

## Post-school education and social class destinations in Scotland in the 1950s

Lindsay Paterson, Alison Pattie and Ian Deary

University of Edinburgh

[lindsay.paterson@ed.ac.uk](mailto:lindsay.paterson@ed.ac.uk)

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### Abstract

*Data from the 1947 Scottish Mental Survey are used to investigate the relationship between type of secondary school attended and both post-school education up to age 27 and also occupational status by age 27, controlling for social background (social class, parental education, gender), intelligence at age 12, and attitude to school work. The survey was based on a representative sample of all children born in Scotland in 1936. They were first surveyed in 1947 and then almost annually to 1963. The focus of the paper is on the legacies of several waves of reform to secondary education in the first half of the twentieth century. The main research questions are whether the reforms extended access to educational attainment up to age 27 and thus widened access to high-status occupations. These questions are investigated using mainly multiple linear regression. The conclusions are that access was extended, but that people who had attended the older-established secondaries that pre-dated the reforms were more successful educationally and occupationally than people who attended newer foundations, even controlling for social background and intelligence. This effect was especially pronounced for pupils of above-average intelligence, the old schools providing them with particularly pronounced opportunities in adulthood.*

### Key Words

Scottish Mental Survey; selective secondary schooling; post-school education; occupational attainment; intelligence.

### Introduction

The main purpose of this paper is to investigate whether reforms to secondary schooling in Scotland in the first part of the twentieth century influenced people's post-school learning and status attainment in the 1950s and early 1960s. The general reason why this question matters is the importance of knowing whether school reform can have an effect beyond the point at which young people leave full-time education. The historically specific reason is to gain some insight into the effects of the 1950s school system on adult opportunities. Much has been written about the ways in which the selective secondary system of the time did or did not

promote opportunity within formal education (Halsey, Heath and Ridge 1980; Gray, McPherson and Raffe 1983; Kerckhoff et al 1988; Paterson, Pattie and Deary forthcoming). Some of that work used data from the same survey as we use here (Hope 1984; Macpherson 1958; Paterson, Pattie and Deary forthcoming). Our analysis goes further than this, tracing the effects of school reform on young people's lives up to their late twenties.

There has been some re-assessment recently of the transition to adulthood in Britain in the couple of decades after the end of the Second World War. The tendency of this research has been to counter

the belief that people proceeded smoothly and swiftly from school to work (Vickerstaff 2003, 2005, 2007; Goodwin and O'Connor 2007; O'Connor and Goodwin 2005; Richardson 2007). A large majority left school at the first opportunity (age 15 from 1947) without formally certificated attainment, but subsequent training for boys was always regarded as important (Goodwin and O'Connor 2007, p. 361). Girls entering the labour force did expect to spend time out of it when they married (Wadsworth 1991, pp. 144-149), but there is evidence that in some regions of England most of them expected also to return to paid work once their children had started school (O'Connor and Goodwin 2005). In Scotland, at age 18, girls were no less willing than boys to express a preference for a kind of job (Macpherson 1958, p. 113), but their paid employment was much more likely to be curtailed by marriage than was men's (Maxwell 1969, pp. 81-2). Therefore, acquiring skills that might improve their prospects of employment mattered for both genders, but probably for a shorter period of time for girls than for boys. Apprenticeship was expanding during the 1950s, though remaining far more common for boys than for girls (Ryrie and Weir 1978). Its form was changing, however, shifting towards day release and away from evening classes (Butt 2000, pp. 186-7; Raffe 1977; Scotland 1969, pp. 237-8); this in turn was encouraged by the large investment in technical colleges that governments made at that time. Commercial and secretarial courses in these colleges were as important for girls as the technical courses were for boys.

This expansion was common to the whole of Britain (Richardson 2007, p. 387), but its effects interacted with inherited structures of provision in different ways, as was noted by Raffe (1977). Whereas in England the changes largely took the form of converting colleges into higher-status polytechnics or universities, in Scotland the main change was the transfer of non-advanced courses to the colleges from Central Institutions, the government-funded institutes that had been emerging as a distinct sector of technological higher education since the early years of the century. Examples of these Central Institutions were the Royal College of Science and Technology in Glasgow, Heriot-Watt College in Edinburgh, and Robert Gordon's Technical College in Aberdeen (Silver 2007; Paterson 2003, pp. 85, 90-92). The Central Institutions themselves were thus joining the four ancient universities in a slowly expanding

system of higher education. Transition to adulthood for the minority who went through higher education in this sense had always lasted into their early twenties.

The system of post-school education came increasingly to be questioned during the late 1950s, culminating in various attempts to reform it from the 1960s onwards (Sheldrake and Vickerstaff 1987). There was a belief that not enough attention was given to proper training rather than time-serving, that training was restricted to only a few trades (and in particular therefore was not properly available to girls), and that young people's general education was not being catered for if they left school at age 15, and received thereafter at best only courses in technical skills. Nevertheless, we might still ask in long retrospect whether the immediately post-war system really was as restricted in the opportunities it offered as its contemporary critics claimed. To do so, we need to have data that allow us to look beyond the immediate effects of schooling, and thus allow us to take account of delayed educational attainment and delayed entry to stable employment.

None of these debates of the time, nor any since, has had anything to say, moreover, about the interaction between school reform and the opportunities which young people had in the decade or so after they might leave school. Yet how best to prepare young people for life after school, and how best to match them to the needs of the economy, had dominated discussion and reform of post-primary education since the beginning of the century. By the 1930s, the main structure of Scottish secondary schooling had settled into a pattern of three-year 'junior secondary' and five-year 'senior secondary' courses. The former were intended to prepare people for training and work, and the latter were supposed to lead to the professions either directly or through university. Allocation of pupils between these courses was mainly on the basis of tests of intelligence and of attainment (in English, arithmetic and mathematics) taken in the final year of primary school. Within the types of course, there was also a hierarchy of status and of intellectual demand according to whether they were general or narrowly technical and, within the five-year courses, according to the number of non-English languages that were studied. Tests of intelligence were as important for allocating pupils to these finely differentiated courses as to the decisions between three years and five years. The

details are described fully elsewhere (Anderson 1983, 1985a, 1985b; Gray, McPherson and Raffe 1983; McPherson 1992; Osborne 1966; Paterson 2004, forthcoming). What matters for present purposes is the mapping of the length and type of course onto the sectors of secondary school, defined by their origins in these debates and reforms since the beginning of the century.

