



BIPE Project

Social and ethnic biases in primary education



ETHNIC BIASES in ENGLISH STATE PRIMARY SCHOOLS

Exploring the impact of school ethnic composition on teachers' biased perceptions of students' school effort

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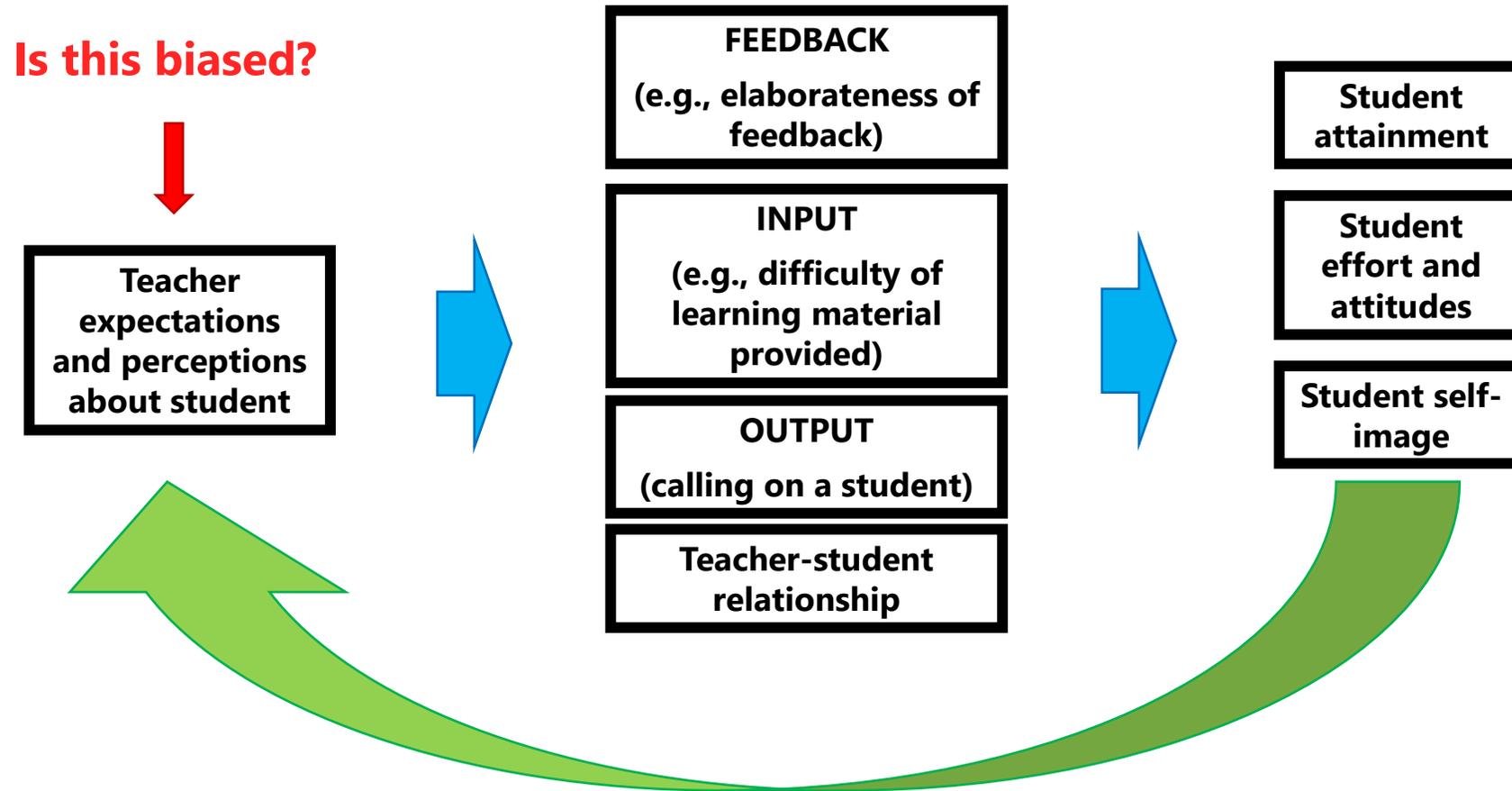
Katherin Barg

2023 SLLS Conference – Munich
9th October 2023

MOTIVATION

Self-fulfilling prophecies and feedback loops

Theoretical framework of self-fulfilling prophecies and feedback loops



THEORETICAL CONSIDERATIONS

TEACHER BIAS & ETHNICITY

There is a fair amount of research on teacher bias & student ethnicity but:

- most focuses on inaccurate teacher assessment of students' performance & abilities
- most from other countries (US, Canada, other European countries)
- many reduce ethnicity to majority/minority, white vs other, migration background vs. native etc.

See: Meissel et al. (2017); Turner, Rubie-Davies & Webber (2015); Tobisch & Dresel, (2017); Kaiser, Südkamp & Möller (2017); Glock & Krolak-Schwerdt (2014); Holder & Kessels (2017)

SO, this research fits in the understudied intersection of TEACHER ETHNIC BIASED PERCEPTIONS of STUDENTS' ACADEMIC ATTITUDES in England.

Why are academic attitudes (and SCHOOL EFFORT in particular) important?

- Assessments of student motivation and engagement are used by teachers (alongside assessments of students' academic achievement) to grade, place students in within-class ability groups, or advise students & families on school transitions and school tracks placement

See: Brookhart et al. (2016); Baeriswyl et al. (2011); Baumert et al. (2019); Pit-ten Cate et al. (2016); Vanlommel & Schildkamp (2019)

- Learning motivation and interest affect student achievement

See: Richardson et al (2012); Givvin et al (2011); Praetorius & Südkamp (2019); Harvey, Suizzo & Jackson (2016)

- Unrecognised effort is linked to lower self-concept & school enjoyment

See: Francis et al. (2017)



SCHOOL ETHNIC COMPOSITION

How does school ethnic composition relate to teacher bias?

➤ **Allport INTERCULTURAL CONTACT HYPOTHESIS**

high-quality contact with members of an outgroup can promote more positive out-group attitudes. The presence of a large proportion of students from the target group implies that the teacher has more contact and is more familiar with target group students.

