



## Educational attainment in the short and long term: was there an advantage to attending faith, private, and selective schools for pupils in the 1980s?

Alice Sullivan, Samantha Parsons, Francis Green, Richard D. Wiggins, George Ploubidis & Timmy Huynh

To cite this article: Alice Sullivan, Samantha Parsons, Francis Green, Richard D. Wiggins, George Ploubidis & Timmy Huynh (2018): Educational attainment in the short and long term: was there an advantage to attending faith, private, and selective schools for pupils in the 1980s?, Oxford Review of Education, DOI: [10.1080/03054985.2018.1481378](https://doi.org/10.1080/03054985.2018.1481378)

To link to this article: <https://doi.org/10.1080/03054985.2018.1481378>



© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 11 Sep 2018.



Submit your article to this journal [↗](#)



Article views: 218



View Crossmark data [↗](#)

# Educational attainment in the short and long term: was there an advantage to attending faith, private, and selective schools for pupils in the 1980s?

Alice Sullivan<sup>a</sup>, Samantha Parsons<sup>a</sup>, Francis Green<sup>a</sup>, Richard D. Wiggins<sup>a</sup>, George Ploubidis<sup>a</sup> and Timmy Huynh<sup>b</sup>

<sup>a</sup>University College London, London, UK; <sup>b</sup>Penn State, Pennsylvania, USA

## ABSTRACT

This paper asks whether private, selective, and faith schools in England and Wales in the 1980s provided an academic advantage to their pupils, both in the short and longer term. Using longitudinal data from the 1970 British Cohort Study, we examine academic outcomes in compulsory schooling and further education, and the highest qualification gained by age 42. School sector differences are substantially attenuated by controlling for prior pupil characteristics. Nevertheless, a residual effect of private, grammar, and secondary modern schooling remains, both in the short and long term, controlling for both pupil and school characteristics. In the case of faith schools, however, the apparent advantage is restricted to the short term once pupil characteristics are controlled. A unique feature of our analysis is that we control for the individual's faith of upbringing, which is important in reducing what could otherwise be seen as a distinctive Catholic school advantage.

## KEYWORDS

Faith; Catholic; private; grammar; selective; school; attainment

## Introduction

Questions regarding whether private, faith, and academically selective schools are superior to state, secular, and all-abilities schools respectively continue to be debated. Advocates of private schooling attribute the success of private schools to the fact that, in a competitive, market-based system, schools must respond to parental demands in order to survive (Tooley, 1994). This view of the success of the private sector has influenced education policy in Britain and internationally, with a stream of reforms designed to stimulate a quasi-market within the state school sector. Arguments in favour of faith schools are sometimes simply an extension of the 'parental choice' agenda, but there is also a distinctive argument, dating back to Coleman, that the community inherent in church schools, particularly Catholic schools, allows higher academic and disciplinary standards to be maintained (Coleman, Hoffer, & Kilgore, 1982; Morris, 2009). A further argument is that the shared values and social mission of Catholic schools promote high achievement, especially among disadvantaged groups (Bryk, Lee, & Holland, 1993; Morris, 2005). Advocates of academic selection argue that selective

**CONTACT** Alice Sullivan  [alice.sullivan@ucl.ac.uk](mailto:alice.sullivan@ucl.ac.uk)

© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.  
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

schools promote high academic standards and provide a suitable education for bright children who cannot afford private education (DfE, 2016). The current context of growing socio-economic inequalities (Piketty, 2013) and declining economic prospects for younger generations (Cribb, Hood, & Joyce, 2015) has only increased the salience of these debates.

Advocates of faith schools claim that they are beneficial for children's educational attainment. A distinctive advantage has been claimed for Catholic schools (Coleman et al., 1982; Morris, 2009). However, faith schools tend to be more socially selective than non-faith schools, and it is not clear that there is a benefit above and beyond the school selectivity effect (Allen & West, 2009; Allen & West, 2011; Gibbons & Silva, 2011; Gihleb & Giuntella, 2017; Schagen & Schagen, 2005). In Britain, both private and state schools may cater to a particular faith, as Britain has a long history of incorporating church schools within the state sector. This gives us the advantage of being able to separate the effects of private and faith schooling, whereas in the US, all faith schools are private.

Past findings on British schooling suggest that attending private and grammar schools has conferred both academic and labour market advantages (Clifford & Heath, 1984; Cox & Marks, 1980; Dearden, Ferri, & Meghir, 2002; Feinstein & Symons, 1999; Green, Machin, Murphy, & Zhu, 2012; Green, Parsons, Sullivan, & Wiggins, *In press*; Heath & Jacobs, 1999; Kerckhoff, Fogelman, Crook, & Reeder, 1996; Kerckhoff & Trott, 1983; Marks, Cox, & Pomian-Srednicki, 1983; Steedman, 1980, 1983a, 1983b; Sullivan & Heath, 2003; Sullivan, Joshi, & Leonard, 2010, 2011; Sullivan, Parsons, Wiggins, Heath, & Green, 2014). However, studies using more recent and cross-national data have found no advantage due to private schooling once social and academic selectivity into the schools and the school peer group are accounted for (Dronkers & Avram, 2009; Dronkers & Robert, 2008; Nghiem, Nguyen, Khanam, & Connelly, 2015; Sakellariou, 2017). The picture is not uniform across national contexts and educational stages (Jerrim, Parker, Chmielewski, & Anders, 2016; Marks, 2015). In view of the large private–state resource gap in Britain, it is possible that the private school advantage in Britain might be substantive, even if the differential is low or non-existent in other countries where the resource gap is also low (Ndaji, Little, & Coe, 2016).

Grammar schools are academically selective schools which admit pupils via competitive entry tests. 'Secondary modern' is the term for schools designed for pupils who fail the test for grammar school entrance. Selective schooling was the norm in Britain until the 1960s, when comprehensive, all-abilities schools were introduced. However, grammar schools were never entirely phased out. Opposition to grammar schools remains focussed on the tendency of selective systems to increase inequalities in educational and occupational outcomes (Boliver & Swift, 2011; Burgess, Dickson, & Macmillan, 2014). Several studies have found that grammar and other academically selective schools provide an advantage in academic outcomes, controlling for inputs, though the size of the effects found varies from substantial to marginal according to the context and the outcome under consideration (Abdulkadiroğlu, Angrist, & Pathak, 2014; Clark, 2010; Clark & Del Bono, 2014; Dobbie & Fryer, 2011; Galinda-Rueda & Vignoles, 2005; Sullivan & Heath, 2003; Sullivan et al., 2014), and selection bias remains a concern (Pischke & Manning, 2006). As well as being academically selective, grammar schools disproportionately admit pupils from relatively privileged backgrounds (Atkinson, Gregg, & McConnell, 2007; Coe et al., 2008; Douglas, 1964).

