Pupil mobility, attainment and progress in secondary school

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PUPIL MOBILITY, ATTAINMENT AND PROGRESS IN SECONDARY SCHOOL

ABSTRACT

This paper is the second of two articles arising from a study of the association between pupil mobility and attainment in national tests and examinations in an inner London borough. The first article (Strand & Demie, 2006) examined the association of pupil mobility with attainment and progress during primary school. It concluded that pupil mobility had little impact on performance in national tests at age 11, once pupils' prior attainment at age 7 and other pupil background factors such as age, sex, special educational needs, stage of fluency in English and socio-economic disadvantage were taken into account. The present article reports the results for secondary schools (age 11-16). The results indicate that pupil mobility continues to have a significant negative association with performance in public examinations at age 16, even after including statistical controls for prior attainment at age 11 and other pupil background factors. Possible reasons for the contrasting results across school phases are explored. The implications for policy and further research are discussed.

PUPIL MOBILITY, ATTAINMENT AND PROGRESS IN SECONDARY SCHOOL

INTRODUCTION

Pupil mobility in this article refers to movement between or changes of school, either once or on repeated occasions, at times other than the normal age at which children start or finish their education at a school. The causes of pupil mobility are wide and varied. In some instances mobility may result directly from parental occupation/lifestyle (e.g., armed forces families, fairground employees, travellers etc.). In other instances mobility may be associated with more specific events such as parental job promotion/relocation, family break-up, exclusion from school, refugee/asylum seeker status etc. Whatever the cause, there is a widespread assumption that pupil mobility is disruptive to education, either directly by disrupting curriculum continuity and progression, or indirectly through domestic stress or poor social adjustment .

The interest in 'pupil mobility' in the UK in recent years has been driven by the concerns of schools and headteachers. A string of articles in the Times Educational Supplement (TES) from the late 1990's onwards highlights the concerns of headteachers around the association between pupil mobility and attainment (TES, 2000, 2001, 2002, 2003). Heads concerns are particularly focused on the adverse effect that mobile pupils may have on school performance (league) tables, formula funding, school target setting, the interpretation of benchmarking data and 'value-added' analyses of school performance. For example, it is difficult to evaluate the progress of a cohort (value added), or to make projections for their future attainment (target setting), when a significant proportion are likely to change school on a regular basis.

These concerns have been recognised by central government, who funded the Pupil Mobility in Schools Project (Dobson & Henthorne 1999; Dobson, Henthorne & Lynas, 2000). From January 2000 the Office for Standards in Education (OFSTED) started collecting data on the number of mobile pupils in all schools inspected, and also asked inspectors directly to "consider whether high pupil mobility affects the picture of the school's performance" (OFSTED 1999, p29) and "whether pupils' education has been disrupted by frequent changes of school" (OFSTED 1999, p36). OFSTED has published "Managing pupil mobility" (2002) which for the first time reports national

levels of pupil mobility with data collected on a consistent basis. The report noted that schools in inner London have double the level of mobility of schools elsewhere, and also noted that “all schools with mobility above 15% have average GCSE scores below the national average” (p6). In 2003, the Department for Education and Skills published “On the move: Managing pupil mobility” (DfES, 2003), which provides guidance for all schools on how they should handle “the challenge of pupil mobility” (p13) and in 2004 published “Ensuring the attainment of mobile pupils” (DfES, 2004). Data on pupil mobility is now included in each schools annual Performance and Assessment (PANDA) report, the national School Improvement Summary Report (SISR) and is one of the factors included in new ‘contextual value added’ assessments of school performance.

Pupil mobility and educational attainment

At first, the negative association between pupil mobility and attainment appears clear cut, both in UK and in US research (Dobson & Henthorne, 1999; Alston, 2000; Demie, 2002; Mott, 2002; DfES, 2003). However Strand (2002) and Strand & Demie (2006) have extensively reviewed the evidence in relation to pupil mobility and attainment and conclude that much of it fails to control for other pupil factors known to be related to attainment, such as socio-economic circumstances. The few large scale controlled studies in the area conclude there is only a weak relationship between mobility and school performance, once other confounding factors such as prior attainment or social-disadvantage are controlled (Douglas, 1964; Ferri, 1976; Schaller, 1976; Blane, 1985; Tymms, 1996; Alexander et al, 1996; Wright , 1999, Strand, 1997, 1999). For example in the UK, Strand & Demie (2006) reports the results of a study tracking the progress of 3,000 pupils in an inner London LA from the age of 7 through to end of KS2 national tests at age 11. The pupils who changed school during KS2 (mobile group) achieved substantially lower scores in national end of KS2 tests, compared to pupil who had remained in the same school for the whole of the key stage (stable group). However, when controls were included for baseline attainment at age 7, sex, socio-economic status, English language fluency and stage of Special Educational Need, changing school during the key stage had no effect on educational progress in reading, mathematics or science. The substantial association between pupil mobility and raw test scores largely reflected international migration rather than pupils changing school