See: Allport (1954); Pettigrew & Tropp (2006)

Why are we interested in the effect of the school ethnic composition?

- There is strong evidence for school SES composition effects on teacher bias
See: Brault, Janosz & Archambault (2014); Matsuoka (2014); Timmermans et al. (2015)
- The empirical evidence on school ethnic composition effects on teacher bias is rather mixed (and focuses almost exclusively on teacher expectations and assessments or implicitly-held biases (ITAs))
See: Kumar, Karabenick & Burgoon (2015); Thys & van Houtte (2016); Yarnell & Bohrnstedt (2018); Kozlowski (2018); Agirdag, van Avermaet & van Houtte (2013); Glock & Böhmer (2018); Boone et al. (2018); McKown & Weinstein (2008)
- The empirical evidence existing does not always investigate differential effects for students of different ethnicities



DATA, SAMPLE & METHODOLOGY

DATA & TIME PERIODS

	ENGLAND
Data	<u>Millennium Cohort Study (MCS)</u> & <u>MCS-linked National Pupil Database</u>
Primary Sampling Unit (PSU)	Electoral Wards
Stratification	(within UK countries) – ethnic, disadvantaged, advantaged
Sample at wave 1	18,552
Birth Cohort	2000-2001
Period of observation in primary education	2008/2012
T1: early primary school	MCS4: Y2, age 7
T2: end of primary school	MCS5: Y6, age 11

SAMPLE CONSTRUCTION

	N
MCS wave 1 sample	18,552
MCS wave 1&2 sample (with 'new families')	19,243
Available under EUL	19,231
Productive at t2 (MCS5)	13,279
Residing in England at t2	8,670
BASE SAMPLE	8,670
Productive Teacher Survey at T2	6,224
Matching NPD record at T2	5,134
TARGET SAMPLE	5,134
Productive at t1 (MCS4)	5,134
Complete cases	4,792
ANALYTICAL SAMPLE	4,792

VARIABLES

	time	VARIABLE USED
Student own report of school effort	T2	How often do you try your best at school? <i>[all of the time, most of the time, some of the time, never]</i>
Teacher perception of (student's) school effort	T2	How often does this child try their best at school? <i>[always, often, sometimes, never]</i>
Child's gender	T2	Male (ref.), Female
Child's age	T2	Age in years (2 decimals places)
SES	T2	Annual equivalised disposable income in £
Prior ability (language skills)	T1	BAS II Word Reading
Prior ability (mathematical skills)	T1	NFER Progress in Maths
Prior ability (other cognitive skills)	T1	BAS II Pattern Construction
Child's ethnicity	T2	(Parent-reported) ethnicity of the child, grouped as: <i>[White, Mixed, Indian, Pakistani, Bangladeshi, Black Caribbean, Black African, other ethnic group]</i>
School ethnic composition (version 1)	T2	Share of school body that is not categorised as White
School ethnic composition (version 2)	T2	Share of school body categorised as of the same ethnicity as the cohort member
School size	T2	N. of students enrolled in school
School socio-economic composition	T2	Share or student school body that is eligible for FSM (rounded to nearest 10)

METHODOLOGY

STEP 1: ESTIMATE TEACHER BIAS

Are teacher's perceptions of students' school effort in agreement with student own reports?

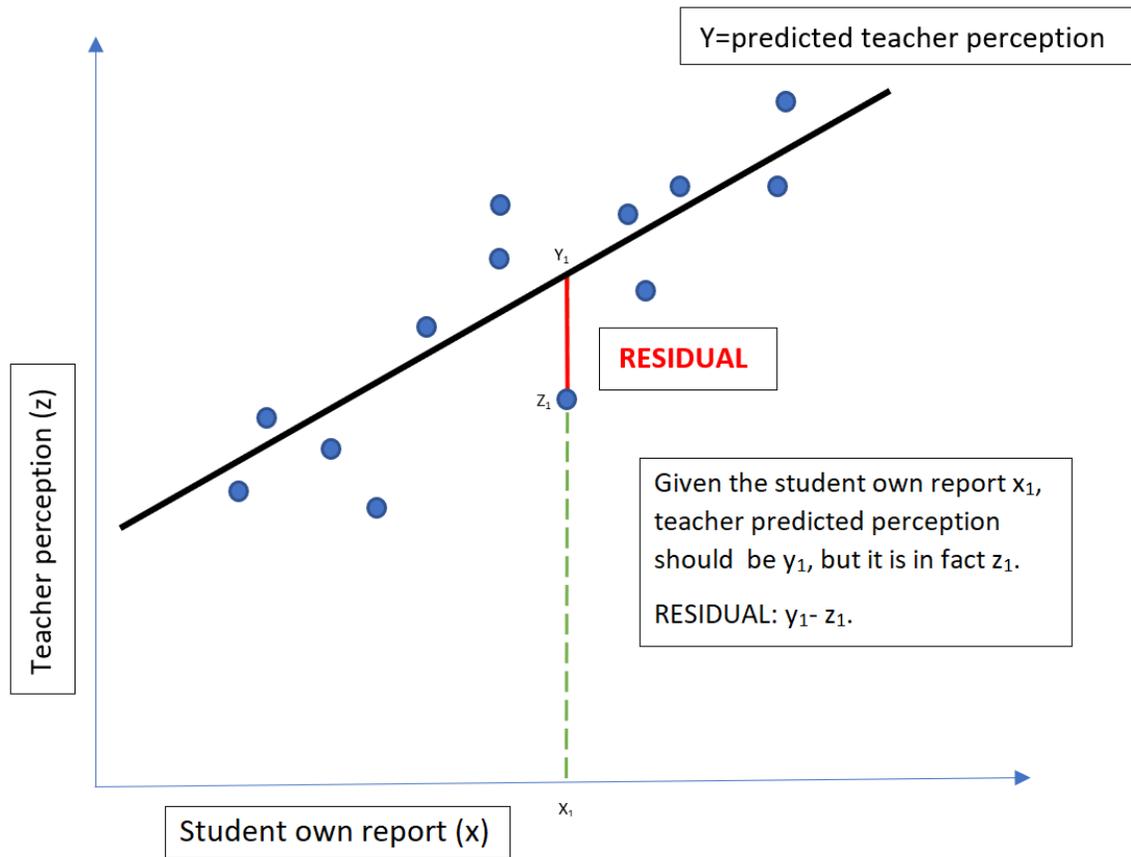
STEP 2: ANALYSIS I – student-level ethnic & socio-demographic predictors of TEACHER BIAS

Do children from different ethnic groups face different teacher biases (even when controlling for socio-demographic factors and prior ability)?