The oldest schools (of which there were about 50) were secondaries providing mainly five-year courses. They served geographical communities that were predominantly middle-class and thus had a long record of sending people into professional careers; from 1888, the route was increasingly likely to be through the rapidly expanding Scottish Leaving Certificate. The second sector (about 100 schools) had been raised to the same full-secondary status as these old schools by government regulations and funding between 1902 and 1924, during which period they had been called 'Higher Grade schools'. They were intended to widen opportunity to take the Leaving Certificate to much broader social groups than the old schools reached, and they were located in predominantly lower-middle-class and upper-working-class areas. In most cases they were founded by upgrading primary schools that, in the nineteenth century, had regularly sent a few boys to university. By the 1950s, these schools had had over three decades of preparing pupils for entry to professional careers. Serving the same social groups was the third sector consisting of some 40 schools that were either founded as secondaries or upgraded to secondaries after 1924. By the 1930s these first three sectors, providing five-year as well as three-year courses, were referred to informally as 'senior-secondary schools'. The remaining two sectors provided only three-year courses, and were described informally as 'junior-secondary schools'. The distinction here lay between schools that had or had not previously presented some pupils for the Leaving Certificate. Those which had done so – approximately 130 in number, about half of them formerly Higher Grade schools – retained a certain academic emphasis, but their relegation to junior-secondary status was controversial and was perceived by critics of government as restricting opportunity (Paterson 2003, p. 135). The remaining approximately 430 junior-secondary schools had no such tradition.

Thus we may summarise the inherited structure of secondary schooling in the 1950s as consisting of five types of institution: old senior secondaries,

senior secondaries that were formerly Higher Grade schools, senior secondaries that were founded after 1924, academic junior secondaries, and other junior secondaries. The allocation of pupils to them was based mainly on measured intelligence at age 12, although other social factors had a strong influence, notably social class, largely through the influence of the area in which the child lived (Douglas et al 1966; Paterson, Pattie and Deary forthcoming). There was also some differentiation by religion (about one in five pupils attended Roman Catholic schools) and, in both the Catholic and the independent sectors, some single-sex schools (Paterson forthcoming); further brief comment on these factors is made later.

Although the immediate purpose of the expansion was to offer pupils better opportunities during their period at school, the ultimate aim, expressed at its most idealistic, was to assign people to work that would suit them and to give them the capacity to keep learning throughout life. On the other hand, the most radical critics of the system that divided secondary schooling between five-year and three-year courses described it as a way of perpetuating inequality, at best only siphoning off into professional careers a small minority of able working-class pupils, and consigning the rest to occupational as well as educational mediocrity (for these debates, see McPherson and Raab 1988, pp. 347-72; Paterson 2003, pp. 129-54). This claim that the system (and its analogues in other countries) achieved no more than a reproduction of social inequality then became the premise on which much sociological debate proceeded in the 1960s and after (as evidenced in, for example, the three volumes edited by Halsey and associates: Halsey et al (1997), Karabel and Halsey (1978) and Halsey, Floud and Anderson (1961)). Recent comparative analysis of social mobility between countries has also concluded that education plays a central role in the transmission of social inequality between generations (Breen and Luijkx 2004). Some of this work has used Scottish longitudinal surveys from the same period as the data used here (Johnson, Brett and Deary 2010; von Stumm et al 2010).

The present study thus has two broad research questions, and answers them using data from people born in 1936 and attending schools in Scotland:

(1) What contribution did the recent history of secondary schools make to young people's learning beyond school?

(2) What contribution did that learning and these schools make to young people's opportunities to attain high-status occupations?

## Data and Methods

We investigate these questions using a unique longitudinal data set – a survey conducted by the Scottish Council for Research in Education of 1208 people born in Scotland in 1936, who were first contacted in 1947 as they were about to enter secondary school. They were followed up almost annually with structured interviews until 1963. This sample was nearly every child in Scotland born on the first day of the even-numbered months of 1936 and attending schools in Scotland in 1947; they were called the Six Day Sample of the Scottish Mental Survey 1947. Full details of the survey methods and the representativeness of the achieved sample are provided by Macpherson (1958), Maxwell (1969), Scottish Council for Research in Education (1953, 1958), and Deary, Whalley and Starr (2009); a short summary is given by Paterson, Pattie and Deary (forthcoming). Analysis is confined to those sample members who had no missing data on any of the variables defined below and for whom the recorded secondary school was in Scotland: this gave a usable sample of 1028 (85% of the original 1208).

The variables which we use are, in summary: an IQ measure (based on form L of the Terman-Merrill revision of the Stanford Binet test, taken at age 12, and standardised herein to have a mean of 0 and a standard deviation of 1 in the sample); gender; father's occupation; the ages at which each parent left full-time education (which we made into an index by taking the arithmetic mean), secondary school category entered at age 12; and secondary school course entered at age 12. Four of these need some further explanation:

- The intelligence test was administered by the original researchers, and was therefore different from the tests that were used as part of the process of allocation of pupils to courses. In particular, the IQ measure used in the present analysis has not been adjusted for gender.
- Social class was based on the 1951 Classification of Occupations and has five

categories: class I is professionals, II is intermediate, III is skilled (both non-manual and manual), IV is semi-skilled and V is unskilled. Because class I has only 17 members in the sample, it is grouped with II, and so we use four categories in the analysis.

- The five categories of school are as explained above (with their summary labels in parenthesis): junior secondary schools with no pre-war history of presenting pupils for certificate examinations ('junior secondaries'); junior secondaries with some such history ('academic junior secondaries'); senior secondary schools created or upgraded in 1924 or later ('senior secondary founded after 1924'); senior secondaries that had their origins in the Higher Grade schools, 1903-1923 ('senior secondary: former Higher Grade'); and senior secondaries that had their origins in the nineteenth century or earlier ('old senior secondary').
- The secondary courses were classified according to length and difficulty as explained above (based on Macpherson (1958, pp. 29-34)): five years with two languages; five years with no or one language; three years, general; three years, technical, domestic or commercial; three years, other.

We mentioned above that there was some further differentiation of schools by gender and – more extensively – by religion. Information on the full extent of single-sex provision in Scottish schools is not in fact accurately known. (Paterson (forthcoming) has information only on the schools that presented some pupils for the Leaving Certificate, drawn from data in the National Archives of Scotland; thus further investigation in the archives would be required to extend that to those junior secondary schools that had never presented any pupils for the Leaving Certificate.) So we are not able to analyse its effects further here, although we do include the gender of the individual.

We do have a note in the data set of whether or not each school was Catholic, but the survey did not ask for the individual or family religion of the respondents. Fuller analysis of this question requires a study of its own, but we did try adding the school-denomination indicator to each of the regressions shown later. In none of the models was it close to being statistically significant, and so its absence from the models as shown cannot have distorted the results.