within the UK. The issue is therefore the wider adjustment required to the whole context of the UK rather than 'change of school' as such.

Pupil mobility during secondary school

The above research relates predominantly to primary schools. What do we know about the specific impact of mobility on attainment in secondary school? There is substantially less literature on mobility as it effects older students. Again, much of the limited literature that does exist suggests a negative impact but is methodologically flawed because of absent or inadequate controls for social factors or prior attainment (e.g., Audette et al, 1993; Demie, 2002; Ewens, 2005; Engac, 2006). Better controlled studies produce conflicting results. Blane, Pilling & Fogelman (1985) report that mobility has no effect on reading or mathematics attainment at age 16 once prior attainment at age 11, sex, entitlement to FSM and social class are controlled. Blane (1985) also reports no overall negative impact of mobility, but a significant interaction with a small adverse effect of mobility on mathematics 'O' level attainment at age 16 for pupils from manual social class groups, but not those from non-manual groups. In contrast, Kendall (1995) reports the GCSE performance of pupils from 11 London LEAs who joined their schools during KS4 (4% of the sample) was significantly lower than their 'stable' peers, and remained significantly lower (although much less so) after controlling for reading score at age 11 and other social factors. Strand & Demie (2004) explored the impact of mobility on educational progress in an inner London LA separately for KS3 (age 11 to age 14) and KS4 (age 14 to age 16). The effect of mobility within each key stage was reduced by about half after control for prior attainment at the start of the key stage and all other pupil and school background factors, but remained significant at around -0.20 of a SD, equivalent to around 5 months of progress at KS3 or approximately half a GCSE grade at KS4. However data was not available to track progress over the full five year secondary school period from the end KS2 (age 11) right through to the end of KS4 (age 16).

US research is also mixed. Some research has indicated mobile pupils have an increased likelihood of high school dropout (Astone & McLanahan, 1994) and repeating grades (Simpson & Fowler, 1994), even after controlling for differences in socio-economic circumstances. In a well controlled study with a representative national sample from the US National Educational Longitudinal Survey (NELS), Rumberger &

Larson (1998) report that pupils who made two or more school moves between 8th grade (age 14) and 12th grade (age 18) and are twice as likely not to complete high school or obtain a graduate equivalence degree, even after controlling for 8th grade academic achievement , school type and family circumstances. In contrast, Straits (1987), analysed data for a national sample of 3,334 15/16 year olds in the USA, and reports an interaction effect with mobility appearing only to adversely effect the educational progress of children with less-educated parents, after controls for family income, sex and race. Norford & Medway (2002) report that frequent movers were no more likely to suffer depression, to have poor social support from friends or to participate in extracurricular activities in grades 10-12 than moderate movers or non-movers. Finally, in another well controlled study using NELS data, Swanson & Schneider (1999) report that mobility during grade 10-12 had a negative impact on grade 12 attainment, but mobility during grade 8-10 had no negative impact on grade 10 attainment, after comprehensive controls for prior attainment, sex and family background. In fact, they report that mobility during grade 8-10 had a *positive* impact on educational progress grade 10-12. They ascribe this to parents moving their children to better quality schools or schools that better match their children's academic or social needs.

In summary, while the evidence suggests the impact of changing school on attainment at primary school is small, the evidence in relation to secondary school age is more equivocal. Further research is clearly required. No study to date has used multiple regression analyses to systematically evaluate the influence of pupil mobility on attainment at age 16, while simultaneously controlling for factors including age, sex, special educational needs, stage of fluency in English, entitlement to free school meals, ethnicity and prior attainment at age 11. The current paper reports such research, conducted in the same LA where Strand & Demie (2006) reported no significant effect of pupil mobility on educational progress during primary school. The study addresses the following questions:

- Is there an association between pupil mobility and performance in public examinations at age 16?