STEP 3: ANALYSIS II – school-level ethnic & socio-demographic predictors of TEACHER BIAS

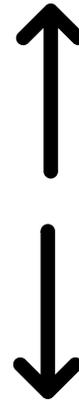
- Does school ethnic composition affect teacher bias?
- Does the impact of school ethnic composition on teacher bias differ across ethnic groups?

TEACHER BIAS: Residuals



METHODOLOGY

1. Standardise teacher perception & student own report of school effort
2. OLS regression of teacher perceptions on student own report
3. Compute residuals
4. Standardise residuals



POSITIVE residuals = teacher overestimates student's effort

NEGATIVE residuals = teacher underestimates student's effort

RESULTS

DESCRIPTIVE STATISTICS

Teacher perception & Student own report

		%
Teacher perception of SCHOOL EFFORT	<i>Always</i>	42.6
	<i>Usually</i>	42.5
	<i>Sometimes</i>	14.4
	<i>Never</i>	0.6
Student own report of SCHOOL EFFORT	<i>All of the time</i>	57.9
	<i>Most of the time</i>	38.0
	<i>Some of the time</i>	3.6
	<i>Never</i>	0.5

weighted analytical sample N = 4,792

Student ethnicity

	%
White	82.3
Mixed	4.1
Indian	2.4
Pakistani	4.4
Bangladeshi	1.4
Black Caribbean	1.5
Black African	2.1
Other ethnic group	1.9

weighted analytical sample N = 4,792

NOTE

Descriptive statistics of teacher perceptions & student own reports decomposed by ethnicity are reported in APPENDIX A

Descriptive statistics of student socio-demographic controls & prior ability are reported in APPENDIX B

Descriptive statistics of school-level information are reported in APPENDIX C



DESCRIPTIVE STATISTICS

Average ethnic composition of schools

		mean	SD
Average share of the school student body that is...	White	81.6	26.1
	Mixed	3.6	3.8
	Indian	2.8	6.9
	Pakistani	4.8	14.1
	Bangladeshi	1.6	7.2
	Black Caribbean	1.1	3.3
	Black African	3.4	7.4
	Other	3.1	5.7
	Unclassified	0.7	1.9