Education taken after leaving school and up to age 27 was summarised according to the highest level achieved, in the manner shown in Table 1. Achievement was recorded either by specific reports from respondents of having completed a course, or else by inference from their later occupation that they had completed it: for example, if a respondent reported attending a non-graduate course of teacher training, and later reported being a school teacher, then it was inferred that that person had completed the course. In the case of 11% of respondents, there was a report of having attended a course but no evidence as to whether they had completed it. The analysis below includes these people as if they had completed the course, on the grounds that the skills gained on even a partly completed course may have contributed to the respondent's employment chances: 70% of that 11% were following low-level courses or trade or secretarial courses, and so some vocational benefit is likely to have been acquired. Nevertheless, all the main regression models were re-run excluding these people, and the results of the models were affected very little.

The value of this data set is that it provides information on post-school education for at least a decade after the sample had left school, and thus is able to take into account the protracted length of the transition from school to work that the research summarised above has shown was common in this period. Ninety percent of the sample members had no formally certificated attainment when they left school, and of the 102 who did, all but 9 (0.9% of the whole sample) had formal attainment in addition to that achieved at school; we use post-school attainment as our measure of eventual educational achievement, and we capture the school experience through the courses followed.

The occupational social class achieved by age 27 was derived from the latest measure of the respondent's occupation (classified in the same way as for fathers, but retaining all five categories): this allows for the length of time that it might take for a respondent to settle into a stable line of work. Because the data collection came to an end at that age, we are unable to investigate respondents' development beyond it.

In the early waves of the follow-up between ages 11 and 27, information was also collected on various measures of personality traits and of home circumstances; the first two in the following list

were assessed by the home visitor and the remainder by the headteacher:

- (1) the emotional atmosphere of the home (three-point scale from 'happy' to 'unhappy');
- (2) the cultural interests of the home (three-point scale from 'above average' to 'below average');
- (3) home circumstances judged to affect education (three-point scale from 'good' to 'poor');
- (4) pupil's confidence (five-point scale from 'very self-confident' to 'marked lack of self-confidence');
- (5) pupil's perseverance (five-point scale from 'very great perseverance' to 'marked lack of perseverance');
- (6) pupil's stability of mood (five-point scale from 'very stable moods' to 'very unchangeable moods');
- (7) pupil's conscientiousness (five-point scale from 'very conscientiousness' to 'marked absence of conscientiousness');
- (8) pupil's originality (five-point scale from 'very original and inventive' to 'marked lack of originality');
- (9) pupil's desire to excel (five-point scale from 'very marked desire to excel' to 'marked lack of ambition').

These were reduced to three dimensions by principal-components analysis, with varimax rotation, which were given the following names: *dependability*: mean of (3) home circumstances, (5) perseverance, (6) mood and (7) conscientiousness; *engagement*: mean of (4) confidence, (8) originality and (9) desire to excel; *family environment*: mean of (1) emotional atmosphere and (2) cultural interests.

These three accounted for 67% of the variance of the nine measures. A fourth would have taken this to 75%, a trivial additional amount, and although the scree diagram might also have indicated a need to retain four (eigenvalues of 3.5, 1.3, 1.2 and then a gentler decline from 0.7) that fourth would have indicated a component accounting for less variance than one item. In any case, the fourth simply separated the two components of 'family environment', and so in the interests of parsimony (and because we have separate indirect measures of cultural resources in the measure of parental education) we retained three dimensions.

The allocation of 'home circumstances' to 'dependability' rather than 'family environment' perhaps requires comment. The respective loadings on the unrotated components (0.69 and 0.26) clearly favoured allocating this item to the first. The loadings on the rotated components were equal

(each about 0.5), but the strongest correlations of 'home circumstances' with individual items were with 'perseverance' and 'conscientiousness' (0.46 each), each on the first rotated component ('dependability'), and the correlation with 'mood' (the third item to load strongly on 'dependability'), at 0.33, was only slightly lower than the higher of its correlations with the two items in the 'family environment' component (0.39 with 'cultural interests'). Its correlation with the other item in 'family environment' was only 0.29. On balance, these considerations point towards including the assessment of home circumstances in the 'dependability' component. Note further that 'home circumstances' were assessed by the school headteacher, whereas the two items that contribute here to 'family environment' were assessed by the home visitor. It is likely that the headteacher's assessment will have been reflecting, not home circumstances directly, but their observed effect on the pupil's motivation and behaviour; it would then not be surprising that such an item would correlate quite strongly with measures of perseverance etc, also observed directly by the school.

Our main statistical technique is regression, with the measures of post-school qualifications or of class attainment as the dependent variable. To allow for non-linearity in attained class, we re-do the analysis of it by logistic regression, dichotomising it at various points, and we further re-analyse it as an ordered logistic regression across all its categories. The explanatory variables are continuous, except for school sector (four categories compared to a reference category of 'old senior secondary'), social class of father (three categories compared to a reference category of classes I and II combined), and secondary course followed (four categories compared to a reference category of five years with two languages). The inter-relationships of the character variables and the other explanatory variables were explored using path analysis. The main regression analysis was carried out in R (using the packages 'lm' and 'glm'), the path analysis by AMOS and the ordinal regression analysis by PASW. To test whether the grouping of pupils in schools ought to be allowed to modify the standard errors of estimation, the main regression models (Tables 4, 6 and 10 below) were re-run in a multi-level framework using the software MLwiN (Rasbash et al 2009); none of the results was affected by this, and so we do not comment further on the clustering.

Specific research questions are therefore:

- (1) What was the relationship between attending a particular type of secondary-school and post-school attainment?
- (2) Might any such relationship be explained by:
  - (2a) intelligence measured upon entry to secondary school, or by social characteristics of the respondent (class, parental education, gender)?
  - (2b) secondary course followed?
  - (2c) the measures of dependability, engagement or family environment?
- (3) Then repeat all the above for social-class attainment by age 27, adding the measure of post-school educational attainment as an extra explanatory variable.

## Results

### Post-School Educational Attainment

Table 1 shows the distribution of the variable recording attainment after people had left school up to age 27. The first point to note is how much education there was: 46% had at least some, rather greater among men than women (respectively 55% and 39%; chi-squared value for gender difference: 317 on 11 df,  $p < 0.001$ ). However, around two thirds of the attainment was at no higher a level than trade-certificate or secretarial. Beyond this, one in eight men had a higher level of technical training, and one in ten women had the certificates required to be a nurse or a primary-school teacher. Six per cent of the whole sample had a university degree or a higher-professional certificate (such as being a qualified accountant), and this was twice as common among men as among women. People continued to take courses for many years after they had left school (details not shown in the table): approximately one quarter of the latest ages at which respondents reported having done so was in each of the ranges 18-20, 21-22, 23-25 and 26-27. Therefore the present study's long-term follow-up was necessary. There is an interesting similarity between this and (for Britain as a whole) the delayed achievement of qualifications by respondents to the cohort that was born in 1946, the evidence on which is summarised by Wadsworth (1991, pp. 144-8): for example, one third of men there who had left school (in the early 1960s) with no qualifications had acquired some by age 26; as in the present analysis, moreover,

women were less likely than men to have acquired qualifications after leaving school.