Some effects of schooling may be restricted to immediate short-term academic gains, while others may represent a longer term influence. Some learning gains may be short term, such as those due to cramming for a particular test. Examination success also relies on school motivation to enter pupils for examinations, which may have been lacking at some schools prior to the introduction of the school accountability agenda, particularly within the secondary modern sector, which was not traditionally oriented towards examinations. It has been suggested that Catholic schools enter pupils for more examinations than other schools, potentially due to the additional subject entry of religious studies (Morris, 2005). Schools may also vary in the knowledge, resources, and motivation they bring to bear on achieving marginal gains in examination success via strategies to boost individual pupils' results. Examples of this include grade appeals and (more recently) classifying students as SEN (Special Educational Needs) in order to gain extra time in exams, both of which are substantially more common in the private sector (Bateman, 2017; Scott, 2016). Private school graduates gain poorer degree results than their state school peers, suggesting that, to this extent, the private school advantage doesn't persist beyond the school years (Smith & Naylor, 2001). Conversely, a longer term influence on pupil outcomes would be likely to operate through mechanisms such as deeper learning gains, the development of a positive attitude to learning, or increased aspirations.

Our study contributes to the literature by exploiting rich, longitudinal data on individuals, allowing us to control for an unusually extensive range of potential confounders, as well as enabling us to distinguish between individuals' attainment in the short term, during schooling, and in the longer term. We address the following questions for a nationally representative sample of individuals born in Britain in 1970 and attending secondary school in England and Wales in the 1980s:

- (1) What differences were there between school types in academic attainment, and to what extent were these accounted for by controlling for relevant confounders?
- (2) Were school sector differences greater at the end of compulsory schooling (age 16), in further education (A-levels), or during adulthood?

## Data and methods

The 1970 British Cohort Study (BCS70) follows the lives of more than 17,000 people born in England, Scotland, and Wales in a single week of 1970 (Elliott & Shepherd, 2006). Over the course of cohort members' lives, the BCS70 has collected information on health, physical, educational and social development, and economic circumstances among other factors. Since the birth survey in 1970, there have been eight surveys (or 'waves') at ages 5, 10, 16, 26, 30, 34, 38, and 42.

Because we exploit data from all of the childhood waves of the study, including the age 16 wave, the problem of missing data must be addressed. The age 16 survey employed 16 separate survey instruments, and a teachers' strike affected the completion of those instruments, including cognitive tests, that were administered via schools (Dodgeon, 2008). This led to substantial instrument non-response, though the overall response and representativeness of the sample at this wave was good (Mostafa & Wiggins, 2015). List-wise deletion is not a practical or desirable option, so we use

multiple imputation using chained equations to ‘fill-in’ values of any missing items in the variables selected for our analysis adopting Schafer’s data augmentation approach (Schafer, 1997) under the assumption of ‘missing at random’ (MAR). In order to strengthen the MAR assumption and to protect against departures from multivariate normality, we included a set of auxiliary variables in our imputation model. Our analytical sample includes all cohort members resident in England and Wales in 1986 with a full set of birth characteristics, who participated in the age 42 survey and had information on school type. The analytical sample is 10,188. Cohort members residing in Scotland were excluded because Scotland’s system of school qualifications differs from that in England and Wales. All reported analyses are averaged across 20 replicates based upon Rubin’s Rule for the efficiency of estimation under a reported degree of missingness across the whole data of around 0.20 (Gelman & Hill, 2007; Little & Rubin, 2014).

Schools are categorised according to sector: comprehensive, grammar, secondary modern, and private. Schools are further characterised as: non-faith, Church of England (C of E), Catholic, and other faith. We have combined data from three sources: the 1986 Head-teacher’s Questionnaire; the 1986 Schools Census, and a retrospective question asked in 2012, as described elsewhere (Sullivan et al., 2014). A limitation of the study is that we are unable to interrogate the meaning of faith schooling beyond official labels, as we have no information on the extent of religious practices within schools. Non-faith schooling does not imply a complete absence of religious influence, and all state schools were required to conduct collective acts of worship and to provide religious instruction.

## **Analytical strategy**

We examine the link between school sector and academic outcomes at age 16, 18, and in terms of the highest qualification gained up to age 42. We run three regression models for each of our three outcomes, as follows.

### ***Model 1: school sectors***

This model shows the raw differences between school sectors at age 16, without controls.

### ***Model 2: model 1 + background controls and prior attainment***

This model shows the remaining difference between pupil performance at different school sectors, controlling for the child’s demographic characteristics.

We control for the following birth characteristics: sex; birth weight, as low birth weight is an indicator of prenatal disadvantage (Karlson, Holm, & Breen, 2010); position in birth order, as parity is a well-established predictor of educational chances, with an advantage for children higher up the birth order (Nisbet, 1953); the age of the mother at first birth, as young motherhood is linked to disadvantage (Aspinall, 2007; Hawkes & Joshi, 2012; Hoffmeyer-Zlotnik, 2003). Occupational social class at birth is captured using the Registrar General’s classification. We use the highest occupation based on either the mother or father’s current or most recent job. Further information on

economic circumstances is provided by variables on home ownership and household overcrowding (at age five).

We include the parents' highest qualification (1975): coded as mother's or father's whichever is highest. In addition, we use information on frequency of reading to the child at age five, and on the type of newspapers regularly present in the home at age 16. The prose style of tabloids was simpler and geared towards a lower reading age and smaller vocabulary than the broadsheets. During the 1980s, newspaper readership was high, and the type of newspaper read was a strong cultural identifier (Chan & Goldthorpe, 2007). Although this variable was captured when the cohort member was age 16, we consider that tabloid or broadsheet readership is a stable characteristic and would be unlikely to be subject to significant change during the preceding years of the cohort member's life.

We exploit data from a range of cognitive tests taken by the BCS70 children at the ages of 5 and 10. We use varimax Principal Components Analysis (PCA) to extract a single main component score for cognition using all available tests at each age. The resulting PCA score is standardised in our analyses. Cronbach's Alpha for these age-specific measures ranged between 0.6 and 0.9 (Parsons, 2014).

