

School effects and equity gaps in educational attainment and progress at age 11

Presentation to the DfE PLASC User Group (PLUG),
Institute of Education, University of London
6 April 2011

Professor Steve Strand
University of Warwick
steve.strand@warwick.ac.uk
024 7652 2197

WARWICK

Equity issues in educational attainment

- Recent government research reviews indicate continued relevance of equity issues in educational attainment:
 - DfES (2006). *Ethnicity and education*. London: DfES.
 - DCSF (2007). *Gender and education: the evidence on pupils in England*. London: DCSF.
 - DCSF (2009). *Deprivation and education: The evidence on pupils in England, Foundation Stage to Key Stage 4*. London: DCSF.
- Reflected in monitoring and 'narrowing the gaps' agenda:
 - Government objectives, e.g. DSO4 & PSA11 "Narrow the gap in educational achievement between children from low income and disadvantaged backgrounds and their peers".
 - Target setting requirements on LAs for underperforming groups
 - National strategies & monitoring of LA and individual schools 'FSM gap'.

WARWICK

Research questions

- What are the relative size of the ethnic, gender and socio-economic gaps?
- Can SES *explain* ethnic gaps?
- Do equity factors interact, e.g. is there a particular issue of low attainment among White British working class boys?
- Can we better understand these gaps through linking in contextual data on pupil background (NPD, attendance, pupil voice)
- What are the 'school effects', can we better understand these?

WARWICK

The study LA

- Inner London LA, densely populated, high deprivation, one of the most ethnically and linguistically diverse LAs in England
 - Total population over 280,000, around 3,000 pupils per year grp
 - 73% of pupils from ethnic minorities: largest groups are Black African (29%), White British (24%) & Black Caribbean (12%)
 - 40% with EAL, over 150 languages spoken at home
 - 26th most deprived of the 150 LAs in England
 - Nearly one-third entitled to FSM, over two-thirds of children living in social housing, half of all children live in overcrowded households
- But a strong picture of improvement
 - For the last three years the KS2 results have improved faster than the national average, in 2009 the % L4 in English & Maths reached the national average (72%).

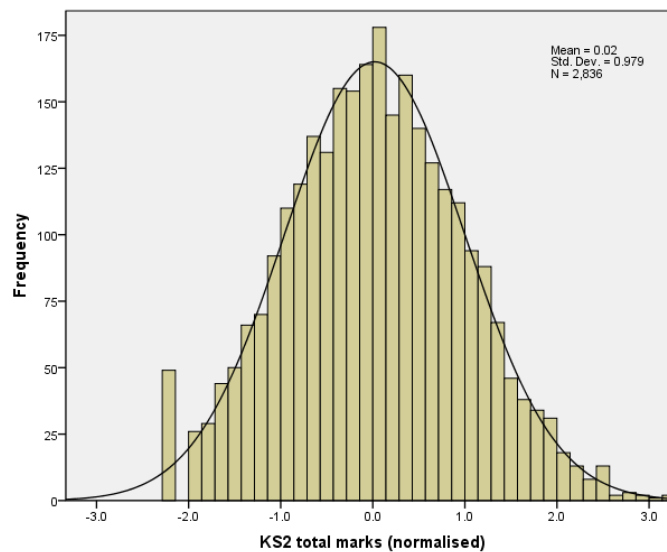
WARWICK

A note on the outcome data

- Includes all 2,875 pupils in 71 primary schools taking national KS2 tests (age 11) in 2008
- % achieving various thresholds (e.g. L4+ or L5+ in English & maths) are useful for communication purposes, but poor for modelling.
- Created a continuous measure of attainment by taking total test marks (0-280). To aid interpretation converted to a normal score (Mean=0, SD=1).

