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# The Ethnic Proportionality of Teachers and Students and the Link to School-Level Outcomes

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Abstract: In England, there are proportionately more White British teachers than White British pupils, and so there is a mismatch between the proportion of teachers and pupils of each ethnic minority group. This mismatch may reduce the number of appropriate role models for some pupils and has been linked to differences in school processes and the behaviour and treatment of ethnic minority pupils. The evidence is weaker regarding any link between ethnic disproportionality and attainment. This paper uses school-level school workforce and pupil attainment data to assess this link. The results are presented as correlations between teacher/pupil characteristics and attainment scores at ages 11 and 16 and as regression models predicting attainment scores using teacher/pupil characteristics. There is no evidence here that ethnic (dis)proportionality is linked to discernible differences in pupil attainment once relative poverty is taken into account. However, as the data are linked at the school level rather than the individual level, we cannot separate the attainment of pupils of different ethnic origins, and the ethnic classification for teachers is simply binary. We are working to overcome these data limitations and hope to present future analyses based on individual data with more detailed ethnic groupings to provide a more definitive result.

Keywords: ethnicity; attainment gap; secondary data; school workforce census; teacher effect



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#### 1. Introduction

In the UK, there are many initiatives to create a more balanced teacher workforce in terms of ethnicity, with the intention of making it more proportionate to the ethnic mix of the student body. These initiatives have been launched in each home country, including England [1], Wales [2], and Scotland [3]. Similar policies have been proposed or implemented in the US and elsewhere [4,5].

There are a number of reasons why a better ethnic match between teachers and their students might be desirable. Any mismatch might suggest a bias in selection or appointment that should be addressed. The mismatch might reduce the number of appropriate role models for some students and might affect the students' treatment, behaviour in school, and even attainment. This paper focuses on the latter issue.

This paper begins by considering the wider impacts of ethnic disproportionality before summarising some of the prior evidence on ethnic disproportionality and attainment at school. The methods for this new analysis are described, and then the results are provided. The paper concludes by considering the implications and next steps.

### 2. The Impact of Ethnic Proportionality

In the US, as elsewhere, there is a clear pattern in which areas or schools with more students belonging to any category of ethnic minority are more likely to have teachers of that same ethnic group [6]. Overall, though, the system is not proportionate. Blom et al. (2017) reported that while 4.4 percent of White adults in the US were teachers, only 1.5 percent of Hispanic adults were teachers [7]. Despite some increases, ethnic minority teachers have tended to be under-represented [8] in the classroom and in school leadership [9], 2016. They are less likely to be appointed and more likely to leave teaching [10,11]. It was estimated

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that each student will be taught by about 55 individuals during their schooling, but a Black student in Detroit (for example) might expect to have only one Black teacher [12].

The situation in England appears to be similar. In England, many ethnic minority pupils might never encounter a teacher of the same ethnicity [13]. Over 85% of teachers are recorded as being White British, but only 66% of students belong to this ethnicity [14]. So, teachers do not fully represent the student body in this respect. For senior staff, the situation is even more extreme. Around 93% of headteachers and 90% of deputy headteachers are White British [15]. The number of ethnic minority applicants to teacher training has increased, and they may now be slightly over-represented. But they have a lower average acceptance rate, worse employment outcomes after training, and higher rates of dropout from the profession [16]. Those that remain are more likely to be employed in a school in a heavily disadvantaged area or with a high proportion of disadvantaged students [17]. Worth et al. (2022) report that ethnic minority teachers are more likely to move schools and are less likely to be promoted to a leadership position [18]. Why does this matter?

Obviously, this affects the occupational trajectories of the teachers concerned and the overall fairness of the school system. Another important reason for which having too few ethnic minority teachers in the workforce might matter is that it could affect educational processes and outcomes. This could be part of the explanation for some ethnic groups, such as those from a Black Caribbean background, having lower-than-average national attainment results in England [19]. This paper examines some of the prior evidence on ethnic disproportionality, the treatment of students in schools, and the attainment of ethnic minority students. Most prior research was based on small-scale, in-depth accounts. The strongest body of work is based on patterns in existing large-scale datasets. There are very few studies with an experimental design (or equivalent) that can provide explicit causal evidence of the impact of disproportionality.

