Ethnic, socio-economic and sex inequalities in educational achievement at age 16: An analysis of the Second Longitudinal Study of Young People in England (LSYPE2)

Report for the Commission on Race and Ethnic Disparities (CRED)

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Abstract

This report analyses ethnic, socio-economic and sex differences in educational achievement at age 16. It uses the Second Longitudinal Study of Young People in England (LSYPE2), a nationally representative sample of 9,704 students who completed their GCSE examinations at the end of Year 11 in the summer of 2015. The LSYPE2 dataset includes ethnic minority boosts so that the sample size of each group is sufficient to make robust estimates, and is the most recent dataset from which a comprehensive measure of students' socio-economic status (SES) can be derived.

The analysis uses regression modelling to explore the achievement of the nine major ethnic groups in England, at three levels of SES, for boys and girls separately. Thus. the models consider a total of 54 estimates for all combinations of ethnic group, SES and sex. The key results are displayed on the following page, and the substantive findings are listed below:

- The groups with the lowest achievement at age 16 are White British and Black Caribbean/Mixed White & Black Caribbean (MWBC) students from low SES backgrounds, who have mean scores well below the average for all students. This is most pronounced for boys (-0.77 SD and -0.68 SD respectively), but low SES girls of Black Caribbean/MWBC and White British heritage are also the lowest scoring groups of girls (-0.54 SD and -0.39 SD respectively);

- Low SES boys of Pakistani, White Other and Any Other ethnic heritage also have mean scores well below the grand mean, but still score substantially higher than White British and Black Caribbean/MWBC boys from low SES backgrounds;

- Among students from average SES backgrounds, only Black Caribbean/MWBC and White British boys have mean scores that fall below the average score for all students;

- The overwhelming picture is therefore of ethnic minority advantage in relation to educational achievement at age 16. At low and average SES, no ethnic minority group has a mean score that is substantially (<0.20 SD) lower than White British students, and in 23 out of 32 contrasts the mean score for the ethnic minority group is substantially (>0.20 SD) higher than White British students of the same SES and sex;

- There are only two instances of ethnic under-achievement compared to White British students of the same SES and sex. First, Black Caribbean and Black African boys from high SES families score lower than White British boys from high SES groups. Second, Pakistani girls from high SES backgrounds do not achieve as well as White British high SES girls

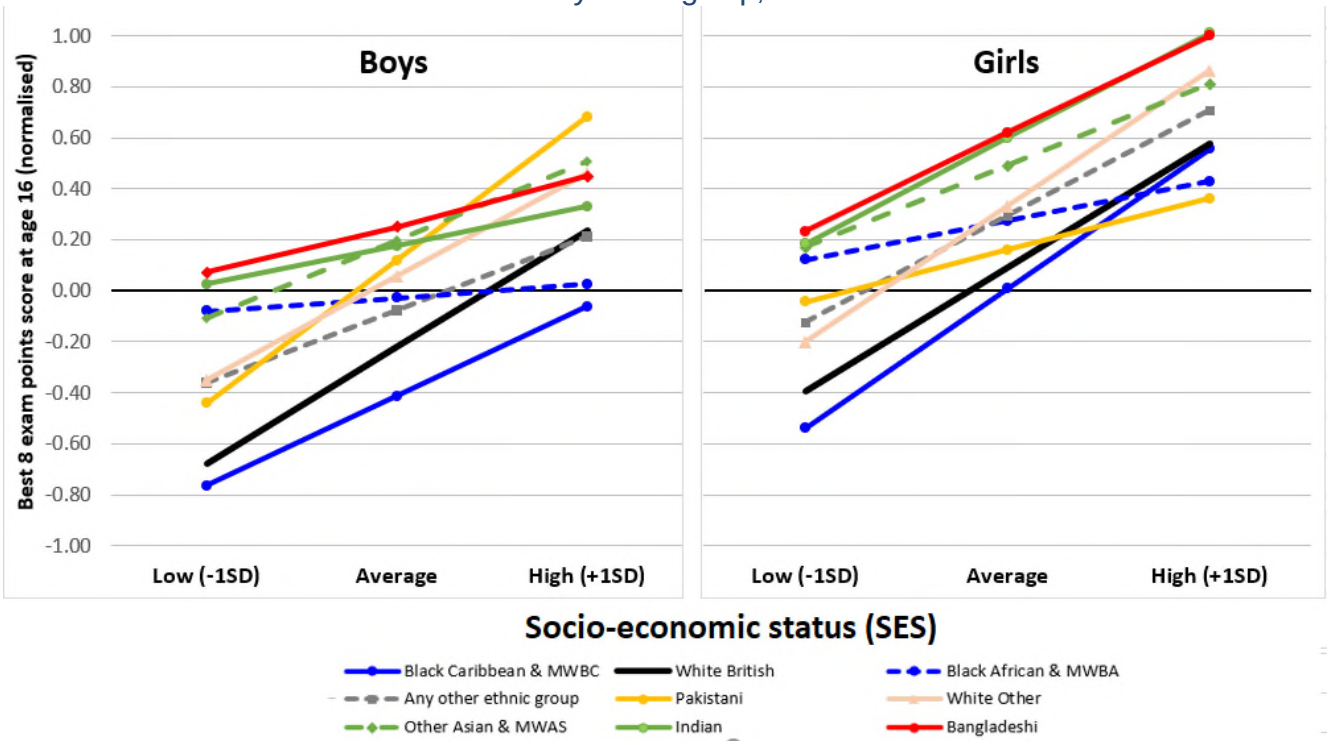
The results are discussed in relation to theories of "immigrant optimism" (Kao & Thompson, 2003), "segmented assimilation" (Portes & Zhou, 1993), and teacher expectations and cultural norms.

(a) Mean best 8 score by ethnic group, SES and sex, and (b) ethnic achievement gaps relative to White British students of same sex and SES

		Mean Best 8 score[a]			Gap vs. White British[b]		
		Socio-Economic Status (SES)			Socio-Economic Status (SES)		
Ethnic group & sex		Low (-1SD)	Avge.	High (+1SD)	Low (-1SD)	Avge.	High (+1SD)
Boys	Black Caribbean & MWBC	-0.77	-0.41	-0.06	-0.09	-0.19	-0.30
	White British	-0.68	-0.22	0.24	-	-	-
	Any other ethnic group	-0.36	-0.08	0.21	0.32	0.15	-0.03
	Black African & MWBA	-0.08	-0.03	0.03	0.60	0.19	-0.21
	Pakistani	-0.44	0.12	0.68	0.23	0.34	0.45
	White Other	-0.35	0.06	0.46	0.33	0.28	0.22
	Other Asian & MWAS	-0.11	0.20	0.51	0.57	0.42	0.27
	Indian	0.03	0.18	0.33	0.70	0.40	0.10
	Bangladeshi	0.07	0.25	0.45	0.75	0.47	0.21
Girls	Black Caribbean & MWBC	-0.54	0.01	0.56	-0.15	-0.09	-0.02
	White British	-0.39	0.09	0.58	-	-	-
	Any other ethnic group	-0.12	0.30	0.71	0.27	0.20	0.13
	Black African & MWBA	0.12	0.27	0.43	0.52	0.18	-0.15
	Pakistani	-0.04	0.16	0.36	0.35	0.07	-0.22
	White Other	-0.20	0.33	0.86	0.19	0.24	0.29
	Other Asian & MWAS	0.17	0.49	0.81	0.56	0.40	0.23
	Indian	0.18	0.60	1.01	0.58	0.51	0.43
	Bangladeshi	0.23	0.62	1.00	0.63	0.53	0.42

*Notes: (a) **Mean Best 8 score**: These figures show the mean score for the group compared to the grand mean score across all pupils (which is set to 0). (b) **Gap vs. White British**: These figures show the difference in mean score between each ethnic group and White British students of the same sex and SES. Following Cohen's (1988) effect size thresholds, any values <-0.20 are shown in red and any values >0.20 are shown in blue. Ethnic groups are sorted in order of their mean Best8 score for pupils of average SES.*

Mean best 8 score by ethnic group, SES and sex



Background

Education is the key to future life outcomes of young people. Educational success at age 16 is strongly predictive of later occupational, economic, health and well-being outcomes as well as future social mobility. Unsurprisingly, 13 of the 17 social mobility indicators drawn up by the UK government are, therefore, measures of educational attainment (Cabinet Office, 2011). Unfortunately, educational attainment varies substantially between young people from different ethnic backgrounds, which could lead to inequalities in the life outcomes for different sections of British Society. For example, in the 2019 GCSE examinations, the average Attainment 8 score for Black Caribbean (39.4) and Mixed White and Black Caribbean (41.0) pupils was over five points lower than the average for White British pupils (46.2), or over half a grade lower in each of the eight subjects included[1]. At the same time, the average scores for Indian, Pakistani, Bangladeshi and Black African pupils were above the White British average. What factors underpin such variation?

One possible explanation is that ethnic groups experience different levels of socio-economic deprivation. It is widely documented that students with low socio-economic status (SES) tend to have lower educational achievement. This may be due to a direct influence, for example through poorer nutrition and an increased risk of a range of health and developmental problems, as well as an indirect influence through limited financial resources in the home, low parental education, reduced ability to help with homework, unemployment, maladjustment or neglect, housing instability or homelessness, greater family stress and living in neighbourhoods with lower quality public services and higher rates of crime (e.g., Bradley & Corwyn, 2002; McLloyd, 1998; Reiss, 2013; Spencer, 1996).