There was a clear gradient in attainment across the categories of secondary school, as is shown in Table 2 (now using a grouped version of the attainment variable): the numbers there show row percentages, and thus show the distribution of attainment within sector. Two thirds of people who had attended one of the oldest secondary schools had some sort of post-school qualification, in contrast to one half of those who had attended the newest sector of senior-secondary school, and only just over a quarter among those who had attended

a non-academic junior-secondary school. At the other end of the scale, whereas one fifth of people who had attended an old secondary had a degree or higher professional qualification, at most one tenth of those who had attended the newer senior secondaries attained this level of qualification. Despite these differences, Table 2 shows that there were possible paths from any type of secondary school to the highest post-school attainment, with one exception: no-one from a non-academic junior secondary went on, by age 27, to have a higher professional qualification or degree.

**Table 1. Post-School Attainment, by Gender**

	Male	Female	All
Level of attainment:	%	%	%
1 None	45	61	54
2 Low	4	2	3
3 Trade certificate	28	3	15
4 Secretarial certificate	2	21	12
5 City and Guilds	8	0	4
6 Ordinary National Certificate etc	3	0	1
7 Higher National Certificate	2	0	1
8 Nursing qualification	0	6	3
9 Non-graduate teaching qualification	1	4	2
10 Non-degree professional qualification	2	1	2
11 Degree	6	2	4
Sample size	491 (=100%)	537 (=100%)	1028 (=100%)

**Table 2. Grouped post-school attainment, by school sector**

School sector:	Level of attainment (levels grouped from Table 1) Percentages in rows					Sample size (=100%)
	None or low (1,2)	Trade and secretarial (3,4)	City and Guilds etc (5,6,7)	Nursing and teaching (8,9)	High professional and degree (10,11)	
Old senior secondary	32	27	7	14	21	111
Senior secondary: former Higher Grade	38	34	10	10	9	248
Senior secondary founded after 1924	48	32	7	6	7	98
Academic junior secondary	65	25	5	4	1	147
Junior secondary	72	22	5	1	0	424

The attainment difference between the senior-secondary and junior-secondary sectors reflects in part the difference in intelligence between them caused by the initial selection of pupils into them (as explained in the Introduction): among people in the lowest quintile of intelligence, only 10% had any post-school qualification; this rose to one half in the middle quintile and to 77% in the top quintile. Part of the explanation for attainment differences could lie in the measures of personality: the product-moment correlation of attainment with the measure of dependability was 0.29, and with the measure of engagement was 0.30; these associations were partly but not wholly due to effects of intelligence (with which dependability and engagement were significantly correlated), because the partial correlations, adjusting for intelligence, were respectively 0.12 and 0.10. Social class is also a potential explanation for attainment differences, because the older school sectors continued to

reflect their origins serving relatively high-status groups (Paterson, Pattie and Deary forthcoming). Thus the row percentages in Table 3 show that, whereas 59% of people whose origins were in social classes I or II had some post-school qualifications, only 26% had any among those with origins in class V. The proportions with a degree or higher-professional qualification for classes I/II and V were, respectively, 18% and 2%. The class gradient was evident even controlling for intelligence, and so was not due only to the class contribution to intelligence: thus, in the top quintile of intelligence, the proportions with no post-school qualifications were 14% in classes I and II but 39% in class V; the proportions with a degree were respectively 41% and 17%. Nevertheless, despite these strong correlations, the association of attainment with social origin is not perfect: there were routes for able people from the lowest class even to the high professions.

**Table 3. Grouped post-school attainment, by social class of father**

Father's social class:	Level of attainment (levels grouped from Table 1)					Sample size (=100%)
	Percentages in rows					
	None or low (1,2)	Trade and secretarial (3,4)	City and Guilds etc (5,6,7)	Nursing and teaching (8,9)	High profession al and degree (10,11)	
I and II	41	26	4	11	18	114
III	51	33	8	5	4	555
IV	66	19	8	4	3	180
V	74	16	4	4	2	179

**Table 4. Regression models of post-school attainment**

	Model 1		Model 2		Model 3	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Intercept	4.5**	0.26	3.4**	0.25	0.40	0.21
School sector (ref. old senior secondary)						
Senior secondary: former Higher Grade	-1.3**	0.32	-0.85**	0.29	-0.59**	0.29
Senior secondary founded after 1924	-2.0**	0.38	-1.4**	0.35	-1.1**	0.35
Academic junior secondary	-3.1**	0.35	-1.7**	0.33	-1.4**	0.33
Junior secondary	-3.6**	0.30	-2.0**	0.29	-1.6**	0.30
Intelligence at age 12			1.4**	0.088	1.3**	0.090
Gender (ref. male)					-0.13	0.16
Father's social class (ref. I and II)						
III					-0.70**	0.27
IV					-0.60(*)	0.31
V					-0.82*	0.32
Parental education					0.24**	0.078
R <sup>2</sup>	0.18		0.33		0.34	

For model-fitting statistics, see Table 5.

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; (\*)  $0.05 < p < 0.10$ .

**Table 5. Analysis of variance of regression models of post-school attainment for Model 3 in Table 4**

Model term added in this order:	Degrees of freedom	Sum of squares	Mean square	F- value	Significance (p value)	cumulative R <sup>2</sup>
School sector	4	1682	420	68	<0.001	0.176
Intelligence	1	1471	1471	239	<0.001	0.330
Gender	1	4.4	4.5	0.72	0.40	0.330
Father's class	3	76	25	4.1	0.007	0.338
Parental education	1	57	57	9.2	0.002	0.344
Residual	1017	6264.2	6.2			

For regression coefficients, see Table 4.

To disentangle these several potential explanations of the school-sector differences in post-school attainment, we use multiple regression. A series of multiple linear regressions is shown in Tables 4 to 6. The dependent variable is the full version of the

measure of attainment, as an 11-point ascending scale from 1 (no attainment) to 11 (a degree) (as in Table 1). The regression coefficients of the first three models are in Table 4, and the analysis of variance is in Table 5. The first model reproduces

the simple description of the differences among the historical school sectors in Table 2. The following models add control variables in order to assess whether the sector differences may be explained by these. (We checked the residuals of the final model 3 and found them to be approximately Normally distributed, presumably because the dependent variable has as many as 11 categories and because the measure of intelligence is a strong predictor of it.)