We do not include ethnicity as a category in this analysis, as the proportion of ethnic minorities in BCS70 is very low. Similarly, we do not consider single-parent status at birth due to low numbers. Within our sample, 2.5% of cohort members with ethnicity information were from a minority ethnic group and 3.7% lived in a single-parent household (1.4% widowed, separated, or divorced, 2.3% single never married).

### ***Model 3: model 2 + religion of upbringing***

Much research on faith schooling fails to control for the faith of upbringing of the child, which may be an important confounder. We include a retrospective item on the faith of upbringing, captured at age 42.

## **Analysis**

We start by presenting a descriptive analysis of the differences between school sectors.

Table 1 shows the percentages of individuals attending each type of school, followed by a comparison of mean academic outcomes at age 16 (A–C grade O-level passes), 18 (A-level passes), and 42 (highest qualification achieved), with statistically significant differences ( $p < 0.05$ ) flagged with an asterisk. The majority of the cohort members attended comprehensive schools (81%), with 10% at secondary moderns, 4% at grammar schools, and 5% at private schools. Most schools within each sector were non-faith, and the proportion of non-faith schools ranged from 84–86% within the state sector to 76% within the private sector. Catholic schools catered for 8% of the sample, C of E schools for 4%, and other faith schools for 2%. Within the private and grammar sectors, pupils were similarly likely to be in Catholic or C of E schools, whereas in the comprehensive, and especially the secondary modern sectors, pupils were more likely to be at Catholic than at C of E schools.

Pupils from private and grammar schools performed better on average on all of the academic outcomes than those at comprehensive schools, while pupils at secondary

**Table 1.** Academic outcomes.

	State or private				Faith				Original N	% missing
	Comp	Sec Mod	Grammar	Private	None	C of E	Catholic	Other		
<b>Sample by school type</b>	<b>0.81</b>	<b>0.10</b>	<b>0.04</b>	<b>0.05</b>	<b>0.85</b>	<b>0.04</b>	<b>0.08</b>	<b>0.02</b>	<i>10,188</i>	<i>0</i>
Non-faith	86.1	84.8	83.9	76.2						
C of E	3.8	4.0	3.2	12.1						
Catholic	7.8	10.3	3.4	10.0						
Other faith	2.3	0.9	9.5	1.7						
<b>Academic outcomes</b>										
<i>A–C exam passes at 16: mean number</i>	2.1	1.5*	4.3*	4.7*	2.2	3.0*	2.7*	3.2*	9087	10.8
<i>A-levels</i>									8315	18.3
None	0.81	0.89*	0.51*	0.39*	0.79	0.71*	0.75*	0.67*		
1+	0.19	0.11*	0.49*	0.61*	0.21	0.29*	0.25*	0.33*		
<i>Highest qualification</i>									8963	12.0
None	0.26	0.34*	0.11*	0.07*	0.26	0.18*	0.23	0.18*		
CSE grade 5–2/O-levels/GCSE DE	0.11	0.12	0.02*	0.02*	0.11	0.11	0.08*	0.06*		
CSE 1/O-levels/GCSE A–C	0.29	0.29	0.21*	0.13*	0.28	0.27	0.28	0.28		
A-levels	0.06	0.07	0.13*	0.08	0.06	0.08	0.09	0.08		
Degree	0.23	0.16*	0.46*	0.55*	0.24	0.32*	0.28	0.33*		
Higher degree	0.04	0.02	0.07*	0.15*	0.04	0.04	0.05	0.07		

Note: Statistically significant school mean differences (at  $p < 0.05$  level) marked \*, reference category comprehensive or faith = none.

moderns performed worse. For example, pupils at comprehensives attained an average of 2.1 A–C grade O-level passes, compared to 1.5 for pupils at secondary modern schools, 4.3 for those at grammars, and 4.7 for private school pupils. Pupils from faith schools of each type (C of E, Catholic, and other) received higher levels of O-level passes than those at non-faith schools, and those from C of E and other schools were somewhat more likely to achieve some A-level passes, and to achieve a university degree level qualification than those at non-faith schools.

Table 2 shows the differences between school sectors in individual pupil characteristics. We include the full range of covariates to be used in our subsequent models, and some clear patterns are apparent. Compared to those at comprehensives, pupils from private and grammar schools were advantaged, and those at secondary moderns disadvantaged, both in terms of cognitive scores at ages 5 and 10, and in terms of socio-economic circumstances, captured by a wide range of variables. For example, 58% of pupils at comprehensives were in home-owner families, compared to 47% of pupils at secondary moderns, 77% of those at grammars, and 89% of those in private schools. Pupils at faith schools were also advantaged in terms of cognitive scores at age 10, and in general, those from C of E and ‘other’ faith schools were socio-economically advantaged compared to pupils at non-faith schools, but this was not the case for pupils at Catholic schools.

Catholic schools were dominated by children who were brought up Catholic (73%), but also had 10% C of E pupils, and 7% each of pupils with ‘other Christian’ or no faith upbringings, the remaining 2% being from other faiths. C of E schools had 50% C of E

Table 2. Pupil characteristics.

