) but not the interaction between the origin and destination classes. Table 6 is analogous to the lower half of Table 4 with parental education controlled and with the index fixed at a score of two in the upper part and at three or four in the lower part. The differences between the stable social classes are still substantial in each row, especially for the higher levels of the parental education index, although they are smaller than they are in Table 4. However, there is no consistent evidence of a wider gap between the mobility groups and so the results are not in line with expectation if cultural capital is the dominant explanation of class differences. Table A4 gives the corresponding results for ages five to 16 and the same conclusions are reached when comparing them with Table A3.

6.2. Social class gradient

The methodological issue raised in Section 3: the possibly changing association between parental social class and their children's educational qualifications – the social class gradient – is assessed from an ordered logit model (i.e. Eq. (1)) relating qualifications to social class where class is treated as an equally spaced linear term. The gradient is estimated by the regression coefficient for class. There is a clear reduction in the gradient for both the ONS LS cohorts according to when social class is measured: down from 0.51 (s.e. = 0.0079; $n = 48{,}249$) in 1971 to 0.46 (s.e. = 0.0077; $n = 45{,}017$) in 1981, and from 0.58 in 1981 (s.e. = 0.013; $n = 17{,}755$) down to 0.48 (s.e. = 0.012; $n = 16{,}751$) in 1991. This is line with expectations given that upward mobility is more prevalent than downward mobility. The results are not so clear-cut for the BCS70 data:

SC, birth 0.57 (0.020) $n = 8841$
SC, five 0.56 (0.020) $n = 7656$
SC, 10 0.54 (0.019) $n = 8196$
SC, 16 0.57 (0.025) $n = 4809$

However, the unexpected increase from ages 10 to 16 coincides with a sharp fall in the sample size. This variation in the class gradient has important implications for comparative analyses of the kind presented by Shavit and Blossfeld (1993) in that comparisons of the gradient across societies should be based on measures of social class taken at the same age in childhood.

7. Discussion

There is strong and consistent evidence, obtained from two rather different studies and across different

cohorts of children, to support the hypothesis that children who experience parental social mobility, either up or down, during their school years attain levels of qualifications in later life that lie between those from families who remained stable in the relevant classes of origin and destination. This evidence does not directly contradict the finding that social class differentials in educational test scores appear to widen during childhood (Goldstein, 1979; Feinstein, 2003). Rather it suggests that the social class 'churn' acts as a constraint on these widening differences, differences that are further amplified when considering post school-level educational qualifications, as opposed to performance on educational tests, given that social class is related to entering higher education even for fixed test scores or school examination grades (Jackson et al., 2007).

Taken overall, the findings give rather more support to a 'resources based' than to a 'culture based' explanation for social gradients in educational qualifications. There is no consistent evidence that the upwardly mobile have higher qualifications than the downwardly mobile for any $(x, x+1)$ pairs of social classes and the position of both mobile groups about mid-way between the stable groups is in line with what would be expected if economic and social resources are the dominant factor in accounting for social class differences. Moreover, this mid-way position, and the fact that the probabilities of obtaining a first or higher degree do not change in the expected directions after controlling for parental education, suggest that the cultural capital hypothesis is less well supported. We do, nevertheless, recognise that our analyses would be strengthened if we had good data on changes in family income that we could match with the changes in social class. Recent work using the better income data from the UK Millennium Cohort Study (Sullivan, Ketende, & Joshi, 2013) has pointed to the importance of income as well as social class in relation to children's cognitive development. It would also be interesting to follow through the implications of the link, established by Chan and Boliver (2013), between maternal grandparents' social class and an adult child's social class regardless of their parents' social class. If there were differences between the socially mobile and stable groups in the distribution of grandparents' social class, and if the incorporation of grandparents' social class into the models reduced or eliminated the differences in qualifications found in this paper, this could lead to a refinement of the explanations for these differences.

Whereas the resources available to support children's efforts at school might be regarded as responsive to changes in social class, this is less likely in the case of cultural capital. There is little empirical work that explicitly examines changes in cultural practices following social mobility. Daenekindt and Roose (2013), the authors of one of the few studies, say of what has been done that "There is no consensus in the literature on the effect of multiple socialisation contexts on taste and cultural behaviour". Bourdieu's view seems to have been that cultural capital becomes embodied in the habitus (Bourdieu, 1984) and does not respond to change in the social environment. Lahire, in contrast, has argued that such change may take place (Lahire, 2008). Because some studies of cultural influences have found a greater effect of cultural participation, which is facilitated by economic resources, than other markers of the home cultural environment (Aschaffenburg & Maas, 1997), this is another plausible effect of changes in social position (Roksa & Potter, 2011).

Breen and Goldthorpe's focus on the availability of resources for school success is also supported, in that an increased (or decreased) ability to spend money on books and cultural activities would accompany social mobility. The implications of these findings for the aspirations hypothesis are somewhat more complex. If parents are themselves upwardly mobile, for example, we would expect children to opt for a harder course of study that would equip them for membership of their parents' new, more advantaged social class. And likewise, we would expect the children of downwardly mobile parents to lower their educational aspirations. Empirically, the average achievement of children in the mobile groups does not tend more towards the achievements of children in their destination classes. The findings do not therefore give very strong support to this aspect of the rational action theory of educational inequality.

Our ability to replicate results across studies suggests that the differences between them in terms of design and conduct are not crucial. We should, nevertheless, recognise that our conclusions are based on two snapshots of social class taken several years apart. We do not know to what extent the changes we observe hide other changes in the period between observations or whether the appearance of stability for the non-mobile groups is masking a more variable underlying process. More frequent measures of social class – as obtained in annual panel studies like the British Household Panel Survey for example – would be helpful in this respect but these studies tend not to have collected data over a long enough period to determine final educational outcomes, and to have relatively small samples of children in even a broad cohort. Also, there was substantial sample loss in BCS70. If the missingness were related to changes in social class then this could have introduced some bias into the analyses.

Missingness is, however, a much less important issue for ONS LS.

It is also possible that the changes in social class we do observe – or the lack of them – could have arisen from classification error arising from reporting and coding errors in the Censuses and BCS70. Unfortunately, evidence on the extent of misclassification arising from interviews and coding of responses in studies of this kind is hard to find. The replication of our results across studies with different methods of data collection and different sets of coders is reassuring, as is the finding that the pattern of results is not substantially altered when we control for parental education. Nevertheless, we recognise that all studies of social mobility – both intra- and inter-generational mobility – would benefit from a more detailed consideration of possible misclassification of social class.

To conclude, we believe this paper has shown that the changes in socio-economic status as represented by parental occupational class mobility can throw light on the social determinants of educational attainment. The way in which change in parental social class is related to children's later qualifications tends to support resources-based interpretations of the class gradient, including the resource orientation of rational action theory. In contrast, cultural interpretations are rather less well supported by the data. These results are therefore sociologically and methodologically important and have far-reaching implications in terms of children's life chances.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.rssm.2013.10.001.

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