WARWICK

KS2 score



WARWICK

Socio-economic status (SES)

- Need a measure that reflects both disadvantaged and advantaged ends of the SES spectrum
- Entitlement to FSM
 - identifies families dependent on state benefits and is pupil based, but measures only disadvantage end of spectrum
- Income Deprivation Affecting Children Index (IDACI)
 - The proportion of children in tightly defined geographical areas (SOAs, 32,000 in England) in families entitled to a range of state benefits. Is more differentiated than FSM, but area rather than pupil based. Deciles are standardised to national norms.
- Have combined these to a single index

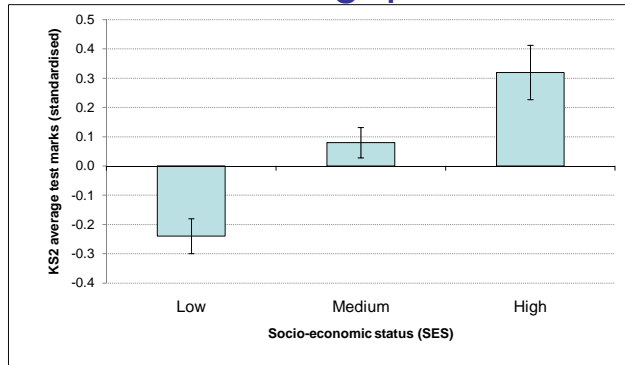
WARWICK

A measure of SES

SES	Definition	% of sample
Low	Entitled to FSM	33%
Medium	Not entitled FSM but living in one of the 20% most deprived neighbourhoods in England	50%
High	Not entitled FSM and living in a <i>relatively</i> advantaged neighbourhood (for the LA)	17%

WARWICK

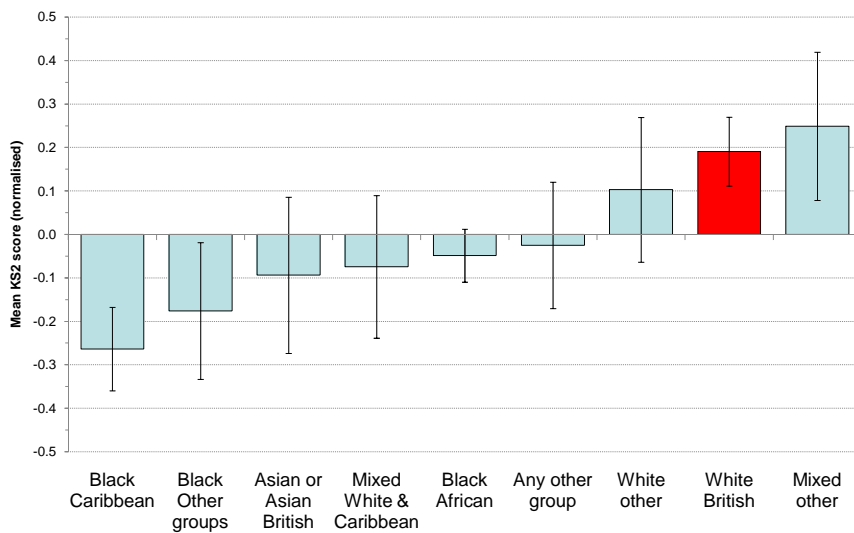
SES gap



SES	Description	KS2 average marks	Level 4+ English & maths	Level 5+ English & maths
Low	Entitled FSM	-0.24	62%	8%
Medium	No FSM & IDACI ≤20%	0.08	74%	15%
High	No FSM & IDACI >20%	0.32	76%	24%
All		0.01	70%	14%

WARWICK

Ethnic gaps



WARWICK

Gender gap

Mean KS2 test marks (normalised)

Subject	Boys	Girls	Gap
English	-.16	.18	-.34
Maths	.05	-.04	.09
Science	-.04	.05	-.09
Average	-.05	.06	-.11

WARWICK

Comparing attainment gaps

Variable	KS2 marks meanSD	L4+ En&Ma
SES		
Low	-.24 (0.91)	62%
Medium	.08 (0.97)	74%
High	.32 (1.01)	76%
<i>gap</i>	0.56	14%
Gender		
Boys	-.05 (1.01)	67%
Girls	.06 (0.97)	72%
<i>Gap</i>	0.11	5%
Ethnic group		
White British	.19 (1.05)	73%
Black African	-.05 (0.94)	70%
Black Caribbean	-.26 (0.86)	61%
<i>Gap - BAFR</i>	0.24	3%
<i>Gap- BCRB</i>	0.45	12%