The variation in the levels of socio-economic deprivation experienced by different ethnic groups has also been well documented in previous research. For example, in 2016, 14% of White British pupils in England were eligible for a Free School Meal (FSM) compared to 25% of Black African, 28% of Black Caribbean and 29% of Mixed White and Black Caribbean pupils (Strand & Lindorff, 2018). This unevenness extends across many socio-economic dimensions in employment, income, housing and health (Kenway & Palmer, 2007; Strand, 2011). Many ethnic groups may therefore be more at risk of low achievement because of the greater socio-economic disadvantage they experience relative to the White majority. Therefore, in order to understand the factors that underpin these group level differences, we must compare the test scores of pupils from different ethnic groups who come from similar socio-economic backgrounds.

This is not aimed at 'explaining away' any ethnic achievement gaps, but instead can help us to better understand the root causes and therefore identify relevant policy

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[1]. Attainment 8 includes eight subjects (English and mathematics; at least three subjects from the Ebacc (e.g. sciences, humanities, languages); and three others that may be any mix of GCSEs or technical subjects). However English and mathematics are double weighted, so the total score is calculated across ten items. See DFE (2020). Secondary accountability measures guidance Feb 2020 (publishing.service.gov.uk)

interventions and action. For example, if ethnic achievement gaps reflect the socio-economic disparities between ethnic groups, then a focus on in-service training to address racism by secondary school teachers would be unlikely to deliver substantial change, whereas a focus on increased resourcing for disadvantaged pupils (such as the pupil premium grant) may have a greater likelihood of success.

It is therefore important that any analysis looks not just at ethnicity in isolation but instead looks simultaneously at ethnicity and socio-economic status as well as gender. Previous analyses of the first Longitudinal Study of Young People in England (LSYPE) have looked at these three factors simultaneously in relation to educational achievement at age 11, 14 and 16 (See Strand 2011; 2012; 2014). A summary of the results at age 16 is reported in *Appendix A*. The results indicated that average scores for ethnic minority groups were higher than for White British pupils of the same SES and sex, such that ethnic minority status was a facilitator, not a barrier, to achievement. However, the LSYPE cohort took their GCSEs back in summer 2006, which makes the data over 15 years old. This report analyses more recent data from the Second Longitudinal Study of Young People in England (LSYPE2) who took their GCSEs in summer 2015 to provide the most recent possible analysis of the combined effect of ethnicity, sex and socio-economic status in relation to student's educational achievement at age 16.

Methodology

We place the vast amount of information on the methodology in a separate section at the end of this report, so that readers can focus immediately on the key findings and discussion. We summarise here only those features that are essential to interpretation of the results and key findings. Detailed description of the dataset and analysis is given in the later section titled Detailed Methodology.

The dataset

The LSYPE2 recruited a nationally representative sample of 13,000 young people aged 14 in Year 9 in 2012/13, and conducted detailed 45 min. interviews with them and their parents in their homes, as well as drawing from linked administrative sources such as the National Pupil Database (NPD). Importantly, the LSYPE2 includes ethnic minority boosts with a target of 1,000 respondents from each of the main ethnic minority groups, so that the sample sizes are large enough to support robust national estimates for different ethnic minority groups. The students and their families were interviewed twice after their initial interview, in Wave 2 in Y10 and in Wave 3 in Y11. Of the 10,396 students who completed Wave 3, a total of 9,704 gave their permission for linkage to the NPD so we can analyse their GCSE results from the end of Y11 in summer 2015.

The measures

Ethnic group: In 2015, the year of the GCSE examination data we are analysing, 28.9% of the school population in England were from ethnic minority groups (in the most recent 2019 data the figure is 32.9%, see methodology). We present a summary at the highest level of aggregation (White, Mixed, Asian, Black, Other) but believe there is value in a more differentiated analysis in relation to the nine main ethnic groups in England (White British, White other groups, Indian, Pakistani, Bangladeshi, Other Asian, Black Caribbean, Black African and Any Other ethnic group). We include the mixed heritage groups in the ethnic minority part of their heritage e.g. we combine Black Caribbean and Mixed White & Black Caribbean (MWBC) students. The rationale is explained in the detailed methodology section.

Socio-economic status: For descriptive purposes we focus on parental occupation as the single most frequently cited measure of social class (Raffe et al, 2006). We use the Office for National Statistics Socio-Economic Classification (ONS-SEC), and indicative examples of the classification are given in *Appendix B*. We employ the dominance method (Erikson, 1984) taking either the father's or the mother's occupation, whichever is the highest. We do the same for parents' educational qualifications and family income. For subsequent statistical modelling, we create a comprehensive measure of Socio-Economic Status (SES) incorporating all three measures: parental occupational status, parental educational qualifications, and average family income. To do this we take the loading on the first factor of a principal component analysis of the three measures (see detailed methodology).

Educational outcomes: We calculate each pupil's Best 8 point score, which is the total score across the best 8 GCSE examination results achieved by the pupil. The points are calculated on the QCA scale which is not a very familiar metric, and the score distribution is slightly negatively skewed, so for ease of interpretation we have applied a normal score transformation so that the outcome is expressed in standard deviation (SD) units. Therefore, the average score across all students is indicated by zero, and two-thirds of students score in the range between -1 and +1. For a threshold measure we report the proportion of pupils achieving a GCSE grade A*-C in both English and mathematics. This measure is still reported in secondary school performance tables (based on the proportion of students achieving a Grade 5 or above using the new 1-9 scale first used in the summer of 2017) so is more useful than the headline measure in used in 2015, which was five or more GCSEs at A* - C, including English and mathematics.

Key Findings

1. Descriptive statistics for achievement by ethnicity, sex and SES

Table 1 and Figure 1 present the mean Best 8 points score and the percentage achieving GCSE A*- C in both English and mathematics by ethnicity, sex and three measures of SES (parental occupation, parental education and family income).

The key points are:

- At the highest level of ethnic aggregation, the mean Best 8 score was 0.05 for White students and -0.06 for Black students, giving a Black-White difference of -0.11 SD. This Black-White gap is statistically significant but small[2]. By way of comparison, Cohen's (1988) effect size thresholds suggest 0.20 SD is small, 0.50 SD is medium and 0.80 is large.
- The results contrast strongly with those from the US, where in the 2017 National Assessment of Educational Progress (NAEP), Black students scored -0.81, -0.83 and -0.89 SD below the mean for White students in mathematics at age 10, 14 and 18 respectively. Black students also scored approximately -0.72 SD below the mean for White students for reading at the same ages (US Department of Education, 2019).
- When the 'Black', 'Asian' and 'White' groups are disaggregated, some slightly larger gaps are found. However, the only ethnic group with an average score significantly below the White British mean is Black Caribbean/MWBC students, with a gap of -0.29 SD, while Black African/MWBA students have a mean score that is near identical to White British students. All other ethnic groups score as well as, or in the case of Indian and Other Asian pupils significantly better than, the White British average.
- This Black Caribbean achievement gap is the same magnitude as the gender gap which is also 0.29 SD, with girls scoring higher than boys. However, both gaps are dwarfed by the parental occupation gap, which is over three times larger at 0.97 SD. The family income gap is 0.93 SD and the parental education gap is 1.14 SD.
- If we take a conservative analysis, comparing the results for the 22% of students in the lowest three parental occupational groups (LTU, routine and semi-routine occupations) against the average for the 45% of students with a parent in the highest groupings (higher technical, higher managerial and professional occupations), the gap is 0.81 SD, which is still three times larger than either the Black Caribbean or gender gaps.

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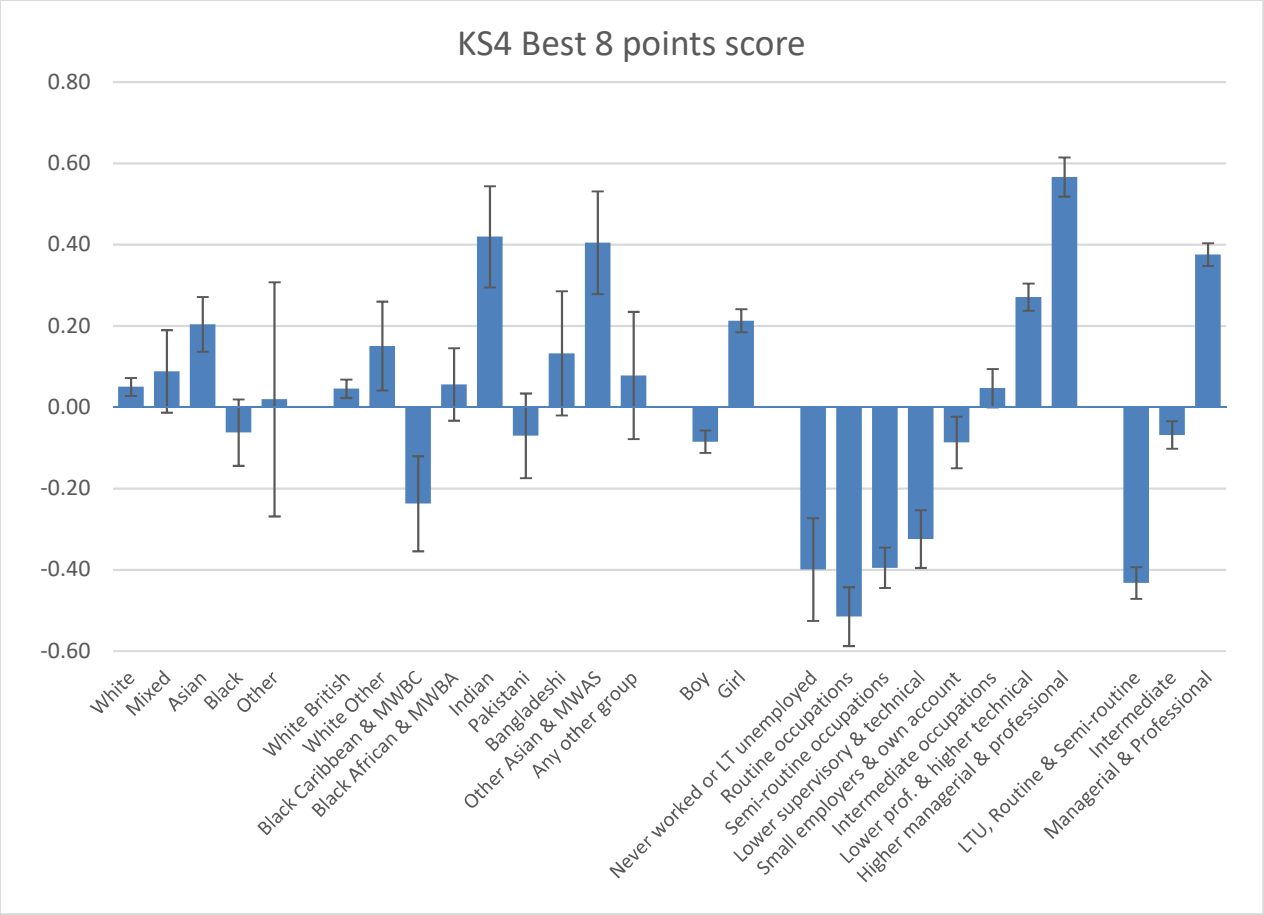
[2]. In the QCA scoring system, a GCSE grade 'G' was allocated 16 points and each subsequent grade a further six points up to 58 points for an A*. These scores were summed over all eight qualifications giving a mean score of 313.4 and SD of 97.8 (for the LSYPE2 sample). Therefore, a difference of -0.11 SD equates to approx. 11 QCA points. This could be the difference between one U and one G in one of the eight subjects, or between 6 C's and 2 D's vs. 6 C's, 1 'D' and 1 'F'.