The summary point of the whole sequence of models may be stated quite simply before going through them in detail: although the variation among historical categories is weakened by some of these control variables, it is not entirely explained by any of them, and so there seems to be something about having attended a particular type of secondary school that encouraged or discouraged post-school learning and that is not captured in the measured control variables.

The second model in Table 4 adds what we find to be the most powerful control, the measure of intelligence. This does explain a large part of the sector variation. Thus the  $R^2$  due to sector is 0.18 before adding intelligence, but the change in  $R^2$  due to sector after intelligence is only 0.037. Nevertheless, sector remains strongly associated with post-school attainment, and the gradient from the oldest senior-secondary sector (the reference category) to the non-academic junior secondaries remains clear.

The third model in Table 4 adds gender and family circumstances. (The effect of adding these together is in Table 4; the effect of adding each singly is shown in Tables A1 and A2 in the Appendix.) When they are included together, after intelligence, there is no effect of gender: the male advantage is explained by intelligence (which, recall, had not been adjusted for gender). Social class and parental education, however, both have direct influences on post-school education despite the other variables in the model. That is, people with well-educated parents, or with a father who was in a professional occupation, tended to have higher post-school attainment than those without these advantages, even when we hold constant their intelligence and the kind of school they attended: schooling did not mediate all the effects of social reproduction. There is also no interactive effect of sector with either father's class or parental education. (Compared to Model 3, the interactive effect with sector for father's class had F-value of

1.66 on 12 and 1005 df, and for parental education had F-value of 1.90 on 4 and 1013 df). The absence of such an interactive effect means that there is no evidence that the social-class inequality in post-school attainment was exacerbated or diminished by any of the sectors, and thus in particular no evidence that the oldest sector was especially responsible for social reproduction.

The school-sector effects were attenuated by each of these additions to the model: on its own, as we have noted, sector had an  $R^2$  of 0.18; after intelligence, it added only 0.037 to  $R^2$ , and after gender and family circumstances it added 0.026. Nevertheless, for our main purpose, the most important point is that the sector effects persist after all these additions, with the same gradient as before. Thus the differences among sectors cannot be fully explained by, for example, the higher proportion of brighter children or children of professional parents in the older than in the newer senior-secondary schools.

The sector effects could also not be explained by the organisation of the courses in them. This was tested by adding a further categorical variable to Model 3 in Table 4 (results not shown), with reference category being five-year courses with two or more languages and the other four categories being as noted earlier. The highest post-school attainment was by people who had been on courses in the reference category. Those on five-year courses with one or no languages came next, and then the three kinds of three-year course were similar to each other. Such a gradient is not surprising; the main point for us is that it did not explain the gradient across the categories of school sector, although it did render the post-1924 senior secondaries indistinguishable from the junior secondaries. That is, these most recently founded senior secondaries seem to have had their beneficial effect on post-school attainment mainly through their course structure, whereas the effects of the two older sectors of senior secondaries were not wholly explained by course structure.

Nevertheless, that is not the whole story, because there is an interactive effect of intelligence and school sector. The relevant coefficients are shown in the first column of Table 6, where it may be seen that the interaction takes the form of a steady decrease in the effect of intelligence on post-school attainment across the sectors, from the oldest kind of senior-secondary school to the non-academic junior secondaries.

Another way of looking at this is to calculate the predicted values of post-school attainment from the model in Table 6, at one standard deviation above and below the mean of intelligence. (Note that this is well within the range of intelligence found in each sector, the mean values of which are shown in the final column of Table 7). The first column of Table 7 shows, for each school sector, the predicted value at one standard deviation below the sample mean of intelligence, setting all other variables to their reference category or mean; the third column

shows the same for one standard deviation above the sample mean of intelligence. At the lower of these two values of intelligence, the five sectors are indistinguishable from each other: pupils with lower intelligence attained, on average, about the same educational qualifications by age 27 no matter the school sector they had attended. At the higher value of intelligence, however, there is a gradient across all sectors; pupils with higher intelligence attained, on average, higher educational qualifications by attending the historically more academic schools.

**Table 6. Interactive effect<sup>1</sup> of school sector and intelligence on post-school attainment<sup>2</sup>**

	Coefficient	Standard error
Intercept	0.29	1.2
School sector (ref. old senior secondary)		
Senior secondary: former Higher Grade	-0.28	0.33
Senior secondary founded after 1924	-0.67 <sup>(*)</sup>	0.39
Academic junior secondary	-1.1 <sup>**</sup>	0.36
Junior secondary	-1.5 <sup>**</sup>	0.32
Intelligence at age 12	1.9 <sup>**</sup>	0.21
Interactive effect of intelligence and sector:		
Intelligence BY senior secondary: former Higher Grade	-0.37	0.26
Intelligence BY senior secondary founded after 1924	-0.66 <sup>*</sup>	0.33
Intelligence BY academic junior secondary	-0.86 <sup>**</sup>	0.32
Intelligence BY junior secondary	-1.1 <sup>**</sup>	0.27

<sup>1</sup> The interactive effect (added to Model 3 in Table 4) had a Sum of Squares of 124 on 4 degrees of freedom, and the Residual Sum of Squares became 6141 on 1013 degrees of freedom, yielding an F-value of 5.1 ( $p < 0.001$ ). The  $R^2$  value was 0.36.

<sup>2</sup> Shows only the part of the model relating to these terms; the other terms were as in Model 3 in Table 4.

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; (\*)  $0.05 < p < 0.10$ .

**Table 7. Predicted post-school attainment from model with interactive effect of school sector and intelligence**

	Predicted mean value at one standard deviation below mean <sup>2</sup> intelligence	Standard error of predicted mean	Predicted mean value at one standard deviation above mean <sup>2</sup> intelligence	Standard error of predicted mean	Mean value of intelligence
Old senior secondary	1.5	0.49	5.3	0.31	0.76
Senior secondary: former Higher Grade	1.6	0.37	4.6	0.30	0.46
Senior secondary founded after 1924	1.5	0.49	3.9	0.40	0.35
Academic junior secondary	1.3	0.37	3.3	0.45	-0.26
Junior secondary	1.2	0.31	2.7	0.38	-0.46

<sup>1</sup> That is, from the model summarised in Table 6, using the R function 'predict.lm'. All the other variables in the model are set to their mean (for continuous variables) or their reference category (for categorical variables) for these predictions.

<sup>2</sup> That is, the mean intelligence for the sample as a whole, which has been set to be 0.

Moreover, much of this interactive effect may be explained in a statistical sense by the personality variable which we called 'engagement'. (The variables 'dependability' and 'family environment' had something of this explanatory power for the interactive effect of intelligence and sector, but not as markedly as 'engagement'). Thus when 'engagement' and the interactive effect of it and sector are also added to the model, the only sector difference in the slope of intelligence is in the non-academic junior-secondary schools, where the slope remains shallower.