#### 2.1. Link to Behaviour

There is a reasonably strong and consistent body of work showing that when teacher and student ethnicities match, their relationships tend to be better and the treatment of the students is often fairer. This is especially true for ethnic minorities. Ethnic minority students of similarly ethnic-minority teachers are somewhat less likely to be seen as disruptive or inattentive [20], to face referrals for disciplinary reasons, or be excluded [21–23] or suspended from school [24,25]. They are less likely to be classified as requiring special education [26,27], to have a pattern of chronic absence [28,29], or to drop out of school [30].

Matching is linked to fewer behaviour problems for Black students in the US [31]. Students who match their teachers' ethnicity appear more likely to be referred to a gifted programme [32,33], to be happier and more motivated, and to have better communication with their teachers [34]. Ethnic minority teachers with similarly ethnic-minority students tend to have slightly higher expectations of the students than White teachers do [35], although McGrady and Reynolds (2013) found that while White teachers may have lower expectations of Black students in the US, this is not true for Asian-origin students [36].

Ethnic proportionately clearly matters for processes, decisions, and the treatment of ethnic minority students in schools. What is the position for attainment?

#### 2.2. Link to Attainment

As with teachers assessing behaviour, when student outcomes are judged by their teachers, there is some evidence that the ethnic match makes a difference. When there is a match between the ethnicity of a teacher and their student, the teacher's assessment of the student's attainment tends to be somewhat higher [37–39]. Indeed, intervening to point out similarities between teachers and students seems to lead to better-perceived inter-relationships and higher course grades [40]. On the other hand, Burn et al. (2023) estimate that when teachers assess student grades, ethnic minority students in England do slightly better than when formally tested in maths [41] but slightly worse in English (the reverse is true for White students).

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Despite evidence that some ethnic minority children have lower test and reading scores even from an early age [42], very little evidence exists worldwide that matching student and teacher ethnicities is linked to better student performance on standardised tests. It is generally difficult to demonstrate the impact of teacher characteristics on student attainment. In one analysis, which was not concerned with ethnicity and was based on Grade 6 students in Sweden, the teacher characteristics that best predicted attainment were the level of the teacher's experience and their qualifications [43]. Most studies that take other student and teacher/school characteristics into account (such as student poverty) find little or no difference in the attainment of ethnic minority students with matched or unmatched teachers [44]. A review of 14 studies by Driessen (2015) found no clear evidence that either having a match between the ethnicities of teachers and students or simply having more ethnic minority teachers were linked to better standardised test results [39].

The "effect" sizes of these studies are small, such as less than 1% of one standard deviation in scores [45,46]), and they can even be negative, as Morgan and Hu (2023) found for the science scores of students with teachers of a matching ethnicity [31]. In the UK specifically, it is not clear that having mixed-ethnicity staff helps ethnic minority student attainment (Cline et al. 2002), but there are some indications that it may be linked to lower White student outcomes [47].

There are some studies with slightly more positive results. Hess and Leal (1997) used data on US college matriculation rates to show that having minority teachers is linked to somewhat better outcomes for minority students and perhaps even for all students [48]. However, the ethnic composition of the teaching workforce and the improved outcomes could both be the result of prior changes in school district policies. And Gottfried et al. (2023) used around 18,000 kindergarten children from the US Early Childhood Longitudinal Study and found benefits from the racial matching of staff and students for the development of working memory skills [49].

Overall, and unlike results that are dependent on teacher judgements, prior work taken as a whole does not suggest a link between ethnic proportionality and student attainment in standardised tests.

## 3. Methods

This paper presents a secondary analysis of all the schools in England, combining information about teaching staff, school, and pupil characteristics and attainment outcomes. The data on teaching staff characteristics (most importantly, their ethnicity) come from the school-level School Workforce Census for 2019. This census is available at School workforce in England, Reporting year 2022—Explore education statistics—GOV.UK (explore-education-statistics.service.gov.uk, accessed on 14 August 2023). The data on pupil characteristics and outcomes come from the school-level information for 2019 available at Get Information about Schools—GOV.UK (get-information-schools.service.gov.uk, accessed on 14 August 2023).