- Does any association with examination performance remain significant after controlling for other factors known to be related to educational attainment such as sex, entitlement to free school meals, EAL pupils stage of English fluency or SEN?

- After controlling for prior attainment at age 11, is there any association between pupil mobility and educational progress during secondary school?

- To what extent can any observed effects be ascribed to change of school or to other factors related to mobility?

METHOD

The study LA

The study LA is located in inner London and is one of the most ethnically and linguistically diverse boroughs of Britain. The 2004 LEA census recorded the ethnic and language background of all 28,812 LEA pupils. African pupils form the largest ethnic group with 23%, followed by Caribbean 22%, White British 19%, mixed race 10%, other White 6% and Portuguese 5%. Overall, 81% of pupils in LEA schools belonged to black and other ethnic minority communities. Across the LEA over 145 languages are spoken at home, and at least 42 languages have more than 20 speakers, reflecting the different cultures, experiences and identities of the people in the community (Demie et. al. 2005). Pupil mobility is a substantial issue for the LA, with half of all primary and secondary schools having mobility rates in the national upper quartile (Strand & Demie, 2004, p67).

The sample

The sample consisted of the 1,329 pupils completing public examinations in summer 2004 and attending the 10 state-mainstream secondary schools in the LA. Pupils attending special schools or independent schools were not included. All secondary schools are 11-16 or 11-18 with standard admission in the autumn term of Y7. Further background data, for example prior attainment in national tests at age 11, were also available, drawn both from the Pupil Level Annual School Census (PLASC) and the LAs own data collection programme.

Measures of educational attainment

The outcome measures were results in national public examinations completed at the end of secondary school around the age of 16 years. The principal measure employed was the uncapped total points score (TPS) for each pupil which summarises a student's performance across all examinations completed. Each examination grade is given a points score according to the tariff published by the Qualifications and Curriculum Authority (Autumn Package, 2005). The 'new' points score system first introduced in 2004 was employed which included a wide range of examination in addition to GCSE. In addition, GCSE results in the three separate subjects of English, mathematics and science were also considered. For science both single award and double award results were combined into a single measure. Pupils who completed no examinations were still included in the sample, but with a TPS of zero.

A measure of attainment at age 11 was provided by national end of Key Stage 2 (KS2) tests in English, mathematics and science. The measure used was average marks across the three tests. Pupils who were disapplied or absent for all three tests were disregarded from the analysis.

In the multiple regression analyses, both KS2 average marks and the four main GCSE outcomes were subject to normal score transformations to (a) correct the non-normal distribution of scores for some outcomes so that parametric statistical analyses could be used; and (b) place all four examination outcomes on a common scale, each having a mean of 0 and a standard deviation of 1, making it easier to compare the relative impact of mobility across the four outcomes.

Pupil background measures

Other pupil level variables collected and included in the analyses were:

- *Pupil mobility*: 'stable' pupils are defined as those who entered their secondary school in autumn term of Y7 and therefore attended the same school for the whole of the five years of compulsory secondary schooling, through to and including public examinations at the end of Y11. For pupils other than these, the academic year in which they joined is recorded (Y7-Y11). As a summary measure, all those pupils that joined the school after the autumn term of Y7 are deemed mobile pupils.

- *Sex*: 0=girls, 1=boys.
- *Age*: the pupils age in months at the start of the month when GCSE examinations were completed, normalised to give mean of zero and SD of 1.
- *Entitlement to a free school meal (FSM):* 0=not entitled, 1=entitled. This measure is frequently used as an indication of low family income since only those on income support are entitled to FSM.
- *Ethnic group*: ethnicity data was drawn from PLASC and contrasted 12 groups against White British: White Other groups; Portuguese, mixed heritage, Black African, Black Caribbean, Black Other groups, Indian, Pakistani, Bangladeshi, Chinese and any other ethnic group.
- *Stage of Special Educational Need (SEN):* 0=no SEN; 1= school action (SA); 2=School Action Plus (SAP); 3=undergoing full assessment for a statement or has a statement of SEN.
- *Stage of fluency in English for pupils with English as an Additional Language (EAL):* 0= mono-lingual English speaker; 1=beginner; 2=considerable support; 3=some support; 4= fully fluent in English.