	State or private				Faith				Original N	% missing
	Comp	Sec Mod	Grammar	Private	None	C of E	Catholic	Other		
<i>Female</i>	0.51	0.54	0.52	0.49	0.51	0.54	0.53	0.46	10,188	0
<i>Low birthweight</i>	0.06	0.06	0.04	0.04	0.06	0.03*	0.05	0.06	10,188	0
<i>Birth order</i>									10,188	0
First born	0.40	0.38	0.43	0.40	0.40	0.42	0.34*	0.38		
Second child	0.34	0.32	0.34	0.40*	0.34	0.35	0.32	0.37		
Third+ child	0.26	0.30	0.23	0.20*	0.26	0.23	0.34*	0.26		
<i>Cognition 5: mean z-score</i>	0.01	-0.26*	0.60*	0.64*	0.03	0.08	0.08	0.25*	7693	24.5
<i>Cognition 10: mean z-score</i>	0.04	-0.17*	0.86*	0.97*	0.07	0.23*	0.24*	0.50*	7861	22.8
<b>Family characteristics</b>										
<i>Age mother 1st birth</i>									10,188	0
Teenager	0.09	0.10	0.05*	0.03*	0.09	0.08	0.07*	0.05		
20s	0.68	0.67	0.68	0.65	0.68	0.68	0.63*	0.72		
30+	0.23	0.23	0.27	0.33*	0.23	0.24	0.31*	0.23		
<i>Highest qual parent</i>									8386	17.7
None	0.40	0.43	0.22*	0.07*	0.39	0.29*	0.37	0.22*		
Vocational	0.14	0.18*	0.10	0.07*	0.14	0.11	0.16	0.13		
O-levels	0.22	0.21	0.24	0.18	0.21	0.26	0.23	0.23		
A-levels	0.10	0.08	0.12	0.14*	0.10	0.12	0.10	0.17*		
Degree+	0.14	0.09*	0.32*	0.55*	0.17	0.21*	0.14	0.25*		
<i>Days child read to</i>									8424	17.4
Never	0.10	0.13*	0.06*	0.03*	0.10	0.06*	0.11	0.05*		
Every day	0.36	0.33	0.50*	0.55*	0.38	0.42	0.34	0.41		
<i>Newspapers read</i>									4043	60.4
None	0.22	0.16*	0.18	0.22	0.21	0.22	0.18	0.22		
Tabloid	0.63	0.69	0.43*	0.27*	0.62	0.50*	0.62	0.53		
Broadsheet	0.15	0.15	0.32*	0.51*	0.17	0.28*	0.20	0.25		
<i>Social class (RGSC)</i>									10,188	0
IV/V Partly and unskilled	0.22	0.24	0.12*	0.05*	0.21	0.17	0.23	0.13*		
III m Skilled manual	0.47	0.50	0.32*	0.17*	0.45	0.40	0.46	0.40		
III nm Skilled non-manual	0.14	0.11*	0.19	0.17	0.14	0.16	0.13	0.18		
I/II Professional/managerial	0.17	0.15	0.37*	0.61*	0.19	0.27*	0.18	0.29*		
<i>Weekly family income</i>									8295	18.6
<£50	0.35	0.37	0.26*	0.09*	0.34	0.28	0.43*	0.21*		
£200+	0.10	0.09	0.25*	0.54*	0.13	0.19*	0.12	0.18		
<i>Home ownership</i>	0.58	0.47*	0.77*	0.89*	0.59	0.70*	0.56	0.77*	8742	14.2
<i>Overcrowded home</i>	0.38	0.50*	0.25*	0.09*	0.37	0.24*	0.47*	0.28*	8650	15.1
<i>Religion raised in</i>									7638	25.1
None	0.33	0.34	0.27*	0.19*	0.35	0.19*	0.07*	0.27*		
C of E	0.31	0.23*	0.39*	0.42*	0.32	0.50*	0.10*	0.38		
Catholic	0.14	0.16	0.11	0.14	0.09	0.09	0.73*	0.14		
Other Christian	0.19	0.24*	0.19	0.20	0.21	0.20	0.07*	0.16		
Other	0.03	0.03	0.04	0.04	0.03	0.02	0.02	0.05		

Note: Statistically significant school mean differences (at  $p < 0.05$  level) marked \*, reference category comprehensive or faith = none.

pupils, 20% 'other Christian', 19% of no faith upbringing, 9% Catholic, and 3% other faiths. Pupils at private and grammar schools were relatively likely, compared to pupils at comprehensives, to have a C of E upbringing, and commensurately less likely not to have been brought up according to any particular religion. Evidently, it is important to account for these differences in attempting to isolate any 'effect' of faith schooling on attainment.



**Table 3.** Linear regression: number of good exam passes at age 16 (A–C O-levels, CSE Grade 1).

	Model 1	Model 2	Model 3
<b>School (ref: comp)</b>			
Sec modern	–0.64*** (0.09)	–0.30*** (0.09)	–0.31*** (0.09)
Grammar	2.11*** (0.15)	0.90*** (0.14)	0.90*** (0.14)
Private	2.46*** (0.13)	0.69*** (0.12)	0.68*** (0.12)
<b>Faith School (ref: no)</b>			
C of E	0.56*** (0.14)	0.36** (0.13)	0.35** (0.13)
Catholic	0.47*** (0.10)	0.33*** (0.10)	0.27* (0.12)
Other	0.76*** (0.18)	0.23 (0.17)	0.23 (0.17)
<b>Religion raised in (ref: no)</b>			
C of E			0.12 (0.07)
Catholic			0.20 (0.10)
Other Christian			0.29*** (0.08)
Other			0.45** (0.17)
<b>Female</b>		0.40*** (0.05)	0.39*** (0.05)
<b>Low birthweight</b>		–0.09 (0.11)	–0.11 (0.11)
<b>Birth order</b>		–0.14*** (0.03)	–0.14*** (0.03)
<b>Age mother 1st birth</b>		0.02*** (0.01)	0.02*** (0.01)
<b>Highest qual parent</b>			
Vocational		0.04 (0.09)	0.03 (0.09)
O-levels		0.16* (0.07)	0.16* (0.07)
A-levels		0.26* (0.11)	0.24* (0.11)
Degree +		0.65*** (0.10)	0.64*** (0.10)
<b>Days child read to</b>		0.03** (0.01)	0.03* (0.01)
<b>Newspapers read (ref: none)</b>			
Tabloid		–0.33** (0.12)	–0.32** (0.11)
Broadsheet		0.06 (0.15)	0.06 (0.15)
<b>RGSC (ref: V or IV)</b>			
III m		0.13 (0.07)	0.14 (0.07)
III nm		0.23* (0.09)	0.24** (0.09)
I or II		0.43*** (0.10)	0.44*** (0.10)
<b>Income</b>		0.09*** (0.03)	0.09*** (0.03)
<b>Own home</b>		0.02 (0.07)	0.00 (0.07)
<b>Non overcrowded home</b>		0.08 (0.07)	0.08 (0.07)

*(Continued)*

**Table 3.** (Continued).

	Model 1	Model 2	Model 3
Cognition 5		0.11*** (0.03)	0.12*** (0.03)
Cognition 10		0.97*** (0.04)	0.96*** (0.04)
_cons	2.07*** (0.03)	1.02*** (0.18)	0.93*** (0.19)
N	10,188	10,188	10,188
R <sup>2</sup>	0.07	0.28	0.28

Notes: Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Table 3 shows the models for examination performance at age 16 + . In model 1, we see that pupils at private schools had an advantage of 2.5 ‘good’ (A–C grade) O-level passes compared to those at comprehensives, at grammars the advantage was 2.1 passes, and at secondary moderns pupils gained on average 0.4 fewer passes. At C of E and Catholic schools there was an average advantage of around half an O-level, with a slightly bigger advantage at schools of other denominations.

The school differences are strongly attenuated in model 2, which includes family background and prior attainment, both of which are highly influential as we would expect. The grammar advantage and secondary modern disadvantage are more than halved in this model, while the private school advantage is reduced by more than two thirds. The advantage associated with faith schools is also reduced in this model, so that C of E schools are associated with 0.4 of an additional O-level, Catholic schools 0.3, and other faith schools 0.2 (not statistically significant).