All of the data are linked at the school level (i.e., not for individuals) because data at this level are the most detailed data that are publicly available. We are negotiating access to individual data for a future analysis, but the data controllers for the School Workforce Census do not generally permit their data to be linked to pupil attainment data, and no school performance data based on individuals have been released by the DfE since 2019 (before the COVID-19 lockdown). The two datasets were merged using school ID (URN) as a key.

The merged dataset was sorted by school type and divided into primary (reporting Key Stage 2 results) and secondary (reporting Key Stage 4 results) sections. The small number of all-age schools were included in both files when they had both KS2 and KS4 results. We removed all non-mainstream settings such as hospitals, PRUs, and special schools, not because these are not important but because their patterns of exam entry and outcomes are often very different. We will examine the ethnic matching of these alternative provision institutions in a future analysis.

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The merged dataset had 3255 mainstream secondary schools or schools with KS4 outcomes and 14,993 mainstream primary schools or schools with KS2 outcomes. The key variables for each school were the number of pupils by ethnic group, with eligibility for free school meals (FSMs—an indicator of low family income) and speaking English as an additional language.

Each record also contains the number of teachers and pupils (full-time equivalent), and the number of teachers who are White British or non-White British. This binary classification is less than ideal, but it is the only one publicly available at the school level. The record also includes, where relevant, the schools' KS1 point scores, the KS2 combined points for English and maths, and the KS4 score for the best eight GCSE equivalent qualifications (all standard measures of attainment in England). The best eight or Attainment 8 scores are also presented in terms of average value-added progress from KS2 to KS4 for secondary schools, known as Progress 8.

For each phase of education, the relevant attainment score(s) is (are) correlated with the percentages of teachers and pupils with known characteristics, with the ratio of White teachers to White pupils, and to a variable representing how far the ratio of non-White teachers to pupils deviates from 1. Regression models are also presented which use attainment outcomes as the dependent variable and a combination of the teacher and pupil characteristics plus prior attainment as predictors. The predictors are entered into each model in two main steps. The first step involves predictors based on pupil characteristics and prior attainment (if relevant), and the second step involves predictors based on teacher ethnicity and/or the ethnic ratio of teachers to pupils.

#### 4. Results

#### 4.1. Secondary Schools

Considering first the correlations between school-level attainment outcomes and teacher/pupil characteristics, Table 1 shows that the strongest links are with prior attainment (KS2 scores) and FSM eligibility. In general, the association between any indicator and the Progress 8 score is lower than for Attainment 8, but some of these correlations are still substantial. The strongest predictors of KS4 attainment here are KS2 scores. The R is 0.878, yielding an R-squared of 0.77, meaning that 77% of the variation in school-level KS4 scores can be predicted/explained by KS2 scores. This is a well-established finding. Secondary school "performance" results like KS4 scores at age 16 are almost entirely determined by the attainment level of the pupil intake at age 11.

**Table 1.** Correlations (R) between Key Stage 4 outcomes and student/teacher characteristics at school level, England, 2019.

	Attainment 8 Score	Progress 8 Score
% White British pupils	-0.155	0.021
% White British teachers	-0.085	0.010
% Chinese pupils	0.382	0.052
% White/Asian pupils	0.313	0.133
% Indian pupils	0.260	0.023
% other Asian pupils	0.245	0.046
% other mixed pupils	0.141	-0.061
% Irish pupils	0.134	0.020
% African pupils	0.083	-0.035
% other ethnic group pupils	0.059	-0.057
% other White pupils	0.056	-0.041
% Bangladeshi pupils	0.045	0.046

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Table 1. Cont.