Table 1: KS4 results by ethnicity, sex and parental SEC.

		Un-weighted	Best 8 Score			Level 2 English & maths		
Variable	**Values**	**N**	Mean	SD	SE	%	SD	SE
Ethnic	White	7534	**0.05**	0.99	0.01	**59.8%**	0.49	0.01
group	Mixed	413	**0.09**	1.01	0.05	**59.9%**	0.49	0.02
	Asian	937	**0.20**	0.98	0.03	**62.5%**	0.48	0.02
	Black	743	**-0.06**	0.86	0.04	**55.0%**	0.50	0.02
	Other	77	**0.02**	1.20	0.14	**58.7%**	0.50	0.06
	White British	7250	**0.05**	0.98	0.01	**59.8%**	0.49	0.01
	White Other	284	**0.15**	1.03	0.05	**59.2%**	0.49	0.03
	Black Caribbean & MWBC	438	**-0.24**	0.95	0.06	**49.7%**	0.50	0.03
	Black African & MWBA	489	**0.06**	0.84	0.04	**60.6%**	0.49	0.03
	Indian	221	**0.42**	0.96	0.06	**72.1%**	0.45	0.03
	Pakistani	337	**-0.07**	0.92	0.05	**53.9%**	0.50	0.03
	Bangladeshi	230	**0.13**	0.86	0.08	**61.1%**	0.49	0.04
	Other Asian & MWAS	254	**0.40**	1.07	0.06	**64.4%**	0.48	0.03
	Any other group	201	**0.08**	1.04	0.08	**59.5%**	0.49	0.04
Sex	Boy	4851	**-0.08**	0.98	0.01	**54.7%**	0.50	0.01
	Girl	4853	**0.21**	0.97	0.01	**65.2%**	0.48	0.01
SEC8	Never worked or LT unemployed	317	**-0.40**	0.93	0.06	**38.1%**	0.49	0.03
	Routine occupations	828	**-0.52**	0.95	0.04	**40.5%**	0.49	0.02
	Semi-routine occupations	1513	**-0.40**	0.89	0.02	**43.6%**	0.50	0.01
	Lower supervisory & technical	583	**-0.32**	0.85	0.04	**42.8%**	0.50	0.02
	Small employers & own account	855	**-0.09**	0.94	0.03	**55.3%**	0.50	0.02
	Intermediate occupations	1394	**0.05**	0.88	0.02	**61.2%**	0.49	0.01
	Lower prof. & higher technical	2753	**0.27**	0.92	0.02	**69.1%**	0.46	0.01
	Higher managerial & professional	1428	**0.57**	0.98	0.02	**74.1%**	0.44	0.01
SEC3	LTU, Routine & Semi-routine	2658	**-0.43**	0.91	0.02	**42.1%**	0.49	0.01
	Intermediate	2832	**-0.07**	0.91	0.02	**55.7%**	0.50	0.01
	Managerial & Professional	4181	**0.38**	0.95	0.01	**70.9%**	0.45	0.01
Parent	No qualifications	819	**-0.60**	0.90	0.04	**35.1%**	0.48	0.02
Educ.	Other qualifications	145	**-0.42**	0.86	0.08	**42.6%**	0.50	0.04
	Some GCSE passes or equiv.	1536	**-0.33**	0.86	0.02	**45.8%**	0.50	0.01
	5+ GCSEs at A*-C or equiv.	1670	**-0.19**	0.86	0.02	**52.7%**	0.50	0.01
	A/AS levels or equivalent	1384	**0.02**	0.91	0.02	**60.8%**	0.49	0.01
	HE below degree (e.g. HND)	1489	**0.14**	0.88	0.02	**65.1%**	0.48	0.01
	Degree (e.g. BA, BSc, MA)	2634	**0.54**	0.99	0.02	**73.5%**	0.44	0.01
Family	Lowest 20%	1846	**-0.41**	0.09	0.02	**42.9%**	0.50	0.01
Income	next 20%	1684	**-0.27**	0.93	0.02	**48.2%**	0.50	0.01
	Middle 20%	1912	**-0.11**	0.91	0.02	**56.5%**	0.50	0.01
	next 20%	1998	**0.17**	0.90	0.02	**65.5%**	0.48	0.01
	Highest 20%	2263	**0.52**	0.96	0.02	**73.0%**	0.44	0.01
All Pupils		9704	**0.06**	0.98	0.01	**61.8%**	0.49	0.01

Notes: SEC= the ONS Socio-economic classification (SEC) of the occupation of the highest classified parent. Parent Educ= the highest educational qualification held by the most qualified parent. Family income= average family income expressed in quintiles.

Figure 1: Mean Best 8 points score by ethnic group, sex and parental SEC



2. Ethnicity and Socio-Economic Status (SES)

Considering the three factors of ethnic group, sex and SES separately is limited, because there is significant confounding between these variables. Most particularly, levels of socio-economic disadvantage are substantially higher among most ethnic minority groups than among the White British majority. Table 2 present averages for a wide range of socio-economic measures separately for each ethnic group.

The key findings are:

- Parental occupation (r= 0.38), parental education (r= 0.38) and family income (r= 0.38) were all positively correlated with KS4 Best 8 score, but the overall SES measure gave the highest correlation (r= 0.45). Therefore, SES is the best single measure in relation to exam success.
- In terms of overall SES, the most advantaged ethnic groups were White British (0.22 SD), Indian (0.21 SD) and Other Asian (0.11 SD), all three groups having mean SES scores above average. Black Caribbean (-0.15 SD), Black African (-0.12 SD) and White other (-0.14 SD) were closely grouped and had scores that were slightly below the average. Finally, Pakistani (-0.53 SD) and Bangladeshi (-0.83 SD) groups had SES scores that were substantially lower than the grand mean for all students.

- The gaps in the three measures underlying the overall SES indicator were stark:
    - Over 40% of Black African, Pakistani and Bangladeshi parents in the sample were LTU, or working in semi-routine or routine occupations. These figures were more than double the equivalent for White British parents (20%).
    - Students from Other Asian (52%), Indian (43%) and Black African (40%) backgrounds had the highest proportion of parents with at least one degree, with students from Bangladeshi having the lowest (13%). For White British students, the figure fell between these two positions (29%)
    - White British students had the highest average annualised family income (£40,785), followed by Indian (£36,246) and Other Asian (£33,862) students. This was more than one-third higher than the equivalent figures for Black Caribbean (£29,485) and Black African (£28,405) students, and nearly double the average family income of Pakistani (£22,693) and Bangladeshi (£19,828) students;
    - 61% of Bangladeshi students were entitled to a FSM at some time in the last six years, along with 53% of Black African students, 47% of Black Caribbean students and 49% of students from Any Other ethnic group. In contrast, only 24% of White British students have been entitled to a FSM at some point in the last six years.
- While Black Caribbean and Black African students had similar overall SES (-0.15 and -0.12 respectively), they differed in their profile across the three underlying components: Black African students have a higher proportion of parents in LTU, routine or semi-routine occupations (41% vs. 31%) and slightly lower family annualised income (£28,405 vs. £29,475), but had a higher proportion of parents educated to degree level (40% vs. 23% respectively).