Model 3 includes the study member’s religion of upbringing. The religion the study member was raised in is significant in the case of the ‘other Christian’ and ‘other religion’ categories, which are associated with an advantage of 0.3 and 0.5 of an O-level respectively. Nevertheless, for the most part, the school sector differences remain intact in this model, though the Catholic school advantage is reduced in statistical significance.

Table 4 shows logistic regression models for achieving any A-level passes at age 18 + . Model 1 shows the raw school differences. Pupils at secondary modern schools had half the odds of getting any A-levels compared to pupils at comprehensives, while pupils at grammars had four times the odds, and pupils at private schools 6.3 times the odds of getting any A-levels. More modest advantages were associated with faith schools. Pupils at C of E and Catholic schools had approximately 1.3 times better odds of getting any A-levels compared to those at non-faith schools, while schools of other faiths were associated with a somewhat greater advantage (OR = 1.7).

In model 2, the school differences are again substantially attenuated. Nevertheless, there remain substantial advantages associated with grammar and private schools, both of which are associated with approximately twice the odds of gaining an A-level, while attending a secondary modern school is associated with a corresponding disadvantage (OR = 0.6). The C of E and ‘other faith’ school advantages are reduced and statistically non-significant in this model, but a robust Catholic advantage remains.

In model 3, we see that the religion the cohort member was raised in is a significant predictor of A-level performance, with a small advantage for those brought up in the C of E, and larger positive differentials for those brought up Catholic or in non-Christian

**Table 4.** Binary logistic regression: A-levels.

	Model 1	Model 2	Model 3
<b>School (ref: comp)</b>			
Sec modern	0.49*** [0.39, 0.62]	0.63*** [0.49, 0.80]	0.63*** [0.49, 0.81]
Grammar	3.96*** [3.18, 4.92]	1.94*** [1.51, 2.49]	1.92*** [1.49, 2.47]
Private	6.31*** [5.20, 7.64]	2.11*** [1.69, 2.65]	2.07*** [1.65, 2.60]
<b>Faith School (ref: no)</b>			
C of E	1.31* [1.03, 1.67]	1.16 [0.89, 1.52]	1.14 [0.86, 1.49]
Catholic	1.34** [1.11, 1.62]	1.31** [1.07, 1.60]	1.10 [0.86, 1.41]
Other	1.65** [1.22, 2.22]	1.19 [0.86, 1.65]	1.15 [0.82, 1.60]
<b>Religion raised in (ref: no)</b>			
C of E			1.21* [1.03, 1.43]
Catholic			1.46** [1.14, 1.86]
Other Christian			1.12 [0.93, 1.36]
Other			2.27*** [1.47, 3.52]
<b>Female</b>		1.12 [0.98, 1.28]	1.11 [0.98, 1.27]
<b>Low birthweight</b>		1.10 [0.84, 1.44]	1.07 [0.82, 1.41]
<b>Birth order</b>		0.92* [0.86, 0.99]	0.92* [0.86, 0.98]
<b>Age mother 1st birth</b>		1.03*** [1.01, 1.04]	1.03*** [1.01, 1.04]
<b>Highest qual parent</b>			
Vocational		1.01 [0.81, 1.27]	1.01 [0.80, 1.27]
O-levels		1.18 [0.97, 1.42]	1.18 [0.97, 1.43]
A-levels		1.27* [1.01, 1.61]	1.27* [1.00, 1.61]
Degree +		1.83*** [1.46, 2.29]	1.82*** [1.45, 2.28]
<b>Days child read to</b>		1.01 [0.98, 1.04]	1.01 [0.98, 1.04]
<b>Newspapers read (ref: none)</b>			
Tabloid		0.85 [0.71, 1.02]	0.85 [0.71, 1.02]
Broadsheet		1.24* [1.02, 1.50]	1.23* [1.02, 1.50]
<b>RGSC (ref: V or IV)</b>			
III m		1.06 [0.87, 1.29]	1.08 [0.88, 1.32]
III nm		1.31* [1.04, 1.66]	1.33* [1.05, 1.70]
I or II		1.42** [1.12, 1.80]	1.44** [1.14, 1.83]
<b>Income</b>		1.02 [0.97, 1.08]	1.03 [0.97, 1.09]
<b>Own home</b>		1.07 [0.91, 1.27]	1.06 [0.89, 1.25]
<b>Non overcrowded home</b>		1.21* [1.02, 1.44]	1.22* [1.03, 1.45]
<b>Cognition 5</b>		1.05 [0.96, 1.15]	1.05 [0.97, 1.15]
<b>Cognition 10</b>		2.13*** [1.02, 1.44]	2.14*** [1.03, 1.45]

*(Continued)*

**Table 4.** (Continued).

	Model 1	Model 2	Model 3
<i>N</i>	10,188	[1.93, 2.36]	[1.94, 2.37]
<i>R</i> <sup>2</sup>	0.06	0.19	0.19

Notes: Exponentiated coefficients; 95% confidence intervals in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

faiths. In this model, the Catholic school advantage is reduced and becomes statistically insignificant.

Table 5 shows linear regression models of the highest educational qualification attained in adulthood (by age 42). The outcome measure is a 0–5 point scale, so the coefficients are interpreted in terms of the level achieved on this scale. For example, one point on the scale could be the step up from no qualifications to a D grade O-level or from A-levels to a degree. Model 1 shows that, compared to comprehensive school pupils, secondary modern pupils had a disadvantage of 0.4 of a qualification level, grammar school pupils had an advantage of one level, and private school pupils had an advantage of 1.4 levels. C of E and Catholic school pupils had an advantage of 0.2, while schools of other faiths were associated with an advantage of 0.4.

In model 2, the secondary modern disadvantage is cut by around half, and the grammar and private school advantage is cut by approximately two thirds. The C of E and ‘other’ faith school advantages are strongly reduced and become statistically insignificant, but a Catholic school advantage remains.

Model 3 introduces the study member’s faith of upbringing. Compared to those not brought up in any particular religion, there were advantages associated with being raised C of E (0.1 of a level), Catholic (0.2), other Christian (0.3), and in a non-Christian faith (0.5). Introducing this variable reduces the Catholic school effect to statistical insignificance, so that none of the faith sectors are now associated with a significant difference compared to non-faith schools.