weighted analytical sample N = 4,792



DESCRIPTIVE STATISTICS

School ethnic composition INDICATOR 1

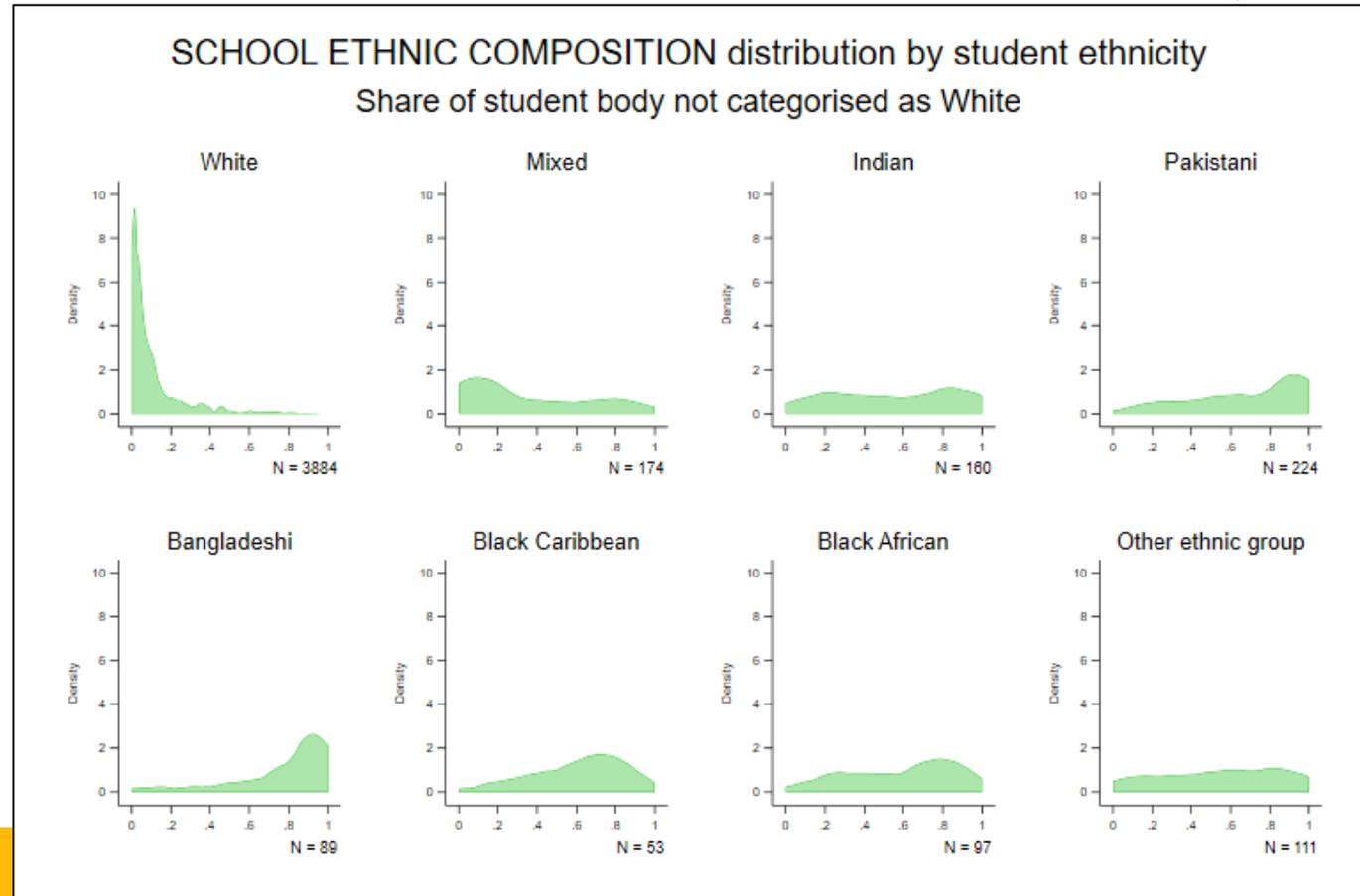
mean	SD
18.4	26.1

Share of school student body that is not categorised as White

Kernel density plots

		%	Cumulative %
Share of students attending schools ...	<i>Below 10%</i>	59.7	59.7
	<i>[10% - 20%)</i>	13.6	73.3
	<i>[20% - 30%)</i>	5.9	79.1
	<i>[30% - 40%)</i>	4.8	84.0
	<i>[40% - 50%)</i>	2.6	86.6
	<i>[50% - 60%)</i>	2.3	88.9
	<i>[60% - 70%)</i>	2.5	91.4
	<i>[70% - 80%)</i>	2.4	93.8
	<i>[80% - 90%)</i>	2.6	96.4
	<i>[90% - 100%]</i>	3.7	100

weighted analytical sample N = 4,792



DESCRIPTIVE STATISTICS

School ethnic composition INDICATOR 2

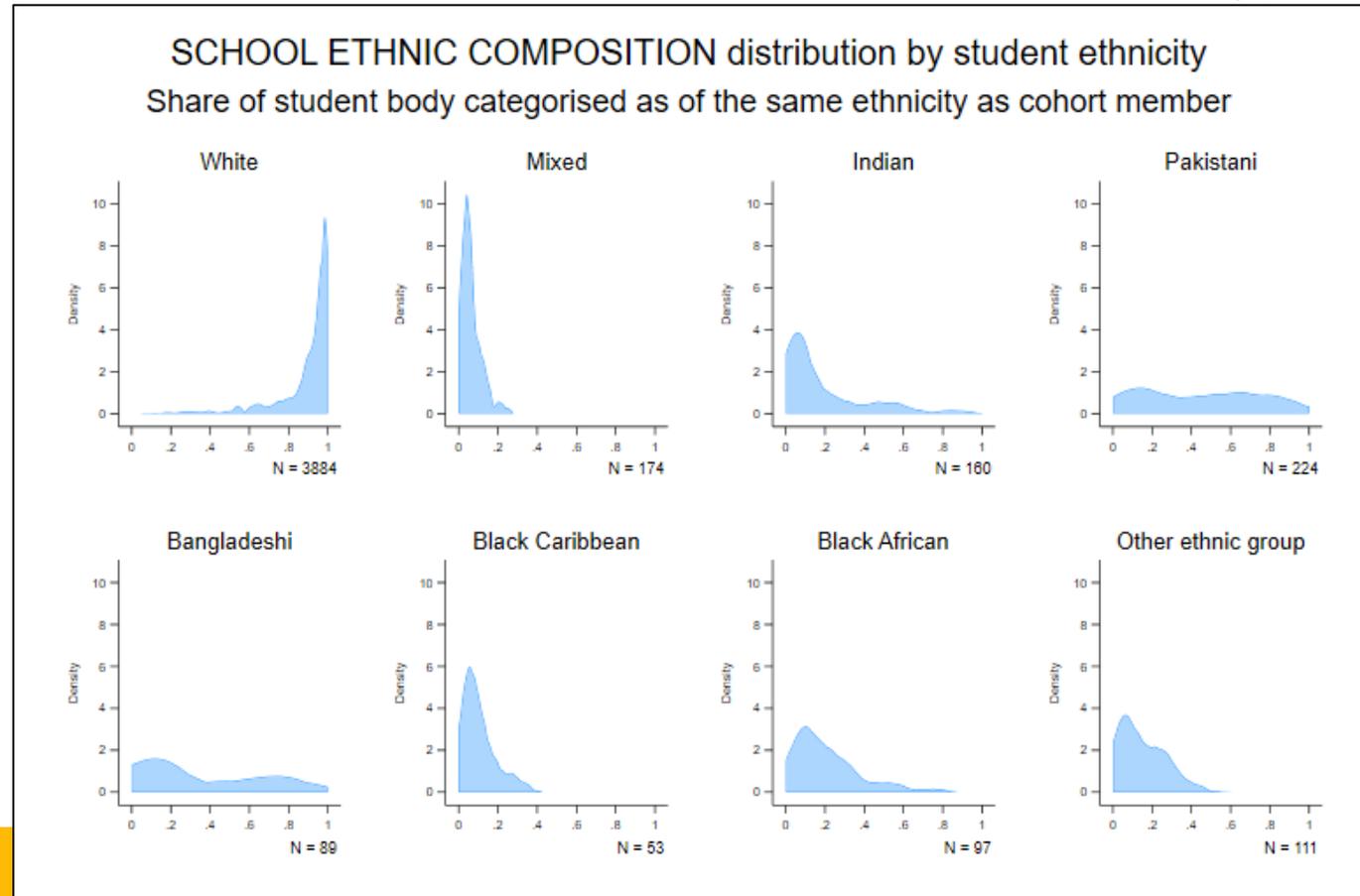
mean	SD
77.8	31.0

Share of school student body that is categorised as of the same ethnicity as cohort member