	Attainment 8 Score	Progress 8 Score
% Pakistani pupils	0.032	0.035
% White/Black African pupils	0.011	-0.030
% other Black pupils	-0.012	-0.073
% Caribbean pupils	-0.053	-0.093
% Gypsy/Roma pupils	-0.128	-0.070
% Irish traveller pupils	-0.155	-0.109
% White/Black Caribbean pupils	-0.169	-0.087
KS2 scores	0.878	0.472
% pupils eligible for FSM	-0.713	-0.453
% EAL pupils	0.090	-0.013
% pupils with an unclassified first language	0.041	0.024
% pupils with English as a first language	-0.092	0.021
Ratio of White teachers/pupils	0.051	0.015
Disproportionality of non-White teachers/pupils	-0.099	-0.018

It is interesting that the Progress 8 scores are still relatively highly correlated with the raw KS2 prior scores even though value-added results are designed to be independent of the raw scores from which they are computed. However, schools with pupils who have higher prior scores have higher Progress 8 scores (R = 0.472). This lack of independence of underlying raw scores has been noted before and is an important weakness of so-called value-added results [19]. The focus in most of the rest of this section is on Attainment 8.

The percentage of FSM-eligible pupils in each school is highly negatively correlated with Attainment 8 (-0.713) and, to a lesser extent, with Progress 8 (-0.453). This indicator of disadvantage is also a potentially very important predictor of school-level attainment [50]. The relationship between the percentage of pupils with English or another first language and attainment is much weaker. To a small extent, schools with more pupils who do not speak English as a first language have slightly better raw score results.

Schools with more White British teachers have very slightly worse average Attainment 8 scores. And schools with more pupils in most ethnic minority categories have somewhat higher Attainment 8 scores. This is particularly true for schools with Chinese and Indian pupils. Pupils of Black Caribbean origin tend to have very slightly lower average Attainment 8 scores (-0.053), and some of the smaller categories, such as Gypsy/Roma and Irish Traveller pupils, have more substantially lower scores. These results are mostly already well-established [19].

The ratio of White teachers to White pupils has a small positive correlation with attainment, and the disproportionality of non-White teachers to non-White pupils has a small negative correlation. Are these relevant to attainment once other factors, such as poverty, have been taken into account?

The simplest regression model explaining most of the variation in school-level Attainment 8 scores uses only seven predictors (Table 2). As expected, most of the variation explained comes from the prior average attainment of the pupils in that school, followed by the proportion of FSM-eligible pupils. The proportion of teachers with qualified teacher status explains a small amount of variation. Everything else concerns the ethnic origin of the pupils. Schools with more Chinese or mixed White and Asian pupils tend to do slightly better than otherwise expected. Schools with more White or mixed White and Caribbean pupils tend to do slightly worse. The proportion of ethnic minority teachers, and so the ratio of ethnic minority teachers to students, is irrelevant.

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Table 2	Predictors	of Attainment 8.	
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	R	Coefficients in Final Model
Key Stage 2 Points	0.877	0.632
Percentage of FSM-eligible pupils	0.908	-0.289
Percentage of White British pupils	0.927	-0.210
Percentage pupils of Chinese origin	0.934	0.102
Percentage of teachers with QTS	0.937	0.071
Percentage pupils of White/Caribbean origin	0.940	-0.061
Percentage pupils of White/Asian origin	0.939	0.059

The following variables are not included in the model:

- Anything to do with the pupils' first language (English, other, or not known);
- Any other category of ethnic minority for the pupils (Gypsy/Roma, Pakistani, Caribbean, African, Irish, Irish Traveller, any other White background, and any other mixed group);
- The proportion of ethnic minority (non-White British) teachers;
- The disproportion of ethnic minority teachers to ethnic minority pupils.

The presence of the variables in Table 2 illustrates correlations, and they are not necessarily causal factors in explaining progress in secondary school from age 11 to age 16. They could be proxies, for example. However, the absence of any variables from Table 2 does suggest that they are not causally related to progress at school.

We reran the model but omitted the KS2 scores because they explain so much variation just by themselves and thus created a raw score prediction rather than a progress model. The model then had a final R of 0.807 (weaker than above) and required 10 predictors. The main predictor (R of 0.713) was now FSM eligibility. The other predictors were the same as above but with the inclusion of more ethnic categories for the pupils (including African, Bangladeshi, Caribbean, and Pakistani). There is still no role for the ethnicity of teachers, alone or in comparison to the ethnicity of pupils.