Some insight into what is happening here may be obtained by calculating separately for the five sectors the estimates of regression weights and correlations from path diagrams involving post-school qualifications, intelligence and engagement; this is shown in Table 8. The first column shows the unstandardised regression weight from intelligence to post-school qualifications, and so reflects the different slopes noted from Table 6; that is, the older school sectors are better at converting intelligence into educational attainments. The third column shows that for engagement, too, there is a gradient in the association with qualifications, more erratic than but not dissimilar to that for intelligence; the old senior secondaries stand out as being particularly effective in converting

engagement into educational attainment. The fifth column shows that the strongest association between engagement and intelligence is in the old senior-secondary schools: there is a gradient in covariance across all five sectors, although the absence of such a gradient in the correlations in the seventh column (except to a limited extent with respect to the old senior secondaries) shows that the covariances in the junior secondaries are low partly because of the low variability of the intelligence variable there.

The broad similarity of correlations in all but the old senior-secondary sector does, however, allow us to say that the different association of engagement and attainment cannot be due solely to teachers' being the source of the measures that contribute to our variable 'engagement'. Without that similarity, it would in theory be possible that teachers might have under-estimated the educational engagement of pupils in the junior secondary schools, perhaps because of holding low expectations of them; but that under-estimation would be likely to have resulted in an attenuated correlation between intelligence and the measure of engagement in these schools. Thus the measure of engagement is not wholly an effect of intelligence, and so probably does reflect something educationally meaningful about the ethos of the different kinds of school.

**Table 8. Path coefficients connecting post-school attainment, intelligence and engagement, by school sector**

	Intelligence to attainment		Engagement to attainment		Intelligence and engagement		
	Unstandardised weight	Standard error	Unstandardised weight	Standard error	Covariance	Standard error	Correlation
Old senior secondary	1.6	0.33	1.8	0.60	0.35	0.076	0.49
Senior secondary: former Higher Grade	1.4	0.21	0.41	0.35	0.27	0.045	0.41
Senior secondary founded after 1924	1.0	0.34	0.66	0.49	0.26	0.072	0.40
Academic junior secondary	0.84	0.22	0.74	0.29	0.20	0.045	0.39
Junior secondary	0.68	0.11	0.29	0.12	0.16	0.022	0.38

### Social Class Attainment

The second broad area of analysis is to investigate the association between type of school attended and the respondents' eventual social-class destinations at age 27. As in all other studies of social mobility, this data set shows a strong association of respondent's class with father's class: see the top part of Table 9, which displays, for each origin class, the percentage in each destination class. Thus 40% of people who grew up in classes I or II were in these classes at age 27, in contrast to only 7% of those who grew up in class V. That there was less stability at the bottom end of the distribution (only 19% remaining in class V) is partly because of another familiar feature of mid-twentieth-century social mobility: the occupational structure as a whole was shifting upwards with, for example, a decline from 35% to 25% in the proportion in classes IV and V, and a rise from 11% to 18% in the proportion in classes I and II. Thus 36% of the whole sample moved upwards and only 19% moved down. These figures were not strongly differentiated by gender (for example, 17% of women and 19% of men were in classes I or II at age 27), mainly perhaps because the largest differentiating effect of gender on occupational attainment occurred after women had married, which for this cohort would tend to be in their mid twenties (Paterson, Bechhofer and McCrone 2004, p. 14).

There is also a very strong bivariate association of school sector and attained class, as is shown by the percentage distribution of attained class for each sector in the lower part of Table 9. The gradient across school sector in the proportion reaching classes I or II is in fact similar to that across categories of father's class, as is, in the reverse direction, the gradient in the proportion reaching class V. So, as with post-school attainment, the main question for the regression modelling is whether the sector effect is explained by the differential distribution of the pupils' paternal social classes into the sectors.

The two other most promising potential explanations of sector effects are intelligence measured upon entry to secondary school and post-school qualifications (details not shown in the tables): in the top quintile of intelligence, 45% entered classes I or II; in the bottom quintile, the proportion was 4%; among those with degrees or professional qualifications, 79% entered classes I or II, whereas among those with no or only very low qualifications the proportion was 8%. In a process of class allocation that operated fully meritocratically, post-school attainment might be expected to explain the whole of social-class attainment.

Table 10 shows the relevant regression models (with the analysis of variance in Table 11); the effect of adding each explanatory variable separately is in the Appendix Tables A3 and A4. The dependent

variable is the social class attained by the respondent by age 27, treated for the time being as a continuous measure. The first model reproduces the descriptive statistics. The second shows that controlling for intelligence at age 12 reduces but does not eliminate the sector differences, and does leave the academic junior secondaries indistinguishable from the oldest senior secondaries

(the reference category); in other words, the difference in the class destination of the people who passed through them may be explained by intelligence alone. Most of the school-sector effect has been explained by intelligence: the change in  $R^2$  associated with sector is only 0.019 after intelligence is in the model, in contrast to 0.11 in Table 11.

**Table 9. Social class at age 27, by father's class and by school sector**

	Class at age 27 (percentage in rows)				Sample size (=100%)	Column percentage
	I and II	III	IV	V		
Father's class:						
I and II	40	44	11	4	114	11
III	16	64	12	8	555	54
IV	18	55	20	7	180	18
V	7	50	24	19	179	17
All	18	58	16	9	1028	
School sector:						
Old senior secondary	42	47	9	2	111	
Senior secondary: former Higher Grade	23	60	11	5	248	
Senior secondary founded after 1924	21	62	13	3	98	
Academic junior secondary	18	61	13	8	147	
Junior secondary	7	57	21	15	424	

The third model in Table 10, controlling in addition for gender, paternal social class and parental education, reduces the differences among sectors still further, now leaving also the newest senior secondaries indistinguishable from the oldest senior secondaries. The final model, controlling further for post-school attainment, shows almost no differences among sectors at all: there are none when compared to the oldest senior secondaries (as shown in the table), but there is still a

difference between the former Higher Grade schools that became senior secondaries and the academic junior secondaries (not shown in the table): the split in 1924 seems to have had a long-term effect on the opportunities offered to pupils in the latter. A further model (not shown in the table) found no interactive effect of post-school attainment and sector: attainment is related to class destination independently of sector.