Kernel density plots

		%	Cumulative %
Share of students attending schools ...	<i>Below 10%</i>	8.3	8.3
	<i>[10% - 20%)</i>	3.6	12.0
	<i>[20% - 30%)</i>	2.6	14.5
	<i>[30% - 40%)</i>	1.6	16.1
	<i>[40% - 50%)</i>	1.4	17.5
	<i>[50% - 60%)</i>	2.6	20.1
	<i>[60% - 70%)</i>	4.1	24.2
	<i>[70% - 80%)</i>	5.5	29.7
	<i>[80% - 90%)</i>	12.2	41.9
	<i>[90% - 100%]</i>	58.2	100

weighted analytical sample N = 4,792



ANALYSIS STEP 1

ESTIMATING TEACHER BIAS

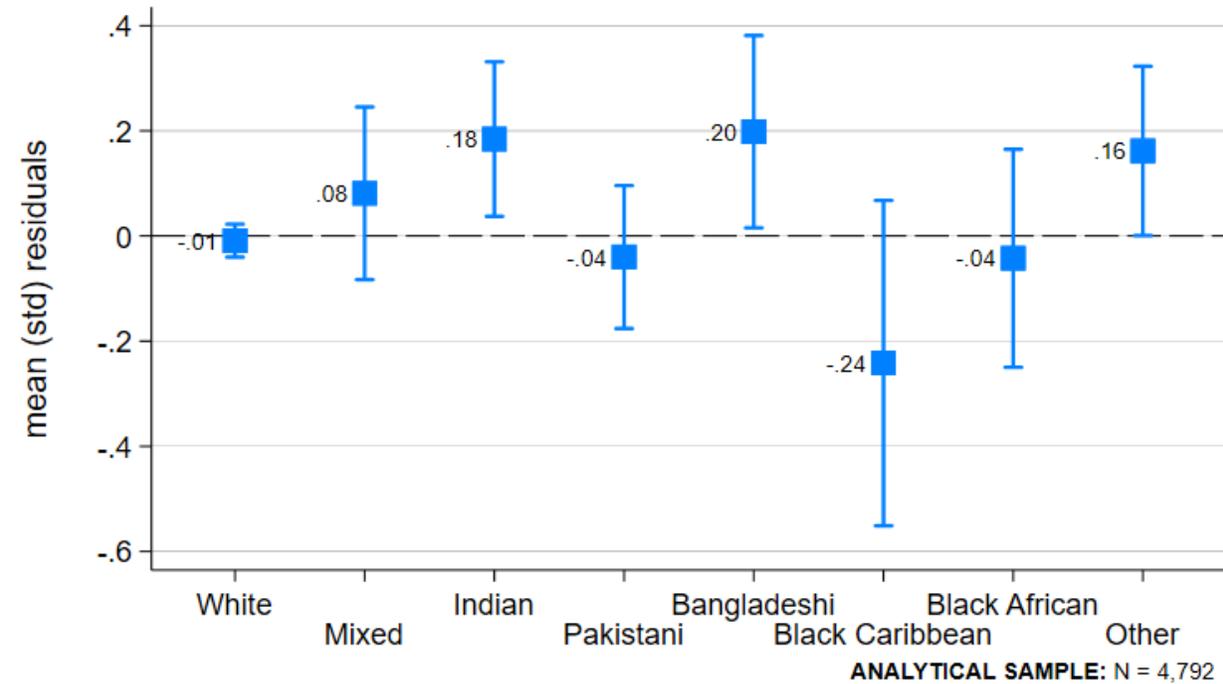
Predicted (std) teacher perception of SCHOOL EFFORT

(std) Student own report of SCHOOL EFFORT	0.258 *** (0.019)
CONSTANT	~ ~
N° of Observations	4,792
R ²	0.066

OLS regression model with standard errors clustered at the teacher level
* p < .05, ** p < .01, *** p < 0.001
~ Coefficient & SE of the constant are suppressed for SDC.

Average TEACHER BIAS by student ethnicity

SCHOOL EFFORT



ANALYSIS STEP 2

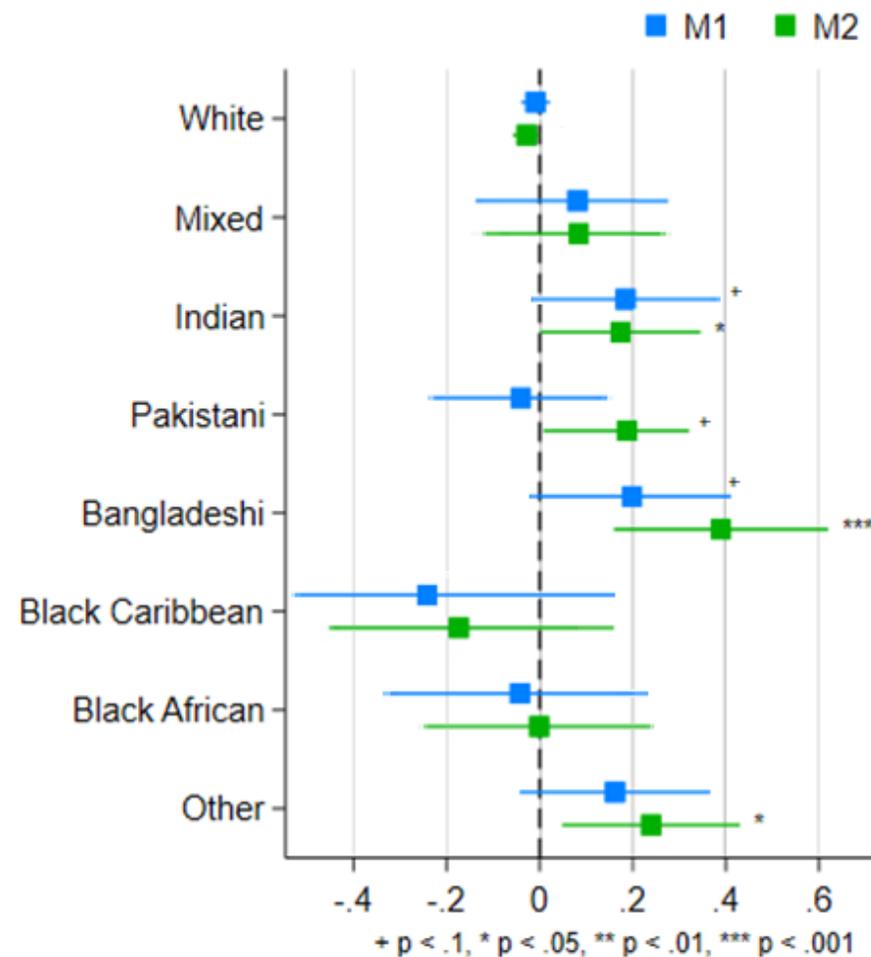
Do children from different ethnic groups face different teacher biases ?