## Discussion

In summary, our results show a consistent disadvantage for pupils who attended secondary modern schools, and a consistent advantage for pupils who attended private and grammar schools, across the outcomes of compulsory schooling, post-compulsory schooling, and in terms of the highest qualification achieved at any time up to mid-life. These differentials are strongly attenuated by a rich set of controls for family background and prior cognitive attainment, but nevertheless, substantial differentials remain. In contrast, in the case of faith schools, only the advantage in examination performance at age 16 is robust to the background controls. The fact that the benefits of faith schools only extended up to age 16 suggests that the practices of these schools were sufficient to raise attainment at age 16, but not to drive up participation and attainment once compulsory participation was over. One possible explanation is that faith schools may have entered pupils for more O-levels compared to non-faith schools (Morris, 2005). We found no evidence for a distinctive Catholic school advantage, compared to Church of England schools once we had controlled for the faith of upbringing alongside other

**Table 5.** Linear regression: highest qualification at age 42.

	Model 1	Model 2	Model 3
<b>School (ref: comp)</b>			
Sec modern	-0.35*** (0.05)	-0.15** (0.05)	-0.16*** (0.05)
Grammar	1.00*** (0.08)	0.35*** (0.08)	0.35*** (0.08)
Private	1.43*** (0.07)	0.46*** (0.07)	0.45*** (0.07)
<b>Faith School (ref: no)</b>			
C of E	0.20* (0.08)	0.07 (0.07)	0.06 (0.07)
Catholic	0.21*** (0.06)	0.14* (0.05)	0.08 (0.06)
Other	0.38*** (0.10)	0.07 (0.10)	0.07 (0.10)
<b>Religion raised in (ref: no)</b>			
C of E			0.13** (0.04)
Catholic			0.22*** (0.06)
Other Christian			0.32*** (0.05)
Other			0.50*** (0.10)
<b>Female</b>		0.19*** (0.03)	0.19*** (0.03)
<b>Low birthweight</b>		0.02 (0.06)	0.00 (0.06)
<b>Birth order</b>		-0.08*** (0.02)	-0.09*** (0.02)
<b>Age mother 1st birth</b>		0.02*** (0.01)	0.02*** (0.01)
<b>Highest qual parent</b>			
Vocational		0.05 (0.06)	0.04 (0.05)
O-levels		0.21*** (0.05)	0.21*** (0.05)
A-levels		0.36*** (0.06)	0.34*** (0.06)
Degree +		0.54*** (0.07)	0.52*** (0.07)
<b>Days child read to</b>		0.02*** (0.01)	0.02** (0.01)
<b>Newspapers read (ref: none)</b>			
Tabloid		-0.13* (0.06)	-0.13* (0.06)
Broadsheet		0.11 (0.07)	0.11 (0.07)
<b>RGSC (ref: V or IV)</b>			
III m		0.03 (0.04)	0.04 (0.04)
III nm		0.10 (0.05)	0.11* (0.05)
I or II		0.11* (0.05)	0.11* (0.05)
<b>Income</b>		0.02 (0.02)	0.02 (0.02)
<b>Own home</b>		0.19*** (0.04)	0.18*** (0.04)
<b>Non overcrowded home</b>		0.02 (0.04)	0.03 (0.03)
<b>Cognition 5</b>		0.08*** (0.02)	0.08*** (0.02)
<b>Cognition 10</b>		0.44*** (0.02)	0.44*** (0.02)

*(Continued)*

**Table 5. (Continued).**

	Model 1	Model 2	Model 3
_cons	1.97*** (0.02)	(0.02) 1.16*** (0.10)	(0.02) 1.06*** (0.10)
<i>N</i>	10,188	10,188	10,188
<i>R</i> <sup>2</sup>	0.06	0.26	0.26

Notes: Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

factors. Conversely, in the case of private and grammar schools, and negatively in the case of secondary moderns, our findings appear to show an influence on academic attainment in the long term, rather than a purely short-term boost. Of course, these results cannot necessarily be interpreted as causal, as the possibility that pupils within each school sector varied in ways that we have not been able to control for remains.

Nevertheless a unique feature of this study is that, among the many observed background factors we have been able to control for, we have accounted for the religion the study member was brought up in. This proved to be important, as the religion of upbringing predicts academic outcomes, especially in the longer term, beyond compulsory schooling. Compared to a non-religious upbringing, only 'other Christian' and non-Christian faiths predicted positive outcomes at age 16, but the main denominations, C of E and Catholic, were associated with academic success at 18 and in terms of the highest qualification achieved. In both instances, the Catholic advantage was somewhat larger than the C of E advantage, and controlling for faith of upbringing was important in reducing what could otherwise be seen as a distinctive Catholic school advantage.

We can speculate that the academic advantage of a religious upbringing may be due to cultural differences, such as stricter parenting practices or due to the protective influence of being part of a particular faith community. The Catholic advantage in Britain is also likely to be bound up with predominantly Irish immigrant heritage, which we cannot disentangle from Catholic upbringing in this study. It is well established that immigrant and ethnic minority groups manifest high rates of educational persistence, staying on in further and higher education at higher rates than ethnic majority peers with similar levels of prior attainment (Leslie & Drinkwater, 1999; Modood, 2004). A further limitation of our study is that we have insufficient detail on the religious practices of the study members' parents to be able to unpack what being 'brought up according to a religion' meant to cohort members, and which aspects of this, if any, may have influenced their academic attainment. Nevertheless, the fact that the faith of upbringing is associated with academic outcomes means that it is likely to be an important potential confounder in any study of faith schooling and academic attainment, and studies which do not include this information may be prone to producing spurious or exaggerated positive results for faith schools as a result.

Our results reflect long-term longitudinal data, and are necessarily historical. A limitation of the study is that these results do not necessarily apply to the contemporary school system. One notable change since the 1970 cohort were at school is that faith schooling within the state sector was expanded under the 'New Labour' government elected in 1997, and extended beyond Christian and Jewish schools to schools of other

faiths (Gillard, 2011). Therefore, contemporary generations of British school children are more likely to experience faith schooling than the 1970 cohort were.

Very few studies comparing faith and non-faith schools are able to either exploit the level of background controls that we use here, or to examine long-term outcomes of schooling. The findings that we present here suggest that caution is needed in interpreting the findings of studies that have these limitations. While objections to faith schooling usually focus on the barriers they may place in the way of social interaction between groups and social cohesion, the arguments in their favour often relate, at least in part, to improved academic results. In the US, advocates of school competition and vouchers often rely on evidence regarding Catholic schools (Gihleb & Giuntella, 2017). Therefore, the results presented here regarding faith schools have an ongoing relevance to contemporary education policy debates.