Table 2: socio-economic variation between ethnic groups

Ethnic Group	un-weighted N	SES		ONS-SEC			Parental Education		Family Income		Ever6	FSM	IDACI	
		Mean	SD	LTU to Semi-routine	Inter-mediate	Mang & prof.	%No qual-ifications	% Degree	Mean	SD	%	%	Q1 (least deprived)	Q4 (most deprived)
White British	7250	0.22	0.97	19.5%	29.4%	51.1%	4.8%	28.7%	40,785	25608	24.1%	13.8%	29.8%	17.7%
White Other	284	-0.14	0.99	34.9%	33.8%	31.3%	13.4%	36.6%	31,977	23443	27.3%	14.6%	11.3%	39.5%
Black Caribbean & MWBC	438	-0.15	0.93	31.2%	29.7%	39.2%	9.7%	22.8%	29,475	20917	47.3%	29.0%	8.0%	53.4%
Black African & MWBA	489	-0.12	1.04	40.7%	19.5%	39.8%	11.0%	40.2%	28,405	22068	52.6%	31.0%	4.5%	66.3%
Indian	221	0.21	0.92	19.7%	27.7%	52.5%	8.1%	43.2%	36,246	22694	21.9%	9.8%	13.4%	26.4%
Pakistani	337	-0.53	0.92	42.2%	38.7%	19.2%	20.8%	24.0%	22,693	17820	42.6%	27.9%	4.4%	57.5%
Bangladeshi	230	-0.83	0.84	42.4%	42.4%	15.2%	32.0%	12.8%	20,340	16576	61.3%	38.7%	x	73.8%
Other Asian & MWAS	254	0.11	1.02	27.1%	27.1%	45.8%	8.4%	51.6%	33,862	25176	30.3%	18.4%	18.4%	35.4%
Any other group	201	-0.12	0.99	32.6%	29.2%	38.2%	9.0%	36.5%	28,228	22799	48.9%	32.4%	10.7%	48.6%
All pupils	**9704**	**0.14**	**0.99**	**22.7%**	**29.5%**	**47.8%**	**6.6%**	**30.0%**	**38,310**	**25368**	**27.7%**	**16.2%**	**25.4%**	**24.5%**

Notes. SES= a standardised score of the loading on the first factor from a principal components analysis of parental occupation, parental education and average family income. Parental occupation was coded by the Office for National Statistics Socio-Economic Classification (ONS-SEC) as the three category version. LTU= Parents were defined as Long Term Unemployed if they had been not had a job for 6 months or more. Parental education is the highest qualification assessed on a seven-point scale ranging from no educational qualifications through to university degree. Family income= average equivalised income per annum. FSM= Entitled to a Free School Meal in January of Year 11. EVER6= Entitled to a FSM at any point during the last six years (Y6-Y11). IDACI= Income Deprivation Affecting Children Index quartile, based on the proportion of children in the neighbourhood from families entitled to state benefits. X= fewer than 10 cases in the cell so value suppressed following ONS rules.

3. Interactive effects of ethnicity, sex and SES with achievement

Given these results, we complete a regression analysis to look at the combined associations of achievement with ethnicity, sex and SES. There were several highly significant ethnic*SES interactions, one ethnic*sex interaction and a three-way ethnic*SES*sex interaction. Therefore, a full-factorial model was specified and effects were assessed using Estimated Marginal Means. The parameters from the model are given in *Appendix C*.

Table 3 and Figure 2 present the mean Best 8 score for each ethnic, SES and sex combination, along with the ethnic achievement gap showing the difference between the average score for each ethnic minority group compared to White British pupils of the same sex and SES. The key findings are:

Mean Best 8 score

- The groups with the lowest achievement at age 16 are White British and Black Caribbean/MWBC students from low SES backgrounds, who are scoring substantially below the average for all students (which is set at zero). This is most pronounced for boys (-0.77 SD and -0.68 SD respectively), but low SES girls of Black Caribbean/MWBC and White British heritage are also the lowest scoring groups of girls (-0.54 SD and -0.39 SD respectively);
- Low SES boys of Pakistani, White Other and Any other ethnic heritage also score well below the mean, but still score substantially higher than comparable White British and Black Caribbean/MWBC peers;
- Among students from average SES backgrounds, only Black Caribbean/MWBC boys and White British boys score below the grand mean;
- Beyond the above, no ethnic, SES and sex combination scores substantially below the grand mean, with the majority scoring well above the average.

Ethnic Gaps relative to White British

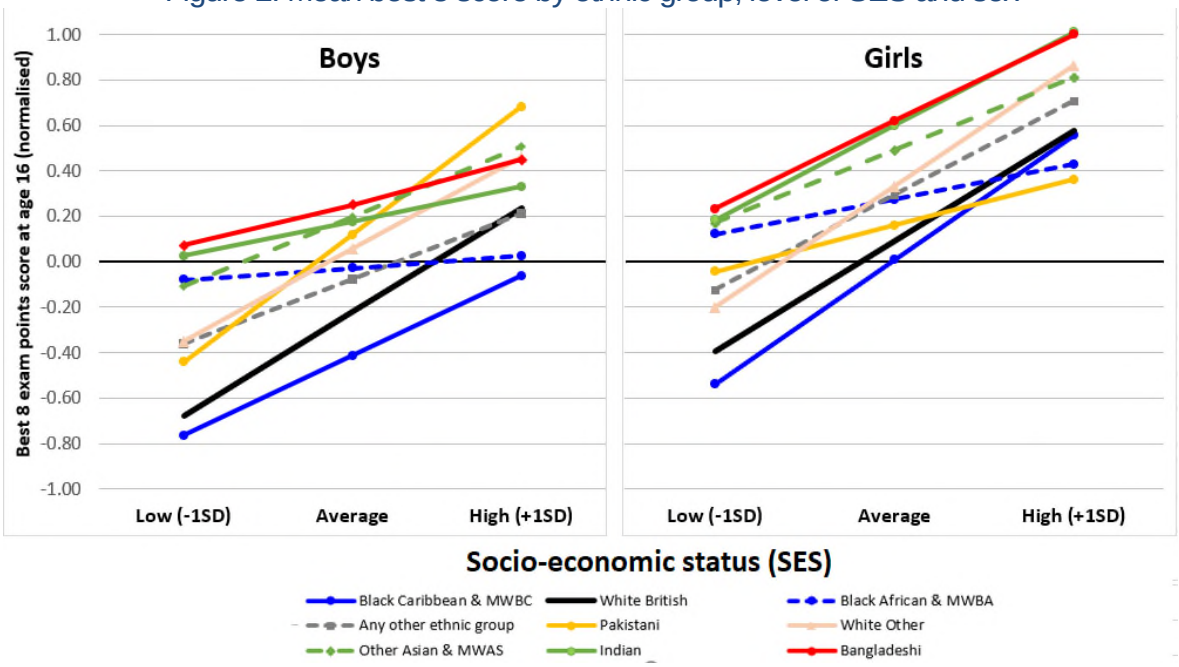
- The overwhelming picture is that ethnic minority groups have higher educational achievement at age 16 than White British students of the same sex and SES. This is particularly notable at low and average SES, where no ethnic minority groups have a significantly lower score than White British students, and indeed in 23 of the 32 comparisons the mean score for ethnic minority students is substantially higher than for comparable White British students.
- There are only two instances of ethnic under-achievement compared to White British students of the same SES and sex. First, Black Caribbean and Black African boys from high SES families score more than 0.20 SD lower than comparable White British boys. Second, Pakistani girls from high SES backgrounds do not achieve as well as White British high SES girls.

Table 3: (a) Mean best 8 score by ethnic group, SES and sex, and (b) ethnic achievement gaps relative to White British students

Ethnic group & sex		Mean Best 8 score[(a)] Socio-Economic Status (SES) Low (-1SD)	Avge.	High (+1SD)	Gap vs. White British[(b)] Socio-Economic Status (SES) Low (-1SD)	Avge.	High (+1SD)
Boys	Black Caribbean & MWBC	-0.77	-0.41	-0.06	-0.09	-0.19	-0.30
	White British	-0.68	-0.22	0.24	-	-	-
	Any other ethnic group	-0.36	-0.08	0.21	0.32	0.15	-0.03
	Black African & MWBA	-0.08	-0.03	0.03	0.60	0.19	-0.21
	Pakistani	-0.44	0.12	0.68	0.23	0.34	0.45
	White Other	-0.35	0.06	0.46	0.33	0.28	0.22
	Other Asian & MWAS	-0.11	0.20	0.51	0.57	0.42	0.27
	Indian	0.03	0.18	0.33	0.70	0.40	0.10
	Bangladeshi	0.07	0.25	0.45	0.75	0.47	0.21
Girls	Black Caribbean & MWBC	-0.54	0.01	0.56	-0.15	-0.09	-0.02
	White British	-0.39	0.09	0.58	-	-	-
	Any other ethnic group	-0.12	0.30	0.71	0.27	0.20	0.13
	Black African & MWBA	0.12	0.27	0.43	0.52	0.18	-0.15
	Pakistani	-0.04	0.16	0.36	0.35	0.07	-0.22
	White Other	-0.20	0.33	0.86	0.19	0.24	0.29
	Other Asian & MWAS	0.17	0.49	0.81	0.56	0.40	0.23
	Indian	0.18	0.60	1.01	0.58	0.51	0.43
	Bangladeshi	0.23	0.62	1.00	0.63	0.53	0.42

*Notes: (a) **Mean Best 8 score**: These figures show the mean score for the group compared to the grand mean score across all pupils (which is set to 0). (b) **Gap vs. White British**: These figures show the difference in mean score between each ethnic group and White British students of the same sex and SES. Following Cohen's (1988) effect size thresholds, any values <-0.20 are shown in red and any values >0.20 are shown in blue. Ethnic groups are sorted in order of their mean Best8 score for pupils of average SES.*

Figure 2: Mean best 8 score by ethnic group, level of SES and sex



Discussion

Ethnicity and low educational achievement

The key finding is that White British and Black Caribbean students from low SES backgrounds are the lowest achieving groups of all students, both for male and female pupils. While low SES boys from Pakistani, White Other and Any Other ethnic groups also score below the overall average, they are still scoring significantly higher than White British and Black Caribbean low SES boys. It is also notable that for students with an average SES, it is again only White British and Black Caribbean boys who score substantially below the average. A key question therefore is why students from most ethnic minority groups perform so much better in GCSE exams than White British and Black Caribbean students from similar socio-economic backgrounds.