NOTE

Average linear predictions were computed for the OLS regressions reported in APPENDIX table D. The values here graphed are reported in APPENDIX table E.

Average linear prediction of TB by ethnicity

SCHOOL EFFORT



M1 – raw model
M2 – with child-level controls (socio-demographic characteristics & prior ability)

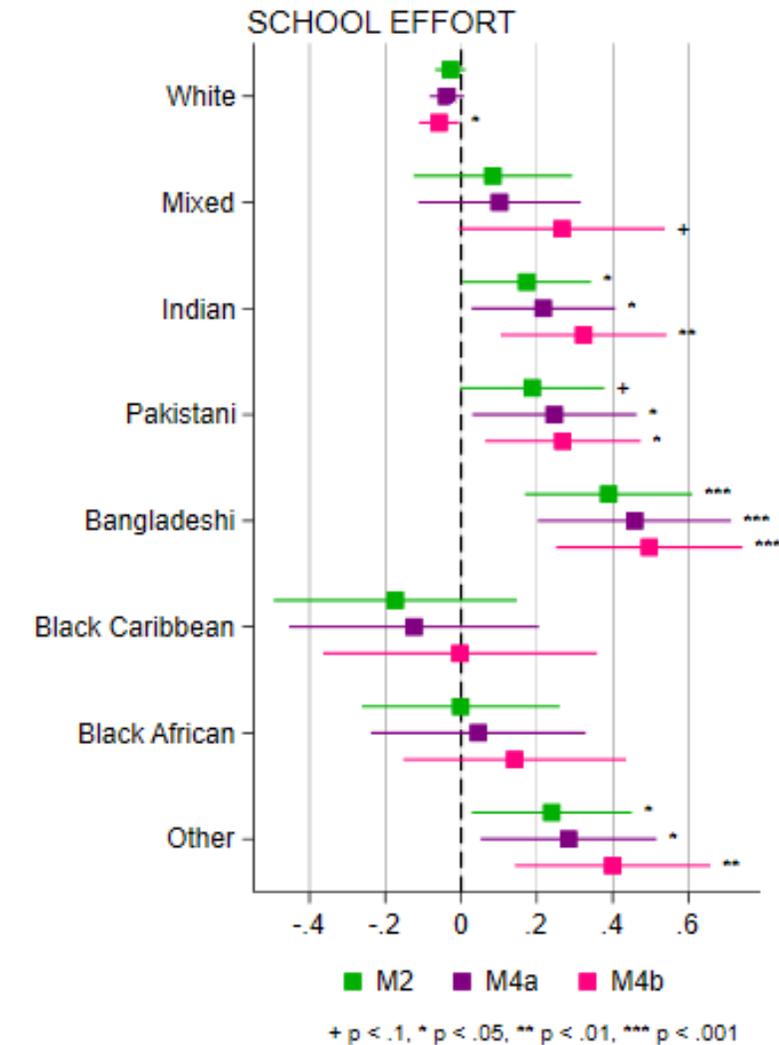
ANALYSIS STEP 3a

Does school ethnic composition affect teacher ethnic bias?
(even when controlling for socio-demographic factors and prior ability & other school-level characteristics)

	MODEL 3a	MODEL 3b	MODEL 4a	MODEL 4b
T2 - School ethnic composition (categorised not as White)	-0.123 (0.111)		-0.130 (0.116)	
T2 - School ethnic composition (same ethnicity as cohort member)		0.249* (0.123)		0.258* (0.125)
Child-level controls (ethnicity, socio-demographic characteristics & prior ability)	X	X	X	X
School-level controls (School SES composition & school size)			X	X
Constant	-2.908*** (0.626)	-3.205*** (0.621)	-2.873*** (0.638)	-3.164*** (0.638)
N° of Observations	4792	4792	4792	4792
R ²	0.137	0.138	0.137	0.138

NOTE
 Average linear predictions were computed for the OLS regressions reported in APPENDIX table F.
 The values here graphed are reported in APPENDIX table G.

Average linear prediction of TB by ethnicity



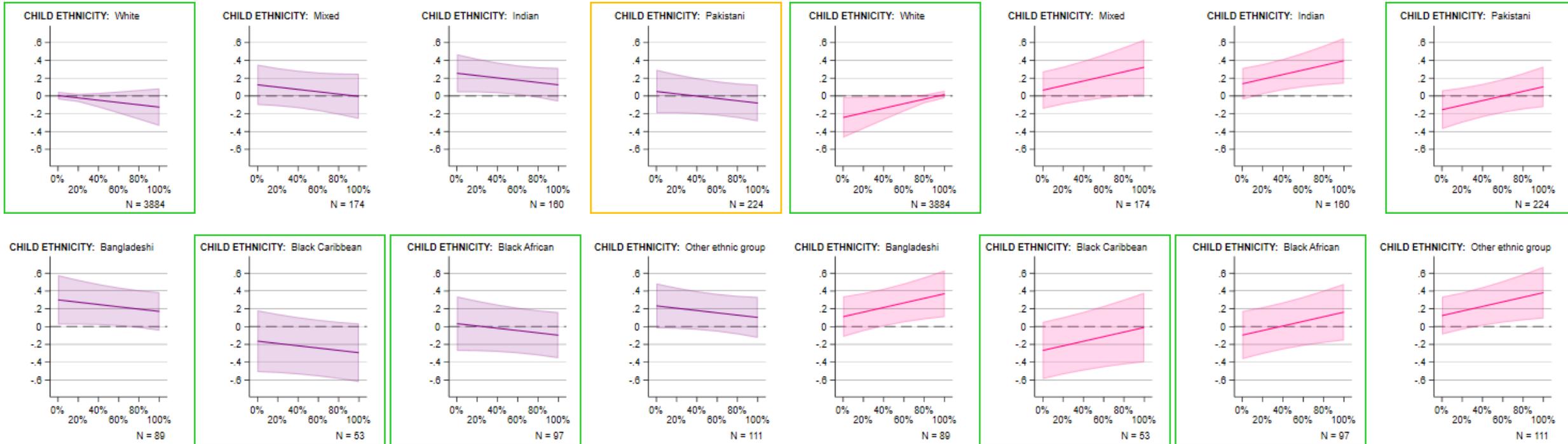
M2 – with child-level controls (socio-demographic characteristics & prior ability)
M3a – with school ethnic composition (v1)
M3b – with school ethnic composition (v2)

ANALYSIS STEP 3b

Does the impact of school ethnic composition on differ across ethnic groups?