## Acknowledgments

This research was funded by ESRC award ES/K007238/1. Many thanks are due to the BCS70 cohort members, who have generously given up their time over many years to generate the data that we use here.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

This work was supported by the Economic and Social Research Council [ES/K007238/1]; Economic and Social Research Council [ES/M008584/1];

## Notes on contributors

*Alice Sullivan* is a professor at the Centre for Longitudinal Studies in the Department of Social Science at University College London.

*Samantha Parsons* works at the Centre for Longitudinal Studies in the Department of Social Science at University College London.

*Francis Green* is a professor at LLAKES (Centre for Research on Learning and Life Chances) at University College London.

*Richard D. Wiggins* is a professor in the Department of Social Science at University College London.

*George Ploubidis* is a professor at the Centre for Longitudinal Studies in the Department of Social Science at University College London.

*Timmy Huynh* works in the Department of Sociology and Criminology at Penn State.

## ORCID

Alice Sullivan  <http://orcid.org/0000-0002-0690-8728>

## References

- Abdulkadiroğlu, A., Angrist, J., & Pathak, P. (2014). The elite illusion: Achievement effects at Boston and New York exam schools. *Econometrica*, 82, 137–196.
- Allen, R., & West, A. (2009). Religious schools in London: School admissions, religious composition and selectivity. *Oxford Review of Education*, 35, 471–494.
- Allen, R., & West, A. (2011). Why do faith-based schools have advantaged intakes? The relative importance of neighbourhood characteristics, social background and religious identification amongst parents. *British Educational Research Journal*, 37, 631–655.
- Aspinall, P. J. (2007). Approaches to developing an improved cross-national understanding of concepts and terms relating to ethnicity and race. *International Sociology*, 22, 41–70.
- Atkinson, A., Gregg, P., & McConnell, B. (2007). *The result of 11 plus selection: An investigation into opportunities and outcomes for pupils in selective LEAs*. Bristol: CMPO.
- Bateman, T. (2017). Independent school students gain extra time for exams. *BBC News*. Retrieved from <http://www.bbc.co.uk/news/education-38923034>
- Boliver, V., & Swift, A. (2011). Do comprehensive schools reduce social mobility? *British Journal of Sociology*, 62, 89–110.
- Bryk, A. S., Lee, V. E., & Holland, P. B. (1993). *Catholic schools and the common good*. Cambridge, MA: Harvard University Press.
- Burgess, S., Dickson, M., & Macmillan, L. (2014). *Selective schooling systems increase inequality* (Working Paper no. 14-09). London: Department of Quantitative Social Science, University of London.
- Chan, T. W., & Goldthorpe, J. H. (2007). Social status and newspaper readership. *American Journal of Sociology*, 112, 1095–1134.
- Clark, D. (2010). Selective schools and academic achievement. *The BE Journal of Economic Analysis & Policy*, 10(1).
- Clark, D., & Del Bono, E. (2014). *The long-run effects of attending an elite school: Evidence from the UK*. Essex: ISER Working Paper Series.
- Clifford, P., & Heath, A. (1984). Selection does make a difference. *Oxford Review of Education*, 10, 85–97.
- Coe, R., Jones, K., Searle, J., Kokotsaki, D., Mohd Kosnin, A., & Skinner, P. (2008). *Evidence on the effects of selective educational systems*. Durham: CEM Centre.
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1982). *High school achievement: Public, Catholic and private schools compared*. New York: Basic Books.
- Cox, C., & Marks, J. (1980). *Real concern: An appraisal of the National Children's Bureau report on progress in secondary schools*. London: Centre for Policy Studies.
- Cribb, J., Hood, A., & Joyce, R. (2015). *Living standards: Recent trends and future challenges*. London: IFS.
- Dearden, L., Ferri, J., & Meghir, C. (2002). The effect of school quality on educational attainment and wages. *Review of Economics and Statistics*, 84, 1–20.
- DfE. (2016). *Schools that work for everyone: Government consultation*. London: Department for Education. Retrieved from <https://www.gov.uk/government/consultations/schools-that-work-for-everyone>
- Dobbie, W., & Fryer, R. G., Jr. (2011). *Exam high schools and academic achievement: Evidence from New York City*. Cambridge, MA: National Bureau of Economic Research.
- Dodgeon, B. (2008). *Guide to the dataset: BCS70 16 year follow up: APU arithmetic test*. London: Centre for Longitudinal Studies.
- Douglas, J. W. B. (1964). *The home and the school: A study of ability and attainment in the primary school*. London: MacGibbon and Kee.
- Dronkers, J., & Avram, S. (2009). Choice and effectiveness of private and public schools in seven countries. A reanalysis of three PISA data sets. *Zeitschrift Für Pädagogik*, 55, 895–909.
- Dronkers, J., & Robert, P. (2008). Differences in scholastic achievement of public, private government-dependent, and private independent schools a cross-national analysis. *Educational Policy*, 22, 541–577.