The 'immigrant paradigm' (Kao & Thompson, 2003) offers one possible explanation. This theory suggests that recent immigrants devote themselves more to education than the native population because they lack financial capital and see education as a way out of poverty. In a similar vein, Ogbu (1978) makes a distinction between 'voluntary minorities' (such as immigrant groups who may be recent arrivals to the country and have very high educational aspirations) and 'involuntary' or 'caste like' minorities (such as African Americans or Black Caribbean and White Working Class pupils in England) who hold less optimistic views around social mobility and the transformative possibilities of education. This theory could, for example, account for the substantial contrast between Black Caribbean & MWBC pupils on the one hand and Black African & MWBA pupils on the other, whose achievement is substantially higher despite the same or higher levels of risk in terms of low SES, neighbourhood deprivation, and poverty. Most Black Caribbean and MWBC pupils are third generation UK born, while many Black African pupils are more recent immigrants, some of whom have arrived directly from abroad. For example, the 2011 national population census indicates that one-third (66.7%) of the Black African population were born outside of the UK, compared to 39.8% of the Black Caribbean population (ONS, 2013).

But if "immigrant optimism" is the explanation, why does the achievement of Black Caribbean/MWBC students more closely match that of White British students, particularly at low SES, rather than matching other ethnic minorities groups? Partly this may be because they are one of the longer-standing migrant groups, with the largest waves of migration in the 1950s and early 1960s. Ogbu (1978) suggests that those minorities who have been longest established in a country, particularly in a disadvantaged context, may be the least likely to be optimistic about the possibilities of education to transform their lives, and several studies have noted this 'second generation' gap (e.g. Rothon et al, 2009). However, Indian and Pakistani migration was also high during the 1950s and 1960s, so why is the achievement profile for these ethnic groups not also closer to White British students? Perhaps relevant here is "selective assimilation theory". Black Caribbean migrants in the 1960's predominantly moved into poor urban and inner city areas populated by the White British working class. The intersecting of the communities is reflected in the high level of inter-ethnic partnerships and births, with there now more

students of MWBC heritage than there are of Black Caribbean heritage (1.6% vs. 1.1% of the school population) (DFE, 2019). Thus, Black Caribbean & MWBC students may have cultural attitudes that parallel their (predominantly) White British working class neighbours. In contrast, other long standing ethnic minority groups have different patterns of migration. Indian migrants were more likely to be of high SES in their host countries, many were professionals and managers, and migrated to a more varied and diverse selection of geographical areas. Other groups, such as Pakistani migrants, while also tending to move predominantly to poor areas of inner cities where housing was cheap, tended to move to areas with higher levels of ethnic segregation, which meant they retained greater cultural homogeneity.

The most direct support for the 'immigrant optimism' thesis comes from Strand (2011; 2014), in his analysis of the original LYSPE, which identified four key factors underlying the greater resilience of low SES ethnic minority pupils:

- high educational aspirations on the part of students to continue in education post-16 and to attend university, placing education central stage for achieving their future goals;
- high educational aspirations by parents and strong 'academic press' at home;
- high levels of motivation and homework completion;
- strong academic self-concept.

See also Strand & Winston (2008). There is insufficient time to undertake further analysis at present given the deadline for this report, but further analysis will be completed later in the year to see if these results from LSYPE are replicated for LSYPE2.

Ethnic minority underachievement

The overwhelming picture is that ethnic minority groups have higher average levels of achievement than White British peers of the same SES and sex. While they were very much exceptions to the rule, there were two specific instances of ethnic under-achievement.

First, Black Caribbean and Black African boys from high SES homes underachieved relative to White British high SES boys. What underlies this particular finding is not known, and worthy of further investigation. Previous research has indicated that Black Caribbean pupils are under-represented by their teachers in entry to higher tier examinations, even after controlling for prior attainment, SES, attitudes and behaviour (Strand, 2012), and that Black Caribbean and MWBC pupils are more often subject to disciplinary sanctions like exclusion than other ethnic groups, again after control for covariates (Strand & Fletcher, 2014). It may be that in school settings, negative expectations about Black boys lead to greater surveillance and pre-emptive disciplining by teachers, which may be particularly disproportionately felt by Black middle class boys (Gillborn et al, 2012). Alternatively, it may be that White British middle class families use their financial resources to purchase advantages, like private schooling, to a greater extent than Black middle class families. In the LSYPE2 we found 6.7% of White pupils compared to 2.2% of Black pupils attended independent schools, although analysis of

the British Social Attitudes survey suggests no significant difference (Evans & Tilley, 2012). Out of school factors may also be influential. For example, Foster et al. (1996) and Sewell (2009) argue that Black boys experience considerable pressure by their peers to adopt the norms of an 'urban' or 'street' subculture where more prestige is given to unruly behaviour with teachers than to high achievement or effort to succeed (e.g., Foster et al., 1996; Sewell, 2009). Gangster culture and hyper-masculinity may be shared to greater extent by White and Black boys within working class contexts, more so than in middle class spaces. Issues of identity could also be felt particularly by black middle class boys, with some researchers suggesting Black middle-class families often express "an unease about *middleclassness* which was viewed by some as a White social category" (Ball et al, 2013, p270, see also Archer, 2010; 2011). Of course, these arguments are not mutually exclusive, both in-school and out-of-school factors may well play a role.

Second, Pakistani high SES girls underachieved compared both to White British high SES girls, and indeed achieved less well than high SES Pakistani boys. It may be that traditional attitudes to gender roles, lower perceived benefits of daughters' relative to sons' education, and threats to respectability and modesty expressed by parents in Pakistan (Purewal & Hashmi, 2015) also apply in England. However, Fleischmann & Kristen (2014) looking at second generation immigrants in nine European countries (including England & Wales) indicate that gender gaps favouring males in countries of origin are largely reversed in the second generation, transforming to the patterns of female achievement advantage seen in the host countries. This is a small group within the LSYPE2 dataset, because of the very skewed SES distribution for Bangladeshi and Pakistani students. For example, the number of Pakistani pupils in the top quintile (top 20%) of SES is just 17 and <10 Bangladeshi pupils (the comparable figure for White British pupils is 1667 cases). The finding should therefore be treated with caution, but is worthy of further investigation.

Conclusion

These results indicate that ethnic minority groups on average achieve higher levels of success in education at age 16 than White British pupils. To the extent that there is a small gap for Black Caribbean students, this seems to reflect structural inequality in SES, with fewer parents in managerial and professional roles and lower average family income. Gaps in achievement at age 16 related to SES are large and persistent, and represent by far the greatest challenge to equity and social mobility agendas. Educational achievement at age 16 is crucial, in that it acts as a gatekeeper to higher education and employment opportunities later in life. Nevertheless, ethnic variation in outcomes at later ages still remain. For example, in access to high-tariff universities (Boliver, 2016), in entry to work (Heath & Di Stasio, 2019) and to the highest occupational groups (UK Government, 2020).

Detailed Methodology

The measures

Ethnic minority groups

The table below indicates the unweighted number of pupils within each ethnic group as recorded in the LSYPE2 Wave 3 dataset and with valid linkage to the NPD. The third column of the table shows the percentage that each ethnic group represents in the whole school population, sourced from the 2019 school census. This shows that one-third of the school population in England (32.9%) are of ethnic minority heritage (DFE, 2019).