## 4.2. Primary Schools

The picture for attainment at primary school is very similar to the above. However, the prediction is not quite as strong at each stage (Table 3). The strongest predictor is, again, prior attainment (the KS1 score). The proportion of FSM-eligible pupils remains somewhat important but is overtaken by the proportion of White British pupils (both are linked to somewhat lower KS2 scores). Otherwise, the predictors are the figures for the proportion of different ethnic groups of pupils. Again, there is no role for the ethnicity of teachers or the ratios of ethnic minority teachers and pupils.

The following variables are not included in the model:

- Anything to do with the pupils' first language (English, other, or not known);
- Any other category of ethnic minority for the pupils (including Bangladeshi, Caribbean, Indian, African, Irish Traveller, any other White background);
- The proportion of teachers with QTS;
- The proportion of ethnic minority (non-White British) teachers;
- The ratio of ethnic minority teachers to ethnic minority pupils.

As with secondary schools, we ran the model again but without prior attainment (school-level KS1 scores) to allow for greater variation to see if teacher ethnicity would become a potential factor. Again, the model was slightly weaker because of this (R of 0.517), with FSM eligibility now the key predictor (R of 0.421). The proportion of teachers with QTS then became a minor predictor, but there was still no role for the ethnicity of teachers or the ratio of ethnic minority teachers to ethnic minority pupils.

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Table 3. Predictors of KS2 total scores.

	R	Coefficients in Final Model
KS1 points	0.583	0.477
Percentage of White British pupils	0.611	-0.307
Percentage of FSM-eligible pupils	0.636	-0.204
Percentage of Gypsy/Roma pupils	0.639	-0.060
Percentage of Chinese pupils	0.642	0.045
Percentage of pupils of any other mixed ethnicity	0.643	0.050
Percentage of pupils of unclassified ethnicity	0.645	-0.048
Percentage of pupils of other White ethnicity	0.646	-0.086
Percentage of Irish pupils	0.647	0.040
Percentage of Pakistani pupils	0.648	-0.082
Percentage of mixed White and Caribbean pupils	0.650	-0.049

#### 5. Discussion

The datasets used in this paper are national for all schools in England and are based on verified school census and performance data. There are very few missing data. Combining these datasets at the school level leads to the conclusion that the proportion of ethnic minority (non-White) teachers on staff is not linked to the attainment of students once prior attainment and poverty are taken into account. There is also no link between attainment and the proportion of ethnic minority teachers to ethnic minority students at each school. Poverty is a more substantial predictor of attainment, and teacher qualification and experience are somewhat more important than teacher ethnicity, as also found by Johansson et al. (2023) [43].

However, the datasets have several key limitations for the purpose they are used for here. The records are for schools and not the individual teachers or students in those schools. This means that the performance data cannot be separated by student ethnicity and compared to the ethnicity of the teachers in each school. And the public version of the Schools Workforce Census has two only ethnic categories for teachers at the school level. This means that we cannot perform a fine-grained analysis of the proportionality of teachers and pupils for each ethnic group, as we had previously carried out at the local authority and regional levels [13]. We have applied for linked School Workforce Census and National Pupil Database records to overcome these limitations and have encountered several obstacles (such as that the controllers of the School Workforce Census do not permit the Census data to be linked to performance data). We hope to be able to overcome these obstacles and present a fuller analysis in the future. For the present, we conclude that the ethnic matching of staff and students does not show up in general attainment results at the school level. This is in line with much of the literature citied earlier.

Of course, even if this finding is confirmed by individual-level data, concerns about disproportionately and the barriers faced by some ethnic minority teachers remain. It is right that the employment and deployment of ethnic minority teachers represent the wider society into which the students will later pass. This is not just an issue of proportionality but also the exposure of all students, even in schools and areas that are predominantly White British, to a more diverse teacher workforce. All students can benefit from a diversity of cultural experiences and understanding, and students report being somewhat more positive about ethnic minority teachers than White ones anyway [51,52]). As with reduced the social segregation of student intakes into schools [50,53]), the reduced segregation of teaching staff promises to enhance understanding and tolerance for all stakeholders.

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