WARWICK

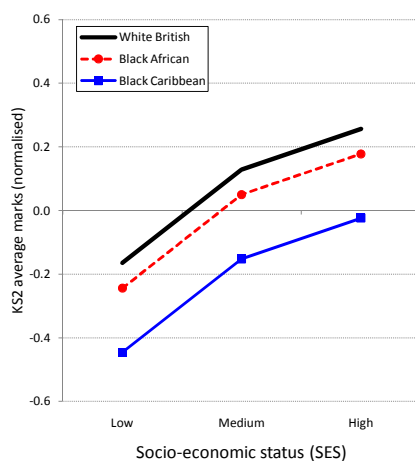
Confounding of Ethnicity & SES

		Socio-Economic Status (SES)			Total
		Low	Medium	High	
White British	N	205	291	193	689
	%	30%	42%	28%	100%
Black African	N	278	520	76	874
	%	32%	59%	9%	100%
Black Caribbean	N	123	170	53	346
	%	36%	49%	15%	100%
All other ethnicities	N	326	426	147	899
	%	36%	47%	16%	100%
Total	N	932	1407	469	2808
	%	33%	50%	17%	100%

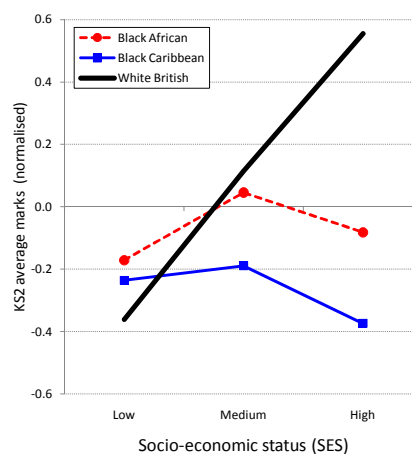
WARWICK

Interaction between ethnicity and class

Simple additive model



Interaction effect



WARWICK

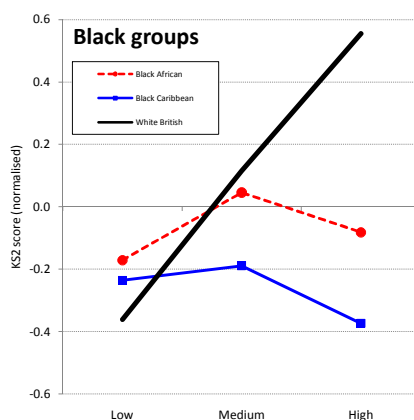
Control for contextual variables

- Age
- Gender
- SEN stage (SA, SAP, statemented)
- Mobility (entry in Y3/Y4 or in Y5/Y6)
- Absence (% sessions missed 2007/08)
- School composition
 - Size, % girls, %SEN, %mobile; % White British, %EAL, Church/Maintained, %FSM, mean IDACI

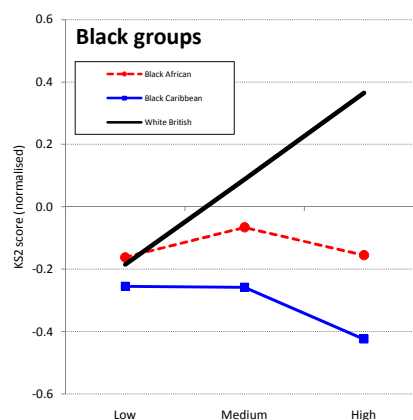
WARWICK

Control for contextual variables

Raw model



Contextual model



Note: Contextual model includes controls for age, gender, SEN, mobility, attendance and school composition variables. See Full report, pages 18-21.

WARWICK

Achievement summary

- **Effect of SES is strongest for White British pupils:** the highest achieving ethnic group (among high SES) and the lowest achieving group (among low SES)
- **Low attainment at age 11:** The lowest attaining groups are White British low SES and Black Caribbean pupils, implications for attainment at age 16 and beyond
- **Black pupils underachievement:** Black pupils from medium and high SES backgrounds (particularly boys) underachieve relative to similar White British.
- **Contextualisation:** reduces SES gap within White British by 40% (from 0.90 to 0.55 SD) but big gap remains. *Increases* the relative underachievement of Black pupils given their high attendance etc.