Table 4: Ethnic coding for purposes of analysis of LSYPE2

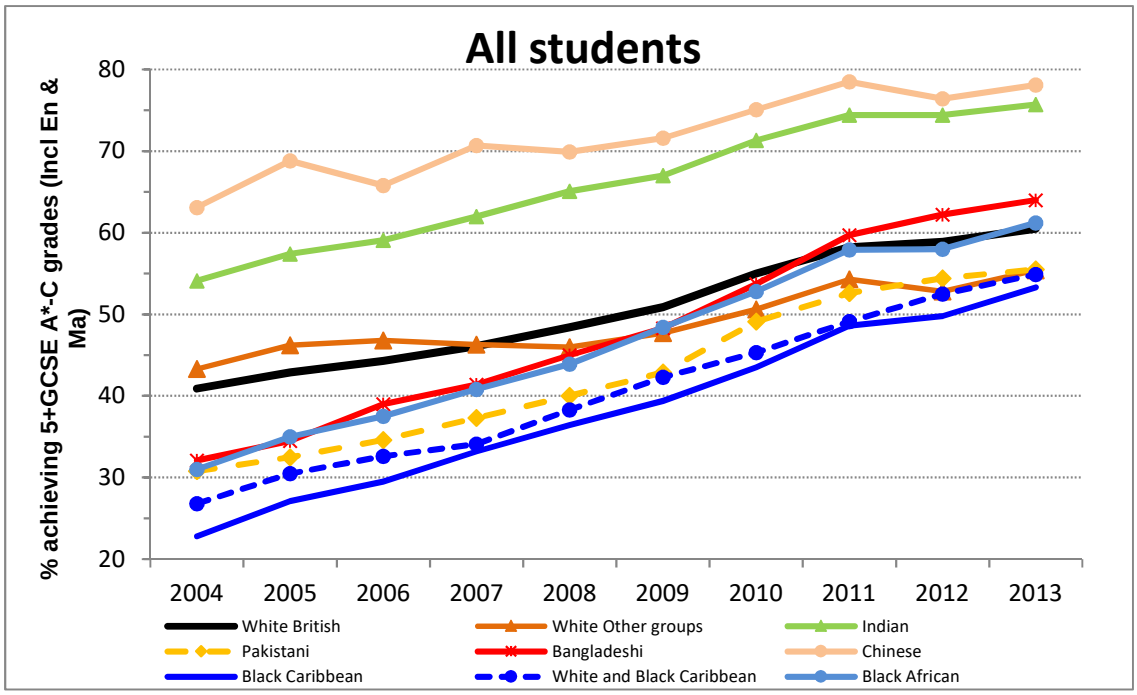
Full set of ethnic codes			**Ethnic groups used in the analysis**		
Ethnic group	LSYPE2 Un-weighted N	% of England school population (2019)	LSYPE2 analytic groups	LSYPE2 Un-weighted N	% of England school population (2019)
White British	7250	67.1%	White British	7250	67.1%
White Irish	24	0.3%	White Other	284	7.3%
Irish Traveller	(a)	0.1%	Black Caribbean & MWBC	438	2.7%
Gypsy Roma	(a)	0.3%	Black African & MWBA	489	4.7%
White Other	260	6.7%	Indian	221	3.2%
Mixed White & Black Carib.	151	1.6%	Pakistani	337	4.5%
Mixed White & Black African	63	0.8%	Bangladeshi	230	1.8%
Mixed White & Asian	105	1.4%	Other Asian & MWAS	254	3.8%
Mixed Other groups	94	2.2%	Any other ethnic group	201	5.0%
Indian	221	3.2%	Total	9704	100.1%
Pakistani	337	4.5%			
Bangladeshi	230	1.8%			
Chinese	27	0.5%			
Asian Other	122	1.9%			
Black African	426	3.9%			
Black Caribbean	287	1.1%			
Black Other	30	0.8%			
Any other ethnic group	77	2.0%			
Total	9704	100%			

Notes: (a) less than 10 pupils so number supressed.

In analysing the LSYPE2 data, a balanced needed to be struck between the number of ethnic groups, the size of these groups in the school population and the number of cases in the specific LSYPE2 sample.

- The seven largest ethnic minority groups (White Other, Pakistani, Black African, Indian, Bangladeshi, Asian Other and Black Caribbean) were retained.
- The Mixed Heritage group are extremely heterogenous, with little in common in terms of the achievement profile among the different mixed heritage sub-groups (see Strand, 2015). In terms of the achievement profile, the greater similarity is with the ethnic minority side of the mixed heritage. For example, the achievement of Mixed White and Black Caribbean (MWBC) pupils is very similar to that of Black Caribbean

pupils, the achievement of Mixed White and Black African (MWBA) pupils is similar to the Black African pupils, and the achievement of Mixed White and Asian (MWAS) pupils is similar to that of Other Asian pupils. The data for Black Caribbean and MWBC pupils is shown in the figure below, which is drawn from Strand (2015), p32.



Source: Strand (2015). *Ethnicity, deprivation and educational achievement at age 16 in England: trends over time*. DFE Research Report 439B, p32.

Therefore, to more accurately reflect the patterns of achievement, and to maximise the analytic samples, the Mixed Heritage groups were included with the relevant ethnic minority group.

- Smaller ethnic groups were merged. Thus, White Irish and Gypsy Roma Travellers (GRT) were included in White Other; Chinese were included in Other Asian and MWAS; and Black Other and Mixed Other groups were included in Any Other ethnic group.

The right-hand section of Table 4 shows the nine ethnic groups used for this analysis, the unweighted number of cases in each group and the percentage the ethnic groups represent in the whole school population (school census 2019).

Family Socio-Economic Classification (SEC)

We utilised the ONS Socio-Economic Classification (SEC). A Family SEC variable is included in LSYPE2 based upon the Household Reference Person (HRP), but in a large number of cases the HRP was not interviewed (n=487) or the individual was not classifiable (n=121). We therefore created our own Family SEC measure. First, we took the SEC for the main parent, which had fewer missing or unclassifiable instances (n=116). Second, to create a family measure, we substituted the SEC of the second parent (if present) if it was higher than for main parent. As a robustness check we

completed the same process taking the highest of the mother's or father's SEC. This measure was very highly correlated (r=0.996) with the MP/SP version, but the MP/SP version had fewer missing cases (n=116 as opposed to n=502) so was preferred.

Table 5: ONS Socio-economic classification (SEC) categories: LSYPE2 Sample

Code	SEC8 category	SEC 3 category
8	Higher managerial & professional	Professional
7	Lower professional & higher technical	
6	Intermediate occupations	Intermediate
5	Small employers & own account workers	
4	Lower supervisory & technical	
3	Semi-routine occupations	Low
2	Routine occupations	
1	Never worked or long-term unemployed	

We also looked in Wave 2 and Wave 3 for SOC2010 values if there was no SEC record in the Wave 1 file. These employ nine major groups and 25 sub-major-groups (see SOC2010 volume 1: structure and descriptions of unit groups - Office for National Statistics). We converted codes between SOC2000 and SOC2010 where needed (see https://www.bls.gov/soc/soc_2000_to_2010_crosswalk.xls). We were able to find valid values for all but 33 cases.

Parental Educational Qualifications

We took the highest educational qualification of the main parent, substituting the highest qualification of the second parent (where present) if it was higher, termed the Dominance method (Erikson, 1984). If we could not find a value in the Wave 1 file we again sourced the variable from the Wave 2 or Wave 3 file. We were able to find valid values for all but 27 cases. A small number of cases (n=37), which were coded as 'entry level qualifications', were combined with 'Other qualifications'. This created a seven point scale ranging from 'No educational qualifications' through to 'Degree or equivalent'. Descriptive statistics showing the relationship with student achievement are given in Table 1.

Family Income

Household income is based on a survey response, with respondents picking a band from a list to represent the annual household income from all sources. The results have been edited to take account of implausible responses, primarily through the use of self-reported earnings data. Earnings data was generally more credible, not least because parents reported their own earnings, over the time period of their choice, rather than having to combine sources and annualize the results. This data has also been edited where implausible, such as where what looked like an annual salary for the stated occupation was reported as being paid weekly. Where the plausible earnings of a household were greater than the annual income selected, the earnings have been used

instead. This is likely to underestimate the true income, as it excludes other sources such as benefits, but should still represent an improvement on the self-reported estimates.

The data were collected in 15 bands allowing a high degree of differentiation. For descriptive purposes we used the mid-point of the ranges as the data value rather than the band number to give a mean income in pounds per annum. It should be noted that income data is notoriously difficult to collect accurately via household surveys, and LSYPE2 is no exception, with a high level of non-response. To deal with this, we took the average income over all three waves of the LSYPE2, this reduced the missing cases to n=437 (or 4.5%) of our sample. To avoid losing these cases, we imputed the value predicted from a regression of income on other variables closely related to income (entitlement to a FSM, IDACI score and parental SEC), so we only had one missing value in the final analysis.

Socio-economic Status (SES)

We created an overall measure of SES that combined the data on all three of the above dimensions of parental occupation, parental education and family income into a single aggregate measure. The three underlying measures were positively inter-correlated: parental occupation correlated r=0.57 with parental education and r=0.58 with average family income, and parental education correlated r=0.50 with average family income. A Principal Components Analysis extracted a single factor which accounted for 69.9% of the total variance. A factor score was created with loadings from each component approximately equal. This SES variable has a mean score of zero and a standard deviation (SD) of 1 and follows a normal distribution. Thus around 17% of scores were -1 or below, two-thirds lay between -1 and +1, and around 17% of score were +1 or above.

Income Deprivation Affecting Children Index (IDACI)

IDACI is produced by the Department for Communities and Local Government (DCLG). The index is based on 32,482 Super Output Areas (SOAs) in England, which are geographical regions of around 1,500 residents, designed to include those of similar social backgrounds. The IDACI score is the percentage of under-16s in the SOA living in income deprived households (primarily defined by being in receipt of certain benefits). This variable is highly skewed and so for the purpose of the current analysis the measure was normal score transformed to give a variable with a mean of 0 and SD=1. A score above 0 indicates greater than average deprivation, and score below 0 indicates less than average deprivation, relative to the average for the LSYPE2 sample. Both 2001 and 2007 IDACI measures were included in the LSYPE2 file. The means of the two were nearly identical (24.7% and 25.7%) and they correlated r=0.97, so the more recent 2007 values were used. Further information about IDACI can be found at: https://www.gov.uk/government/publications/english-indices-of-deprivation-2010.

FSM and EVER6

We took from the January census of Year 11 whether the pupil was entitled to a Free School Meal (FSM) or had ever been entitled over the last six years (EVER6).

The LSYPE2 sample

The primary sample frame for LSYPE2 was the English School Census, which was used to identify sample members in state-funded education. This provides access to pupil-level characteristics information about these young people, which was used to stratify the sample. The stratification has been designed to maintain minimum numbers in certain subgroups of interest right through to the planned end of the survey, to ensure robust analyses of these groups can continue. These subgroups include those with free school meals (FSM), those with special educational needs (SEN), and certain ethnic groups. The sample also included pupils from independent schools and pupil referral units (PRUs), these schools/settings were sampled first and then asked to supply contact details for pupils. Interviews took place with both the young person and at least one parent in the first three waves (i.e. until the young person is aged 15/16). In Wave 1 the interviews took place over a five month period, starting in early April 2013 and finishing in early September 2013. In Wave 1 LSYPE2 achieved a response rate of 71 per cent, representing an achieved sample of 13,100.