**Table 10. Regression models of social class at age 27**

	Model 1		Model 2		Model 3		Model 4	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Intercept	2.6**	0.079	2.88**	0.075	3.66**	0.37	3.7**	0.35
School sector (ref. old senior secondary)								
Senior secondary: former Higher Grade	0.36**	0.095	0.24**	0.087	0.18*	0.088	0.12	0.083
Senior secondary founded after 1924	0.35**	0.12	0.19 <sup>(*)</sup>	0.11	0.11	0.11	-0.0023	0.10
Academic junior secondary	0.53**	0.11	0.12	0.099	0.060	0.10	-0.084	0.096
Junior secondary	0.86**	0.089	0.38**	0.087	0.30**	0.089	0.13	0.086
Intelligence at age 12			-0.39**	0.027	-0.37**	0.027	-0.24**	0.028
Gender (ref. male)					0.11*	0.047		0.045
							0.091*	
Father's social class (ref. I and II)								
III					0.12	0.081	0.055	0.077
IV					0.044	0.094	-0.016	0.089
V					0.35**	0.096	0.27**	0.091
Parental education					0.057*	0.024	-0.034	0.022
Post-school attainment							-0.099*	0.0089
R <sup>2</sup>	0.11		0.26		0.29		0.36	

For model-fitting statistics, see Table 11.

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; (\*)  $0.05 < p < 0.10$ . Table 11

**Table 11. Analysis of variance of regression models of social class at age 27**

Model term added in this order:	Degrees of freedom	Sum of squares	Mean square	F-value	Significance (p value)	cumulative R <sup>2</sup>
School sector	4	87	22	44	<0.001	0.109
Intelligence	1	124	124	248	<0.001	0.264
Gender	1	2.6	2.6	4.6	0.03	0.268
Father's class	3	13	4.4	7.8	<0.001	0.284
Parental education	1	3.3	3.3	5.9	0.02	0.288
Post-school attainment	1	61.6	62	123	<0.001	0.365
Residual	1016	509	0.50			

For regression coefficients, see Table 10.

As in the model of attainment, we checked the residuals here and found them to be approximately Normally distributed. We further checked the conclusions by examining whether there was any evidence of non-linearity in the relationships between attained class and the explanatory variables. For example, modelling by logistic regression the probability of entering classes I or II, we found a strongly negative effect of the non-academic junior secondaries, but again this was explained by post-school attainment. Likewise, modelling entry to classes IV or V, we found no difference even before adding the educational-attainment variable: the sector differences were explained by intelligence. A final check of non-linearity was obtained by ordinal regression of attained class on the series of explanatory variables shown in Table 10. The conclusions concerning the school-history variable were the same as we have drawn from Table 10. In the ordinal regression, moreover, there was no evidence that the relationship between school category and attained class differed by category of attained class.

We may summarise this sequence of models by saying that the link between school sector and occupational-social-status attainment by age 27 is mostly explained by post-school qualifications, but only when both class of origin and intelligence are in the model too. Thus, for a person of given origin class and given intelligence, school sector had no effect on attained class other than through post-school qualifications.

## Discussion

The analysis has used a rich longitudinal data source that provides detailed information on the transition to adulthood of a nationally representative sample of people born in Scotland in 1936. No better source exists for understanding the operation and effects of the secondary-school system of the 1950s, nor the legacies embodied in it of educational reforms and arguments about reform during the previous half century.

There are two main conclusions. The first is that the type of school to which children were assigned at age 12 had lasting effects well into adulthood, effects that were not merely a reflection of intelligence, gender, paternal social class or parental education. Being allocated to a junior-secondary school depressed people's post-school attainment and also their attainment of social status

through the kind of occupation they could enter. In summary illustration of this, we can calculate the equivalent in increments of intelligence of being placed in a (non-academic) junior-secondary school compared to being placed in an old senior-secondary school. For predicted post-school attainment from Model 3 in Table 4, we find that the attainment in the junior-secondary category of a person whose intelligence was at the mean for the whole sample (attainment of 1.5, with standard error 0.13) would, in the old senior secondaries, be the expected attainment of people as much as 1.4 standard deviations below the whole-sample mean of intelligence. Likewise, for predicted social class at age 27, in Model 3 of Table 10 (that is, the model without post-school qualifications), the average attained class of people in the junior-secondary category (3.05, with standard error 0.088) would, in the old senior secondaries, be the expected attained class of people 0.8 of a standard deviation below the mean of intelligence. In short, the difference in outcomes between the sectors – controlling for intelligence, gender, father's social class and parental education – was the equivalent of between 0.8 and 1.4 standard deviations in intelligence.

The effect of school also reflected history. Within the category of senior-secondary school, the oldest led to the highest post-school attainment and the highest-status occupations, even for people of given intelligence, gender, social-class background and parental education. The newer senior secondaries that had started life as Higher Grade schools were in that sense not able fully to match in quality the achievements of their long-standing predecessors. However, the success of educational reform in creating these new secondaries was also evident, because they enabled their former pupils to achieve higher attainment and better occupations than did pupils in the junior-secondary schools, even those junior secondaries which had an academic history similar to that in the schools which became the new senior secondaries.

This advantage was not wholly explained by the kinds of course which the different kinds of school provided. So there appeared to be something about the ethos or culture of the oldest schools that had an impact on their pupils' capacity to succeed. We were able to offer only a tentative explanation, based on the further point that the gap in post-school attainment between pupils of high and low intelligence was greatest in the oldest schools. In

that sense, these were the most internally selective, followed by the two categories of newer senior secondaries, with all these differentiating more thoroughly by intelligence than the junior secondaries. The result was that, for pupils of above-average intelligence, the school attended mattered more for post-school educational achievement than it did for pupils of below-average intelligence. Indeed, for the above-average pupils, there was a gradient across all five sectors, and thus in particular a difference between the academic and non-academic junior secondaries: if an able pupil did not enter a senior-secondary school, then their prospects were better if they could attend a school that had some history of academic work than if they could not.

It appeared that one reason for this differentiation was that pupils in the older schools were more confident in their school work, more original in their thinking and more committed to excelling (summarised in the variable that we have called 'engagement', although we offer the caveat that teachers reporting the traits that made up this dimension could, to some extent, have been reporting pupils' intelligence differences). Whether the schools created these attitudes or merely channelled pre-existing inclinations could not be determined from the data available, but the effect was to create a declining gradient in the strength of meritocratic ethos from the older senior secondaries to the non-academic junior secondaries. This finding demonstrates an effect of school ethos, interacting with school history, and demonstrable even after quite strong controls for pupil characteristics. 'Ethos' has often been an elusive quality in research on school effects, and so to have found a case where it does seem to be measurable is interesting (Rutter and Maughan 2002).