- Elliott, J., & Shepherd, P. (2006). Cohort profile: 1970 British birth cohort (BCS70). *International Journal of Epidemiology*, 35, 836–843.
- Feinstein, L., & Symons, J. (1999). Attainment in secondary school. *Oxford Economic Papers*, 51, 300–321.
- Galinda-Rueda, F., & Vignoles, A. (2005). *The heterogeneous effect of selection in secondary schools: Understanding the changing role of ability*. London. Centre for the Economics of Education, London School of Economics.
- Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel hierarchical models*, 1. New York, NY: Cambridge University Press.
- Gibbons, S., & Silva, O. (2011). Faith primary schools: Better schools or better pupils? *Journal of Labour Economics*, 29, 589–635.
- Gihleb, R., & Giuntella, O. (2017). Nuns and the effects of catholic schools. Evidence from Vatican II. *Journal of Economic Behavior & Organization*, 137, 191–213.
- Gillard, D. (2011). *Education in England: A brief history*. Retrieved from [www.educationengland.org.uk/history](http://www.educationengland.org.uk/history)
- Green, F., Machin, S., Murphy, R., & Zhu, Y. (2012). The changing economic advantage from private schools. *Economica*, 79(316), 658–679.
- Green, F., Parsons, S., Sullivan, A., & Wiggins, R. (In press). Dreaming big: Self-evaluations, aspirations, networks, and the private-school earnings premium. *Cambridge Journal of Economics*, 42(3) 757–778.
- Hawkes, D., & Joshi, H. (2012). Age at motherhood and child development: Evidence from the UK Millennium cohort. *National Institute Economic Review*, 222, R52–R66.
- Heath, A., & Jacobs, S. (1999). Comprehensive reform in Britain. In A. Leschinsky & K. U. Mayer (Eds.), *The comprehensive school experiment revisited: Evidence from Western Europe*. Frankfurt-am-Main: Peter Lang.
- Hoffmeyer-Zlotnik, J. H. P. (2003). How to measure race and ethnicity. In J. H. P. Hoffmeyer-Zlotnik & C. Wolf (Eds.), *Advances in cross-national comparison: A European working book for demographic and socio-economic variables* (pp. 267–277). New York: Kluwer Academic.
- Jerrim, J., Parker, P. D., Chmielewski, A. K., & Anders, J. (2016). Private schooling, educational transitions, and early labour market outcomes: Evidence from three Anglophone countries. *European Sociological Review*, 32, 280–294.
- Karlsen, K. B., Holm, A., & Breen, R. (2010). *Total, direct and indirect effects in logit models* (CSER Working Paper 0005). Aarhus: Aarhus University, Centre for Strategic Educational Research.
- Kerckhoff, A. C., Fogelman, K. R., Crook, D., & Reeder, D. (1996). *Going comprehensive in England and Wales: A study of uneven change*. London: Woburn Press.
- Kerckhoff, A. C., & Trott, J. (1983). Educational attainment in a changing educational system: The case of England and Wales. In Y. Shavit & H.-P. Blossfeld (Eds.), *Changing educational attainment in thirteen countries*. Boulder, CO: Westview.
- Leslie, D., & Drinkwater, S. (1999). Staying on in full-time education: Reasons for high participation among ethnic minority males and females. *Economica*, 66, 63–77.
- Little, R. J., & Rubin, D. B. (2014). *Statistical analysis with missing data*, 333. New York, NY: John Wiley & Sons.
- Marks, G. N. (2015). School sector differences in student achievement in Australian primary and secondary schools: A longitudinal analysis. *Journal of School Choice*, 9, 219–238.
- Marks, J., Cox, C., & Pomian-Srednicki, M. (1983). *Standards in English schools*. London: National Council for Educational Standards.
- Modood, T. (2004). Capitals, ethnic identity, and educational qualifications. *Cultural Trends*, 13, 87–105.
- Morris, A. (2009). Contextualising Catholic school performance in England. *Oxford Review of Education*, 35, 725–741.
- Morris, A. B. (2005). Diversity, deprivation and the common good: Pupil attainment in Catholic schools in England. *Oxford Review of Education*, 31, 311–330.
- Mostafa, T., & Wiggins, R. D. (2015). The impact of attrition and non-response in birth cohort studies: A need to incorporate missingness strategies. *Longitudinal and Life Course Studies*, 6, 131–146.

- Ndaji, F., Little, J., & Coe, R. (2016). *A comparison of academic achievement in independent and state schools*. Durham University, Durham: Centre for Evaluation and Monitoring.
- Nghiem, H. S., Nguyen, H. T., Khanam, R., & Connelly, L. B. (2015). Does school type affect cognitive and non-cognitive development in children? Evidence from Australian primary schools. *Labour Economics*, 33, 55–65.
- Nisbet, J. (1953). Family environment and intelligence. *Eugenics Review*, XLV, 31–42.
- Parsons, S. (2014). Childhood cognition in the 1970 British Cohort Study. *CLS Data Note*. Retrieved from [http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiA6dSgstDbAhWNmbQKHYZsC9QQFggsMAA&url=http%3A%2F%2Fwww.cls.ioe.ac.uk%2Fshared%2Fget-file.ashx%3Fid%3D1969%26itemtype%3Ddocument&usg=AOvVaw0aIN\\_dzzRCcd3GIIX6uLJe](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiA6dSgstDbAhWNmbQKHYZsC9QQFggsMAA&url=http%3A%2F%2Fwww.cls.ioe.ac.uk%2Fshared%2Fget-file.ashx%3Fid%3D1969%26itemtype%3Ddocument&usg=AOvVaw0aIN_dzzRCcd3GIIX6uLJe)
- Piketty, T. (2013). *Capital in the twenty-first century*. New York: Belknap Press.
- Pischke, J.-S., & Manning, A. (2006). *Comprehensive versus selective schooling in England and Wales: What do we know?* Cambridge, MA: National Bureau of Economic Research.
- Sakellariou, C. (2017). Private or public school advantage? Evidence from 40 countries using PISA 2012—Mathematics. *Applied Economics*, 49, 2875–2892.
- Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. London: Chapman and Hall.
- Schagen, I., & Schagen, S. (2005). Combining multilevel analysis with national value-added data sets: A case study to explore the effects of school diversity. *British Educational Research Journal*, 31, 309–328.
- Scott, S. (2016). Independent schools challenge twice as many exam results as state schools. In *Schools Week*. London: LSSECT Learning and Skills. Retrieved from <http://schoolsweek.co.uk/independent-schools-challenge-twice-as-many-exam-results-than-state-schools/>
- Smith, J., & Naylor, R. (2001). Determinants of degree performance in UK universities: A statistical analysis of the 1993 cohort. *Oxford Bulletin of Economics and Statistics*, 63, 29–60.
- Steedman, J. (1980). *Progress in secondary schools*. London: National Children's Bureau.
- Steedman, J. (1983a). *Examination results in selective and non-selective schools*. London: National Children's Bureau.
- Steedman, J. (1983b). *Examination results in selective and non-selective schools, volume 2—Appendices*. London: National Children's Bureau.
- Sullivan, A., & Heath, A. (2003). Intakes and examination results at state and private schools. In G. Walford (Ed.), *British private schools: Research on policy and practice* (pp. 77–104). London: Woburn Press.
- Sullivan, A., Joshi, H., & Leonard, D. (2010). Single-sex schooling and academic attainment at school and through the lifecourse. *American Educational Research Journal*, 47, 6–36.
- Sullivan, A., Joshi, H., & Leonard, D. (2011). Single-sex schooling and labour market outcomes. *Oxford Review of Education*, 37, 311–332.
- Sullivan, A., Parsons, S., Wiggins, R. D., Heath, A. F., & Green, F. (2014). Social origins, school type and higher education destinations. *Oxford Review of Education*, 40, 739–763.
- Tooley, J. (1994). In defence of markets in educational provision. In D. Bridges & T. McLaughlin (Eds.), *Education and the market place* (pp. 138–153). London: Falmer.