Terms were also created for interactions between the above factors. School aggregate measures for % entitled to FSM, % mobile, % EAL, average KS2 score etc. were also tested in the models. While these factors did add slightly to the explanatory power of the models, they were difficult to interpret, counter-intuitive and inconsistent in their effects across different outcomes. Because of the small number of schools in the sample (n=10) aggregate measures were not included in the analysis reported here.

RESULTS

Extent of mobility

The majority of pupils (1,059 or 79% of the sample) remained in the same secondary school for the whole of the five years from age 11 to age 16. However a substantial minority of pupils (276 or 21%) joined their secondary school after the autumn term of Y7. This is more than 2.5 times greater than the secondary school national average of 8.8% as reported in the National Secondary School Improvement Summary Report

(SISR)[1] (OFSTED, 2005). There was substantial variation in mobility between the 10 schools. While eight of the 10 schools had mobility rates at or above the national average, with the highest rate being 59%, two schools had rates of only 3.4% and 4.2% respectively.

Simple breakdown of age 16 examination results by mobility

Table 1 present a simple breakdown of age 16 examination results by year of joining secondary school. The performance of the stable group is higher than that of pupils joining at any time during the secondary phase. Figure 1 shows the most widely cited measure of examination success, the percentage of pupils achieving 5 or more GCSE passes at A*-C or equivalent, by the year in which the pupil joined their secondary school. Those pupils who joined in autumn Y7, and therefore spent all five year of secondary education in the same school, had the highest attainment, with sizeable decrements for those joining later, particularly for those joining in Y11. Similar data are reported by Demie (2002). Averaging across all non-standard admission dates, only one-third (33%) of 'mobile' pupils achieved 5+ A*-C passes, compared to over half (52%) of stable pupils. Similarly the lower threshold of 5 or more passes at grades A*-G or equivalent was achieved by only three-quarters (75%) of mobile pupils but by nearly all (95%) the stable group. The mean total points score of mobile pupils was 264 compared to 351 for the stable group, and mobile pupils achieved a mean GCSE grade 1.7, 1.3 and 2.3[2] grades below the mean for stable pupils for English, maths and science respectively.

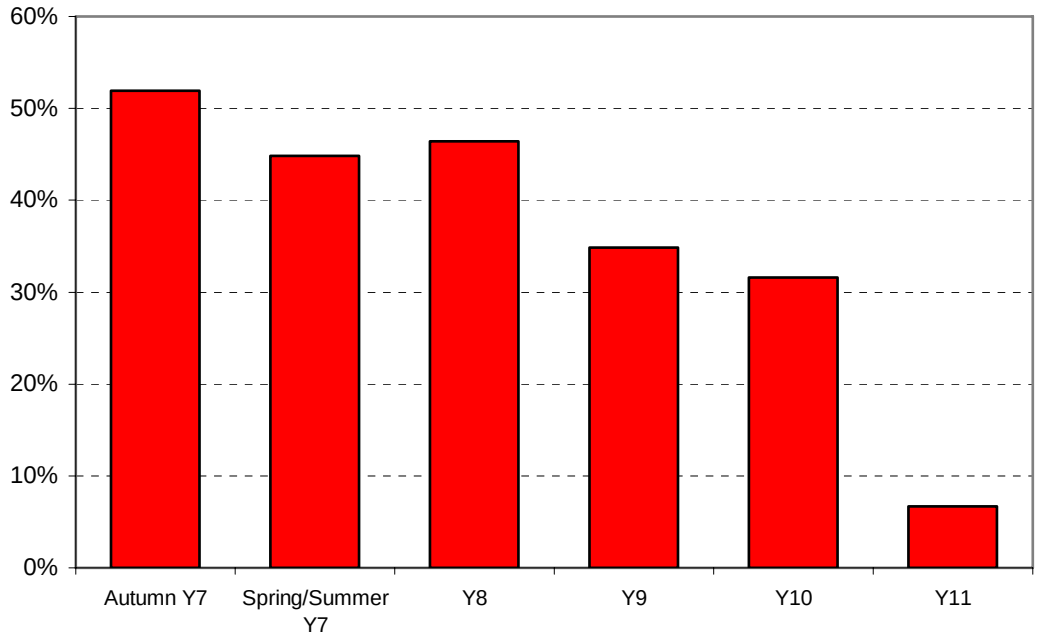
1. *This figure relates to casual admissions not to structural moves. For example, pupils starting school in Y9 would not be classed as mobile if the school was a middle school where all pupils started school in Y9.*
2. *GCSE grades were scored as follows: A*=8, A=7, B=6, C=5, D=4, E=3, F=2, G=1, U/X=0. GCSE English and maths scores could range from 0 to 8. GCSE science includes a double award which counts as two GCSEs, so GCSE Science scores can range from 0 to 16.*