The analytic sample

As stated above, there were 13,100 responding young people in Wave 1 of LSYPE2. Of these, 12,152 responded in Wave 2 and 10,396 in Wave 3. Of those responding in Wave 3, a total of 9,704 gave permission for linkage and were matched to results in the NPD. We had complete observations for ethnic group and sex, but a small number of cases that were missing for SES (n=47) had to be excluded on a pairwise basis. The ONS-SRS does not have the SPSS Missing Values module, so we were unable to impute missing values for these cases, but we will explore whether this might be possible through other means at a later date.

Approach to analysis

We were primarily interested in the relationship between variables, not in simply recapturing descriptive statistics for the relevant population. In these cases, the use of weights is sometimes argued to be problematic (Solon, Haider & Woodridge, 2015). However, given the extent of attrition from Wave 1 to Wave 3 of LSYPE2, we considered it important to use weights that are meant to limit the effect of differential attrition, and used the combined design and non-response scaled sampling weights from Waves 3 in all analyses (LSYPE2_W3_Weight_scaled).

The ONS-SRS has not purchased the SPSS Complex Samples module, and so, despite the software being available to university staff and students throughout the country, we were not able to use it to simultaneously account for weights and for clustering at the school level. However, we also ran all our models using a complex survey design using the *svydesign()* and *svyglm()* functions contained within version 3.35-1 of the *Survey* package (Lumley, 2019) in version 3.6.1 of R (R Core Team, 2019). These models used the students' KS4 school URN as the cluster ID and the LPYSE2_W3_Weight_scaled as the sampling weight. In all cases there were no substantive differences in results and the means were near identical. Although the SEs

tended to be marginally larger, all results that were statistically significant in our SPSS regressions were also statistically significant in the R versions. Therefore, this is not a problem for the interpretation of the results.

References

Archer, L. (2010). 'We raised it with the Head': the educational practices of minority ethnic, middle-class families. *British Journal of Sociology of Education, 31*(4), 449 - 469.

Archer, L. (2011). Constructing Minority Ethnic Middle-class Identity: An Exploratory Study with Parents, Pupils and Young Professionals. *Sociology, 45*(1), 134-151. doi:10.1177/0038038510387187

Ball, S. J., Rollock, N., Vincent, C., & Gillborn, D. (2013). Social mix, schooling and intersectionality: identity and risk for Black middle class families. *Research Papers in Education, 28(3), 265-288. doi:10.1080/02671522.2011.641998*

Boliver, V. (2016). Exploring Ethnic Inequalities in Admission to Russell Group Universities. *Sociology, 50(2), 247-266. doi:10.1177/0038038515575859*

Bradley, R. H., & Corwyn, R. F. (2002). *Socioeconomic status and child development. Annual Review of Psychology, 53(1), 371-399.* https://doi.org/10.1146/annurev.psych.53.100901.135233

Cabinet Office (2009). *Unleashing aspirations: The final report of the panel on fair access to the professions*. London: Cabinet Office. https://webarchive.nationalarchives.gov.uk/20100407163903/http://www.cabinetoffice.gov.uk/strategy/work_areas/accessprofessions.aspx.

Cabinet Office (2011). *Opening Doors, Breaking Barriers: A Strategy for Social Mobility*. London: Cabinet Office.

Cabinet Office (2017). *Race Disparity Audit: Summary findings from the Ethnicity Facts and Figures website*. London: Cabinet Office. www.ethnicity-facts-figures.service.gov.uk

Cohen, J. (1988*). Statistical power analysis for the behavioural sciences (2nd Edition).* Hillsdale, NJ: Erlbaum.

DFE (2019). *Schools, pupils and their characteristics: January 2019. London: Department for Education*. https://www.gov.uk/government/collections/statistics-school-and-pupil-numbers

DFE (2020). Key stage 4 performance, 2019 (Revised). London: Department for Education: https://www.gov.uk/government/statistics/key-stage-4-performance-2019-revised.

DFE (2020). *Secondary accountability measures: Guide for maintained secondary schools, academies and free schools*. London: Department for Education. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872997/Secondary_accountability_measures_guidance_February_2020_3.pdf

Erikson, R. (1984). Social class of men, women and families. *Sociology, 18, 500*-514.

Evans, G., & Tilley, J., T. (2012). *Private schools and public divisions: the influence of fee-paying education on social attitudes. British Social Attitudes, 28th Report:* https://bsa.natcen.ac.uk/media/38965/bsa28_3private_education.pdf.

Fleischmann, F., & Kristen, C. (2014, July 1, 2014). Gender Inequalities in the Education of the Second Generation in Western Countries. *Sociology of Education, 87(3), 143-170. http://doi.org/10.1177/0038040714537836*

Foster, P., Gomm, R., & Hammersley, M. (1996). *Constructing educational inequality*. London: Falmer Press.

Gillborn, D., Rollock, N., Vincent, C., & Ball, S. J. (2012). 'You got a pass, so what more do you want?': race, class and gender intersections in the educational experiences of the Black middle class. *Race Ethnicity and Education, 15(1), 121-139. doi:10.1080/13613324.2012.638869.*

Heath, A. F., & Di Stasio, V. (2019). Racial discrimination in Britain, 1969–2017: a meta-analysis of field experiments on racial discrimination in the British labour market. *The British Journal of Sociology, 70(5), 1774-1798. doi:10.1111/1468-4446.12676*

Kao, G., & Thompson, J. S. (2003). Racial and ethnic stratification in educational achievement and attainment. *Annual Review of Sociology, 29(1), 417-442. http://doi.org/10.1146/annurev.soc.29.010202.100019*

Kenway, P., & Palmer, G. (2007). *Poverty among ethnic groups: How and why does it differ?* York: Joseph Rowntree Foundation.

Lumley, T. (2019) "*Survey: analysis of complex survey samples*". R package version 3.35-1.

McLloyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist 53(2), 185-203.* https://psycnet.apa.org/doi/10.1037/0003-066X.53.2.185

Office for National Statistics (ONS) (2013). DC2205EW – Country of birth by ethnic group by sex. Office for National Statistics. http://www.nomisweb.co.uk/census/2011/dc2205ew

Ogbu, J. (1978). *Minority education and caste*. New York: Academic Press.

Portes, A., & Zhou, M. (1993). The new second generation: Segmented assimilation and its variants. *The Annals of* the American Academy of Political and Social Science, 530(1), 74-96. doi:10.1177/0002716293530001006

Purewal, N., & Hashmi, N. (2015). Between returns and respectability: parental attitudes towards girls' education in rural Punjab, Pakistan. *British Journal of Sociology of Education, 36(7), 977-995. doi:10.1080/01425692.2014.883274*

R Core Team (2019) R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria, URL https://www.R-project.org

Raffe, D., Croxford, L., Iannelli, C., Shapira, M., & Howieson, C. (2006). Social-Class Inequalities in Education in England and Scotland, CES Briefing No. 40. Centre for Educational Sociology, University of Edinburgh. http://www.ces.ed.ac.uk/old_site/PDF%20Files/Brief040.pdf

Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review. *Social Science & Medicine, 90, 24-31. https://doi.org/10.1016/j.socscimed.2013.04.026*

Rothon, C., Heath, A., & Lessard-Phillips, L. (2009). The Educational Attainments of the "Second Generation": A Comparative Study of Britain, Canada, and the United States. *Teachers College Record, 111(6), 1404-1443.*

Sewell, T. (2009). *Generating Genius: Black Boys in Search of Love, Ritual and Schooling*. Stoke on Trent: Trentham books.

Spencer, N. (1996). *Poverty and child health*. Medical Press.

Strand, S. (2010). Do some schools narrow the gap? Differential school effectiveness by ethnicity, gender, poverty and prior attainment. *School Effectiveness and School Improvement, 21(3), 289-314.* *http://doi.org/http://dx.doi.org/10.1080/09243451003732651*

Strand, S. (2011). The limits of social class in explaining ethnic gaps in educational attainment. *British Educational Research Journal, 37(2), 197-229.* 10.1080/01411920903540664.

Strand, S. (2012). The White British–Black Caribbean achievement gap: tests, tiers and teacher expectations. *British Educational Research Journal, 38(1), 75-101. doi:10.1080/01411926.2010.526702*

Strand, S. (2014). Ethnicity, gender, social class and achievement gaps at age 16: intersectionality and 'getting it' for the white working class. *Research Papers in Education, 29(2), 131-171. http://dx.doi.org/10.1080/02671522.2013.767370*

Strand, S. (2014b). School effects and ethnic, gender and socio-economic gaps in educational achievement at age 11. *Oxford Review of Education, 40, (2), 223-245.* http://dx.doi.org/10.1080/03054985.2014.891980

Strand, S. (2015). Ethnicity, deprivation and educational achievement at age 16 in England: Trends over time (DFE Research Report 439B). London: Department for Education.

Strand, S., & Fletcher, J. (2014). *A Quantitative Analysis of Exclusions from English Secondary Schools. U*niversity of Oxford. https://ora.ox.ac.uk/objects/uuid:98d69480-56fe-4633-8dbe-81c4f461f28f

Strand, S. & Lindorff, A. (2018). *Ethnic disproportionality in the identification of Special Educational Needs (SEN) in England: Extent, causes and consequences*. Oxford: Oxford University.