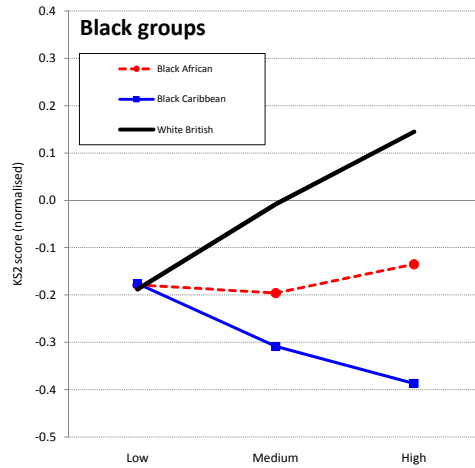
WARWICK

Progress age 7-11

- 90% of sample have KS1 (age 7) scores, average of reading, writing and maths scores used as a baseline.
- Do the SES and ethnic gaps just reflect differences already present at age 7, or do these gaps change (widen or narrow) over time?
- In the following graphic the **zero** horizontal line indicates average progress age 7-11

WARWICK

Progress age 7-11



Note: 90% had KS1 score. Includes controls for age 7 score, age, gender, SEN, mobility, attendance and school composition variables. See *Full report, pages 21-23.*

WARWICK

Pupil progress summary

- White British medium and high SES pupils pull ahead of White British low SES, SES gaps widens age 7-11
- Low SES pupils from all groups make equally poor progress, but additional ethnic penalty for medium and high SES black pupils who:
 - Make significantly less progress than their medium and high SES White British peers
 - In the case of medium & high SES Black Caribbean pupils, make even less progress than low SES peers.

WARWICK

Explanations for SES gap

- Relatively limited data on pupils and families here, but other studies (Strand, 2010; Strand & Winston, 2008) suggest key factors include:
 - Parents' educational aspirations for their child (to stay in FTE post 16 or to attend university);
 - Pupils' own educational aspirations;
 - Pupils' academic self concept;
 - Frequency of completing homework (effort & motivation).
- Explanation for BME underachievement hotly contested, but is clear that single factor focuses (on ethnicity OR class OR gender) are insufficient to account for the patterns of differential attainment

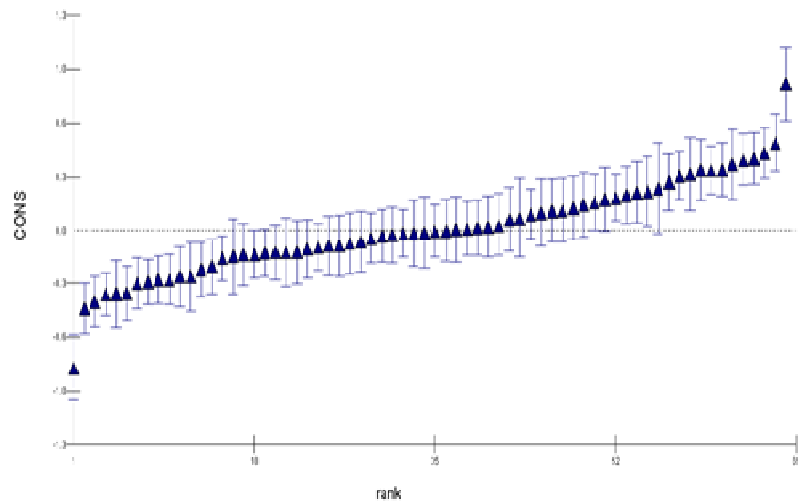
WARWICK

Explanations for gaps - School effects

- Two level (pupil & school) MLWiN model with random intercepts at school level
- Compared to 'null model', pupil prior attainment and background account for 60% of the variation in pupil attainment at age 11.
- But large 'school effects' remain. Over 0.60 SD difference in progress between less and more effective schools (those 1SD above and 1SD below the average value added)

WARWICK

Value added estimates age 7-11



WARWICK

1. Schools make a difference

	Mean KS2 score	
	FSM	Not FSM
Less effective schools (n=16)	-0.55	-0.06
Schools in average range (n=33)	-0.26	0.08
More effective schools (n=15)	0.21	0.54
All schools	-0.22	0.16

WARWICK

2. School composition no bar

	Mean KS2 score		
	FSM	Not FSM	%FSM
Less effective schools (n=16)	-0.55	-0.06	28%
Schools in average range (n=33)	-0.26	0.08	36%
More effective schools (n=15)	0.21	0.54	32%
All schools	-0.22	0.16	33%

Tested a wide range of school composition variables in addition to pupil level measures (*% girls, % White British, % mobile, % EAL, % SEN, % mobile, school size, denomination, mean IDACI score, mean age*) but none were significant.