AVG LP of TEACHER BIAS across school ethnic composition, by ethnicity
Share of student body not categorised as White

AVG LP of TEACHER BIAS across school ethnic composition, by ethnicity
Share of student body categorised as of the same ethnicity as cohort member



CONCLUSIONS

- **School ethnic segregation** (or at least marked differences in the school ethnic composition across cohort members' ethnicities) appear to be quite prevalent in state schools in England
- **Low degree of agreement** between cohort members' & teachers' assessments of SCHOOL EFFORT
- **Teacher biased perceptions of SCHOOL EFFORT are** (partially) **systematically associated with cohort members' ethnicity** (even when controlling for socio-demographic characteristics and prior ability): cohort members reported as *Indian, Pakistani, Bangladeshi,* and *Other* are overestimated in their school effort.
- We find **no significant school effects** when using as our measure of school ethnic composition **% OF MINORITY STUDENTS** - > in contrast with some existing empirical evidence like Glock & Böhrer (2018)
- We find **significant school effects** when using as our measure of school ethnic composition **% of SAME-ETHNICITY STUDENTS** -> in support of Alleport (1954) contact hypothesis
- How school effects affect cohort members of different ethnicities is a complicated matter that has to be investigated more deeply

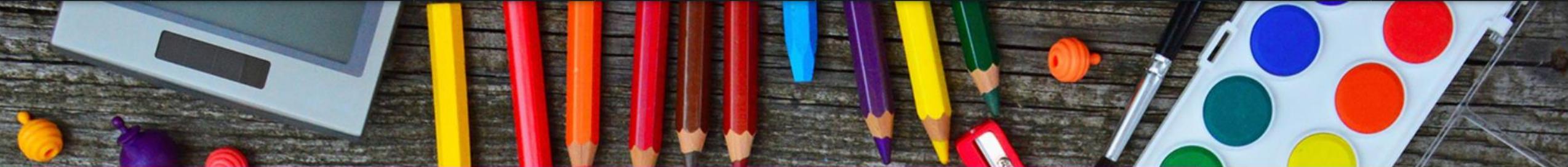
LIMITATIONS & POSSIBLE NEXT STEPS

LIMITATIONS DUE TO SAMPLE & DATA CONSTRAINTS:

- The MCS includes ONLY children born in the UK
- The linked-NPD data allows us to include ONLY state schools in England
- We cannot control for urban/rural status of school or for GOR
- We don't have much teacher-level information (only age, gender, and qualification) and nothing that pertains teacher implicit or explicit beliefs/attitudes

NEXT STEPS:

- Explore the issue of school segregation: how different are the school attended by cohort members of different ethnicities? How does it affect TB differently for cohort members of different ethnicities?
- Move beyond school effort: school enjoyment, classroom misbehaviour, academic self-concept, achievement, school engagement (broader definition)
- Investigate gender-specific patterns of TB for certain ethnicities (Black Caribbean boys?)
- Fine tune last model: teacher characteristics (age, gender, years of experience, **years of exposure**), other school characteristics



BIPE Project

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THANK YOU!
Any question or thought?

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Project website: <https://bipeproject.blogs.bristol.ac.uk>



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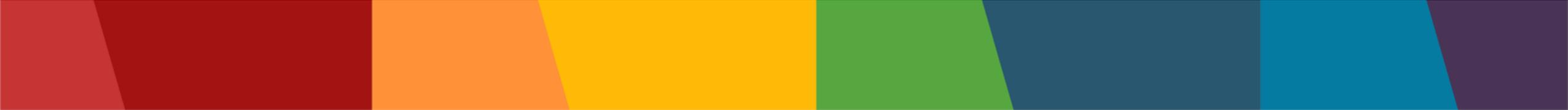
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APPENDIX

APPENDIX A DESCRIPTIVE STATISTICS: Teacher perception & Student own report by ethnicity

		TOTAL	White	Mixed	Indian	Pakistani	Bangladeshi	Black Caribbean	Black African	Other ethnic group
Teacher perception of SCHOOL EFFORT	<i>Always</i>	42.6	41.9	49.7	49.4	42.6	46.4	39.2	42.1	48
	<i>Usually</i>	42.5	42.9	34.5	43.8	42.2	48	35.4	40.7	45.3
	<i>Sometimes</i>	14.4	14.7	≈15	≈5	≈15	< 5	≈20	≈20	< 5
	<i>Never</i>	0.6	0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Student own report of SCHOOL EFFORT	<i>All of the time</i>	57.9	57.4	55.5	62.7	64.8	56.8	58.5	58.6	62.8
	<i>Most of the time</i>	38.0	38.3	39.7	33.6	31.9	39.5	39.4	38.5	37.2
	<i>Some of the time</i>	3.6	3.7	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	<i>Never</i>	0.5	0.6	< 5	< 5	< 5	< 5	< 5	< 5	< 5

weighted analytical sample N = 4,792



APPENDIX B

DESCRIPTIVE STATISTICS: Student socio-demographic controls & prior ability

		mean (or %)	SD
Gender	Male	50.7	-
	Female	49.3	-
Age at t2		11.15	0.34
Annual equivalized disposable income in £		369.00	195.00
BAS II Word Reading – t score		112.78	17.59
NFER PiM – t score		52.95	10.91
BAS II Pattern Construction – t score		98.27	15.57