This differentiation of school sectors was evident for post-school attainment and through it for occupational destination. However, that was more or less the only way that the school sector influenced destination, and in that sense the structure of secondary schooling did operate meritocratically so far as the allocation of former pupils to occupational status was concerned. For a pupil of given intelligence and given social characteristics, the only way in which the school attended had an effect on their eventual occupational status in adulthood was through their attainment in post-school education. If the older

schools made it more likely that such a pupil would attain highly, that advantage was the only advantage conferred in the labour market. In that sense, hidden networks of social capital did not seem to be operating, or, if they did, they operated only in ways that were concordant with measured attainment. So there is some evidence here that, in the middle of the twentieth century, opportunity in Scotland remained somewhat based on the 'contest' as opposed to 'sponsorship' model, the distinction which Turner (1960) drew between mobility in the USA and in England, and which Hope (1984) and McPherson and Raab (1988) also saw as marking Scotland from England. That is, opportunity continued to be based on a combination of intelligence and attainment to a much greater extent than on social capital; if it remained partly based also on parental social class, that was channelled only through attainment, not through direct influence.

These are important conclusions because they say something about the scope and limitations of educational reform aimed at widening opportunity. The extension of full secondary schooling in the first part of the twentieth century did, by the middle of the century, offer new educational opportunities to pupils of middling social classes (Paterson, Pattie and Deary forthcoming). We have seen here that the effect of that lasted into the sometimes lengthy transition into adult life, giving them access to educational opportunities after leaving school. The resulting opportunities to enter worthwhile occupations were then the same in the new as in the old secondaries in the sense that what mattered after leaving school was the publicly verifiable route of post-school educational attainment rather than any exercise of influence based on the kind of school attended.

Schools and school reform were less responsible for social-class destination than for educational attainment itself. The main effect of the selective system, especially the oldest parts of the senior-secondary sector, may have been in the encouragement of people of above-average ability. Whatever the effects of schools, however, there continued to be direct influences from class of origin on post-school education and on type of occupation entered, even among people of similar measured intelligence: ascriptive criteria still had an effect. These persisting and independent effects on young people's learning and opportunities show the limits of merely institutional reform. Nevertheless,

we may conclude from our analysis that, on the whole, the school system that resulted from the reforms was not responsible for social

reproduction, and that it did achieve some measure of success in mitigating its effects.

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## Appendix

**Table A1. Regression models of post-school attainment: effect of adding family-circumstances variables singly (without intelligence).**

	Gender		Class		Parental education	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Intercept	4.3**	0.28	5.1**	0.32	-2.2(*)	1.2
School sector (ref. old senior secondary)						
Senior secondary: former Higher Grade	-1.3**	0.32	-1.0**	0.32	-1.0**	0.32
Senior secondary founded after 1924	-1.9**	0.38	-1.7**	0.39	-1.7**	0.38
Academic junior secondary	-3.1**	0.35	-2.8**	0.35	-2.8**	0.35
Junior secondary	-3.6**	0.30	-3.2**	0.31	-3.2**	0.30
Gender (ref. male)	-0.34*	0.17				
Father's social class (ref. I and II)						
III			-0.92**	0.29		
IV			-1.1**	0.34		
V			-1.5**	0.34		
Parental education					0.46**	0.083
R <sup>2</sup>	0.18		0.19		0.20	

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; (\*)  $0.05 < p < 0.10$ .

**Table A2. Regression models of post-school attainment: effect of adding family-circumstances variables singly (with intelligence).**

	Gender		Class		Parental education	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Intercept	3.4**	0.26	4.0**	0.30	-0.70	1.1
School sector (ref. old senior secondary)						
Senior secondary: former Higher Grade	-0.86**	0.29	-0.67*	0.29	-0.72*	0.29
Senior secondary founded after 1924	-1.4**	0.35	-1.2**	0.35	-1.3**	0.35
Academic junior secondary	-1.7**	0.33	-1.6**	0.33	-1.6**	0.33
Junior secondary	-2.0**	0.29	-1.7**	0.30	-1.8**	0.29
Intelligence at age 12	1.3**	0.089	1.3**	0.089		

Table A2 (cont'd)

Gender (ref. male)	-0.13	0.16		
Father's social class (ref. I and II)				
III			-0.86**	0.26
IV			-0.75*	0.31
V			-1.0**	0.31
Parental education				0.28**
R <sup>2</sup>	0.33	0.34	0.34	0.076

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; (\*)  $0.05 < p < 0.10$ .

**Table A3. Regression models of social class at age 27: effect of adding family-circumstances variables and post-school attainment singly (without intelligence).**

	Gender		Class		Parental education		Post-school attainment	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Intercept	2.7**	0.084	2.4**	0.096	4.4**	0.38	3.2**	0.080
School sector (ref. old senior secondary)								
Senior secondary: former Higher Grade	0.36**	0.095	0.30**	0.096	0.30**	0.095	0.19*	0.085
Senior secondary founded after 1924	0.33**	0.12	0.27*	0.12	0.28*	0.12	0.080	0.10
Academic junior secondary	0.51**	0.10	0.45**	0.11	0.43**	0.11	0.094	0.097
Junior secondary	0.85**	0.089	0.75**	0.092	0.76**	0.095	0.36**	0.085
Gender (ref. male)	0.16**	0.052						
Father's social class (ref. I and II)								
III			0.18*	0.087				
IV			0.18(*)	0.10				
V			0.54**	0.10				
Parental education					-0.12**	0.025		
Post-school qualifications							-0.14**	0.0084
R <sup>2</sup>	0.12		0.14		0.13		0.30	

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; (\*)  $0.05 < p < 0.10$ .

**Table A4. Regression models of social class at age 27: effect of adding family-circumstances variables and post-school attainment singly (with intelligence).**

	Gender		Class		Parental education		Post-school attainment	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Intercept	2.9**	0.078	2.8**	0.091	3.9**	0.35	3.2**	0.077
School sector (ref. old senior secondary)								
Senior secondary: former Higher Grade	0.24**	0.087	0.20*	0.088	0.21*	0.087	0.16 <sup>(*)</sup>	0.082
Senior secondary founded after 1924	0.18 <sup>(*)</sup>	0.11	0.14	0.11	0.15	0.11	0.046	0.10
Academic junior secondary	0.12	0.099	0.090	0.10	0.081	0.10	-0.056	0.095
Junior secondary	0.38**	0.087	0.32**	0.089	0.34**	0.088	0.18*	0.084
Intelligence at age 12	-0.39**	0.027	-0.38**	0.027	-0.38**	0.027	-0.25**	0.028
Gender (ref. male)	0.10*	0.048						
Father's social class (ref. I and II)								
III			0.16*	0.080				
IV			0.077	0.093				
V			0.39**	0.095				
Parental education					-0.071**	0.023		
Post-school qualifications							-0.10**	0.0089
89R <sup>2</sup>	0.27		0.28		0.27		0.35	

Key for statistical significance levels: \*\*  $p < 0.01$ ; \*  $0.01 < p < 0.05$ ; <sup>(\*)</sup>  $0.05 < p < 0.10$ .