WARWICK

3. School matters most for disadvantaged

	Mean KS2 score		
	FSM	Not FSM	%FSM
Less effective schools (n=16)	-0.55	-0.06	28%
Schools in average range (n=33)	-0.26	0.08	36%
More effective schools (n=15)	0.21	0.54	32%
All schools	-0.22	0.16	33%
Diff. (less vs. more effective)	0.76	0.60	

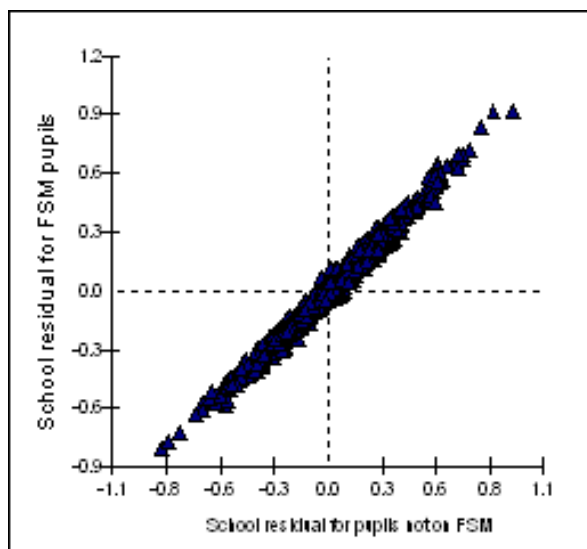
WARWICK

4. Limits to what schools can do re the gap

	Mean KS2 score			Gap
	FSM	Not FSM	%FSM	
Less effective schools (n=16)	-0.55	-0.06	28%	-0.49
Schools in average range (n=33)	-0.26	0.08	36%	-0.34
More effective schools (n=15)	0.21	0.54	32%	-0.33
All schools	-0.22	0.16	33%	-0.38
Diff. (less vs. more effective)	0.76	0.60		

WARWICK

5. Good schools are good for all



WARWICK

Why the school effect?

- These factors not revealed in the data available here
- Qualitative research suggests common features of good schools include:
 - strong leadership and direction, high levels of family engagement & support, perceived relevance of the curriculum, good use of data, additional support (breakfast/homework clubs, use of mentors) etc.
- DfE Extra Mile project aims to address socio-economic disadvantage (primary & secondary), excellent case studies of successful practices
<http://www.teachernet.gov.uk/teachingandlearning/schoolstandards/extramile/>

WARWICK

Conclusions

- Focus on low attainment of 'White Working Class' pupils is valid - but also remember Black working class.
- Should not obscure other concerns such as the underachievement of Black Caribbean pupils from otherwise advantaged circumstances.
- Schools do make a difference, although there are limits to what schools alone can achieve. There is no magic bullet for separate social or ethnic groups – effective schools appear effective for all.
- Further research needed to focus on root causes of SES gap in early years (0-5), family and neighbourhood factors, role of curriculum, school sorting and composition.

WARWICK

References

- **Strand, S. (2011).** The White British-Black Caribbean achievement gap: Tests, tiers and teacher expectations. *British Educational Research Journal, iFirst*.
- **Strand, S. (2011).** The limits of social class in explaining ethnic gaps in educational attainment. *British Educational Research Journal, 37, (2), 197-229*.
- **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*.
- **Strand, S. (2010).** *Banging your head on the ceiling: Socio-economic factors and their relationship to differential attainment in Southwark primary schools*. London: Southwark Childrens Services.
- <http://go.warwick.ac.uk/steve-strand>

WARWICK

References (Cont)

- The following approach the question from a very different methodological perspective, but draw similar conclusions:
 - Evans, G. (2006). *Educational failure and white working class children in Britain*. Basingstoke: Palgrave Macmillan.
 - Lambeth (2010). *White working class achievement: A study of barriers to learning in schools*. Lambeth: Lambeth Children & Young People's Service.
 - DfE Extra Mile Project to address socio-economic disadvantage (both primary & secondary schools)
<http://www.teachernet.gov.uk/teachingandlearning/schoolstandards/extramile/>
 - *National Strategies Narrowing the Gap*
<http://nationalstrategies.standards.dcsf.gov.uk/leadership/narrowingthegaps>

WARWICK