weighted analytical sample N = 4,792

APPENDIX C

DESCRIPTIVE STATISTICS: School-level information

		mean (or %)	SD
School socio-economic composition (rounded to the nearest 10)	0	39.2	-
	10	29.1	-
	20	15.3	-
	30	9.0	-
	40	5.0	-
	50	1.7	-
	60	0.8	-
School size		296.13	191.33
School ethnic composition (alternative 1) Share of (student) school body that is not categorised as White		18.4	26.1
School ethnic composition (alternative 2) Share of (student) school body categorised as the same ethnicity as the student		77.8	31.0

weighted analytical sample N = 4,792

APPENDIX D

OLS regression models of TEACHER BIAS, M1 & M2

		M1	M2
ETHNICITY	<i>White</i>	0.000 (.)	0.000 (.)
	<i>Mixed</i>	0.090 (0.111)	0.112 (0.108)
	<i>Indian</i>	0.193+ (0.112)	0.202* (0.089)
	<i>Pakistani</i>	-0.031 (0.107)	0.216* (0.101)
	<i>Bangladeshi</i>	0.207+ (0.110)	0.417*** (0.116)
	<i>Black Caribbean</i>	-0.233 (0.199)	-0.145 (0.166)
	<i>Black African</i>	-0.034 (0.142)	0.027 (0.135)
	<i>Other ethnic group</i>	0.171 (0.104)	0.267** (0.110)
GENDER	Female (<i>ref. male</i>)		0.505*** (0.034)
Age at time of TEACHER BIAS measurement (in months)			0.116** (0.053)
(log) annual equivalised disposable income			0.241*** (0.038)
BAS II Word Reading			0.118*** (0.021)
NFER Progress in Maths			0.044* (0.021)
BAS II Pattern Construction			0.055* (0.023)
CONSTANT		~	-2.957*** (0.476)
N° of Observations		4792	4792
R²		0.003	0.136
Testing for significance of MAIN EFFECT of ethnicity		F(7,3028)=1.56	F(7, 3028)=3.55**

* p < .05, ** p < .01, *** p < 0.001

~ Coefficient & SE of the constant are suppressed in M0.

APPENDIX E

Average Linear Predictions of TEACHER BIAS by ethnicity groups, M1 & M2

		M1	M2
ETHNICITY	<i>White</i>	-0.009 (0.022)	-0.028 (0.020)
	<i>Mixed</i>	0.081 (0.109)	0.084 (0.107)
	<i>Indian</i>	0.184+ (0.110)	0.174* (0.086)
	<i>Pakistani</i>	-0.040 (0.105)	0.187+ (0.097)
	<i>Bangladeshi</i>	0.198+ (0.108)	0.389*** (0.113)
	<i>Black Caribbean</i>	-0.242 (0.198)	-0.174 (0.164)
	<i>Black African</i>	-0.042 (0.141)	-0.001 (0.133)
	<i>Other ethnic group</i>	0.162 (0.102)	0.239* (0.108)
N° of Observations		4792	4792

These are the average linear predictions computed from the models in APPENDIX D.

* p < .05, ** p < .01, *** p < 0.001

APPENDIX F

OLS regression models of TEACHER BIAS, M4a & M4b

		M4a		M4b	
ETHNICITY	<i>White</i>	0.000	(.)	0.000	(.)
	<i>Mixed</i>	0.139	(0.113)	0.324*	(0.152)
	<i>Indian</i>	0.255*	(0.105)	0.381**	(0.125)
	<i>Pakistani</i>	0.284*	(0.119)	0.327**	(0.116)
	<i>Bangladeshi</i>	0.495***	(0.139)	0.555***	(0.137)
	<i>Black Caribbean</i>	-0.087	(0.173)	0.055	(0.195)
	<i>Black African</i>	0.083	(0.151)	0.200	(0.160)
	<i>Other ethnic group</i>	0.321*	(0.126)	0.458**	(0.145)
GENDER	Female (<i>ref. male</i>)	0.505***	(0.034)	0.505***	(0.034)
Age at time of TEACHER BIAS measurement (in months)		0.112*	(0.053)	0.114*	(0.052)
(log) annual equivalised disposable income		0.235***	(0.040)	0.238***	(0.040)
BAS II Word Reading		0.119***	(0.021)	0.118***	(0.021)
NFER Progress in Maths		0.043*	(0.021)	0.042*	(0.020)
BAS II Pattern Construction		0.056*	(0.023)	0.058*	(0.023)
T2 – School ethnic composition (% not White)		-0.130	(0.116)		
T2 – School ethnic composition (% same ethnicity as child)				0.258*	(0.125)
T2 – School SES composition (% FSM rounded to nearest 10)		-0.000	(0.002)	-0.000	(0.002)
T2 – School size (continuous)		0.000	(0.000)	0.000	(0.000)
CONSTANT		-2.873***	(0.638)	-3.164***	(0.638)
N° of Observations		4,792		4,792	
R²		0.137		0.138	
Testing for significance of MAIN EFFECT of ethnicity		F(7,3028)=2.89**		F(7,3028)=3.50**	

* p < .05, ** p < .01, *** p < 0.001

APPENDIX G Average Linear Predictions of TEACHER BIAS by ethnicity groups, M4a & M4b

		M4a	M4b
ETHNICITY	<i>White</i>	-0.038 (0.023)	-0.058* (0.027)
	<i>Mixed</i>	0.102 (0.109)	0.266+ (0.139)
	<i>Indian</i>	0.217* (0.097)	0.323** (0.111)
	<i>Pakistani</i>	0.246* (0.111)	0.269* (0.104)
	<i>Bangladeshi</i>	0.458*** (0.130)	0.497*** (0.125)
	<i>Black Caribbean</i>	-0.125 (0.168)	-0.003 (0.184)
	<i>Black African</i>	0.045 (0.144)	0.142 (0.150)
	<i>Other ethnic group</i>	0.284* (0.119)	0.400** (0.131)
N° of Observations		4792	4792

These are the average linear predictions computed from the models in APPENDIX F.

* p < .05, ** p < .01, *** p < 0.001