Strand, S., & Lindorff, A. (in press). Ethnic disproportionality in the identification of high incidence Special Educational Needs: A national longitudinal study ages 5-11. *Exceptional Children.*

Strand, S. & Lindsay, G. (2009). Evidence of ethnic disproportionality in special education in an English population. *Journal of Special Education, 43, (3), 174-190.* http://dx.doi.org/10.1177/0022466908320461

Strand, S. & Winston, J. (2008). Educational aspirations in inner city schools. *Educational Studies, 34, (4), 249-267.* http://dx.doi.org/10.1080/03055690802034021

UK Government (2020). Ethnicity fact and figures service, work, pay and benefits: Employment by occupation - GOV.UK Ethnicity facts and figures (ethnicity-facts-

figures.service.gov.uk)

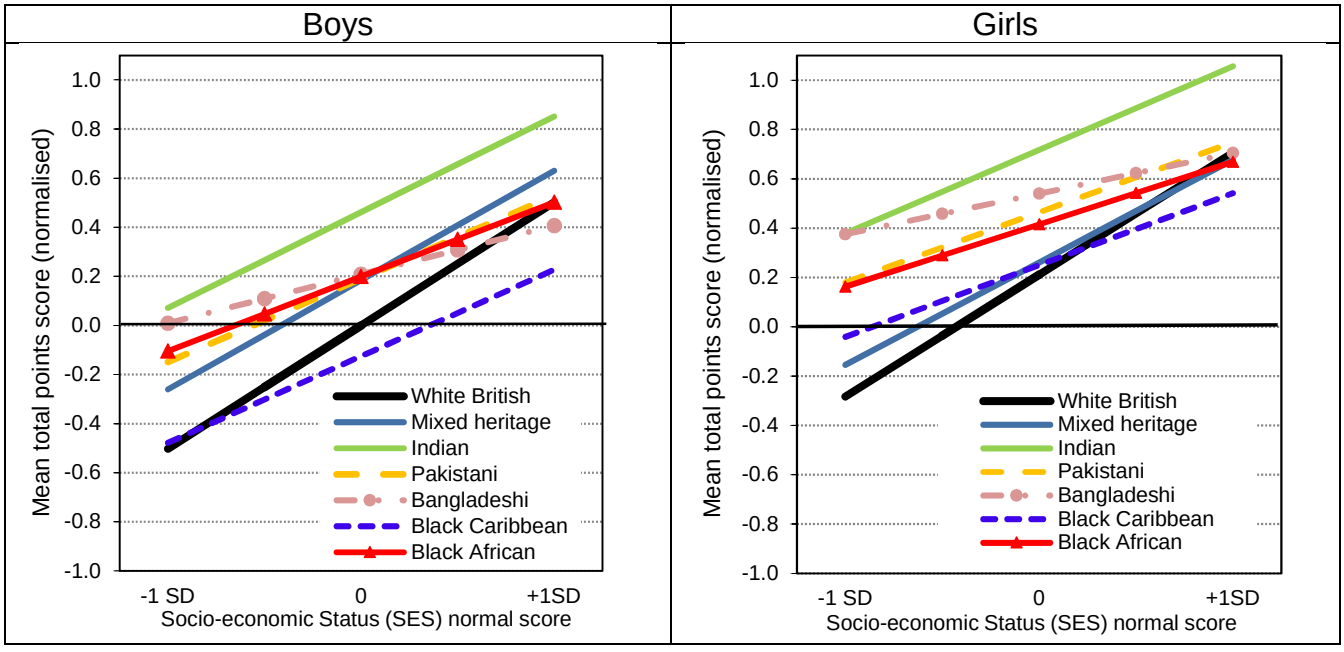
US Department of Education (2019). National Centre for Education Statistics, National Assessment of Educational Progress (NAEP). Retrieved from the Main NAEP Data Explorer https://nces.ed.gov/nationsreportcard/naepdata. (Table prepared October 2019).

Appendix A: Age 16 points score by ethnic group, gender and SES from LSYPE (Strand, 2014)

The KS4 exam results for all pupils in England are available as part of the National Pupil Database (NPD), but there is only very limited data on socio-economic status (SES). The NPD contains only a single measure of SES sourced directly from the pupil, which is whether the pupil is, or is not, entitled to a Free School Meal (FSM), or whether they have ever been entitled to a FSM at some time in the last six years (EVER6). There are often criticisms that some pupils do not claim a FSM even if they are entitled to because of the stigma, but perhaps more problematic is that a simple binary measure tells us nothing about the huge differences in home circumstances among the 85% of pupils who are not entitled to a FSM, which can range from families only just over the income threshold for FSM to those from extremely well-off circumstances.

Fortunately, there is good data on both ethnicity and SES in some of England's longitudinal datasets. For example, Strand (2014) used the Longitudinal Study of Young People in England (LSYPE) to draw on data on parents' occupational classification, their educational qualifications, whether they owned their own home, the deprivation of the neighbourhood in which they lived as well as whether the student was entitled to a FSM, in order to create a robust and differentiated measure of the family socio-economic status (SES). The LSYPE also includes ethnic minority boosts with a target of 1,000 respondents from each of the main ethnic minority groups, so that the sample size is large enough to support robust national estimates for ethnic minority groups.

The results of the analysis are presented below.



Notes: (1). The outcome (total points score) was drawn from examinations completed in 2006, and is a measure of achievement based on all examinations completed by the young person at age 16, expressed on a scale where 0 is the mean (average) score for all Young People at age 16 and two-third of YP score between -1 and 1. (2). The SES measure also has a mean (average) of zero and the effects for low SES are estimated at -1SD and of high SES at +1SD. Source: See Strand (2014) for full details.

Appendix B: Indicative examples of professions in the Office for National Statistics Socio-economic Classification (ONS-SEC).

Table 1: Indicative examples of professions in each reduced NS-SEC Class [1]

NS-SEC Class	Examples of Jobs
1. Higher managerial and professional 2. Lower managerial and professional	Lawyers, Architects, Medical doctors, Chief executives, Economists, Social workers, Nurses, Journalists, Retail managers, Teachers
3. Intermediate	Armed forces up to sergeant, Paramedics, Nursery nurses, Police up to sergeant, Bank staff
4. Small employers and own account workers 5. Lower supervisory and technical	Farmers, Shopkeepers, Taxi drivers, Driving instructors, Window cleaners Mechanics, Chefs, Train drivers, Plumbers, Electicians
6. Semi routine	Traffic wardens, Receptionists, Shelf stackers, Care workers, Telephone salespersons
7.Routine	Bar staff, Cleaners, Labourers, Bus drivers, Lorry drivers

Table source: Office for National Statistics

Long Term Unemployed (LTU) are defined as those who have been out of work for 6 months or longer and are included as part of an eight point category.

Most recently this has been highlighted in the Government's Racial Disparity Audit (RDA), as reported on the government ethnicity fact and figures website (www.ethnicity-facts-figures.service.gov.uk). Black African pupils are three times more likely than White British pupils to be entitled to a Free School Meal (FSM), Black Caribbean pupils are three-times more likely to live in persistent poverty than White British pupils, Pakistani and Bangladeshi pupils are more likely than other groups to live in the most disadvantaged neighbourhoods, and so on (e.g. Strand, 2011).

Appendix C: Full factorial regression of Best 8 score: regression coefficients and parameters

Model parameters	B	SE	sig.
Constant	0.097	0.019	0.000
Boy	-0.300	0.024	0.000
White Other	0.252	0.085	0.003
Black Caribbean/MWBC	-0.062	0.065	0.343
Black African/MWBA	0.131	0.063	0.037
Indian	0.528	0.078	0.000
Pakistani	0.059	0.096	0.542
Bangladeshi	0.548	0.128	0.000
Other Asian/MWAS	0.451	0.118	0.000
Any other ethnic group	0.235	0.106	0.027
SES	0.483	0.020	0.000
White Other * Boy	0.035	0.119	0.770
Black Caribbean/MWBC * Boy	-0.120	0.094	0.203
Black African/MWBA * Boy	0.000	0.091	0.996
Indian * Boy	-0.159	0.131	0.226
Pakistani * Boy	0.241	0.113	0.033
Bangladeshi * Boy	-0.251	0.184	0.173
Other Asian/MWAS * Boy	-0.022	0.151	0.886
Any other ethnic group * Boy	-0.108	0.154	0.482
Boy * SES	-0.031	0.033	0.347
White Other * SES	0.080	0.095	0.402
Black Caribbean/MWBC * SES	0.051	0.064	0.428
Black African/MWBA * SES	-0.315	0.062	0.000
Indian * SES	-0.092	0.088	0.301
Pakistani * SES	-0.258	0.084	0.002
Bangladeshi * SES	-0.071	0.097	0.465
Other Asian/MWAS * SES	-0.191	0.091	0.037
Any other ethnic group * SES	-0.071	0.099	0.473
White Other * Boy *SES	-0.142	0.123	0.251
Black Caribbean/MWBC * Boy * SES	-0.143	0.097	0.144
Black African/MWBA * Boy * SES	-0.039	0.091	0.672
Indian:Boy:SES	-0.171	0.122	0.163
Pakistani * Boy * SES	0.344	0.114	0.003
Bangladeshi * Boy * SES	-0.272	0.155	0.081
Other Asian/MWAS * Boy * SES	0.013	0.130	0.919
Any other ethnic group * Boy * SES	-0.039	0.150	0.795

Notes: Statistically significant interaction terms are shown in blue. Estimated with adjustments for LSYPE Wave 3 weights and clustering at the school level.