TABLE 1: Mean and standard deviation of age 16 outcomes by year of joining secondary school and for all mobile and stable pupils

Year joined	N	Mean total points score	5 or more A*-C or equivalent	5 or more A*-G or equivalent	GCSE English grade	GCSE maths grade	GCSE Science grade
Stable (autumn Y7)	1053	351.3	52%	95%	4.79	4.15	6.93
	79.2%	*140.6*	*0.50*	*0.21*	*1.63*	*1.78*	*3.94*
Spring/Summer Y7	29	301.9	45%	83%	4.00	3.52	6.07
	2.2%	*172.1*	*0.51*	*0.38*	*2.22*	*1.92*	*4.52*
Y8	56	336.9	46%	95%	4.50	3.93	6.75
	4.2%	*133.7*	*0.50*	*0.23*	*1.67*	*1.82*	*3.90*
Y9	66	307.4	35%	88%	3.71	3.39	5.20
	5.0%	*168.7*	*0.48*	*0.33*	*2.13*	*2.28*	*4.26*
Y10	77	252.4	32%	79%	2.57	2.47	4.22
	5.8%	*154.2*	*0.47*	*0.41*	*2.58*	*2.61*	*4.90*
Y11	48	102.8	7%	24%	0.98	1.13	1.81
	3.6%	*120.9*	*0.25*	*0.43*	*1.98*	*2.21*	*3.48*
All mobile pupils	276	263.7	33%	76%	3.11	2.86	4.74
	20.8%	*168.9*	*0.47*	*0.43*	*2.47*	*2.43*	*4.55*
All pupils	1329	333.3	48%	91%	4.44	3.89	6.48
		151.0	*0.50*	*0.28*	*1.95*	*2.00*	*4.17*

Note: GCSE science includes a double award which counts as two GCSEs as well as a single award. This accounts for the higher mean and greater SD for science compared to English or maths.

FIGURE 1: Percentage of pupils achieving 5 or more A*-C passes by year of joining secondary school



Covariance of mobility with other pupil factors

Table 2 contrasts the mobile and stable groups in terms of a range of pupil background characteristics and reveal a number of significant associations. The mobile group contained a higher proportion of girls than the stable group, (*65% vs 57%, X^2=5.33, df=1, p<.021)*. Mobile pupils are much more likely to be entitled to a FSM than stable pupils *(48% vs. 34%, X^2=14.8, df=1, p<.001)*. They are substantially more likely to speak English as an Additional Language (EAL) (*60% vs. 35%, X^2=257 df=4, p<.001)*. They under-represent the White British group (8% vs. 23%) and over-represent Black African, Pakistani and White Other groups (see Table 2). They are much less likely to have a valid age 11 test score, only 27% compared to 94% of stable pupils (*X^2=592.0, df=1, p<.001*)[3]. For those who did complete KS2 tests, the KS2 average marks was significantly lower than for stable pupils (48.6 vs. 53.0, *t=2.30, df=1057, p<.025).* Give the substantial associations between mobility and these factors, a multiple regression analysis is required to attempt to identify the unique influence of mobility.

[3] *While 94% of those joining in Autumn Y7 had a KS2 score, this dropped progressively to 55% of those joining later in Y7, 30% in Y8, 32% in Y9, 18% in Y10 and only 13% of those entering in Y11. This is important to note because the multiple regression analysis includes only those pupils with a prior KS2 score.*

TABLE 2: Contrast between stable and mobile pupils on pupil background variables.

		Stable group		mobile group	
Variable	**Value**	**N**	**%**	**N**	**%**
gender	boy	451	42.8	97	35.1
	girl	602	57.2	179	64.9
Free School Meals	Not entitled	696	66.1	145	52.5
	entitled	357	33.9	131	47.5
Stage of English fluency	mono-lingual English	684	65.0	108	39.6
	Beginner			19	7.0
	considerable support	7	0.7	43	15.8
	some support	125	11.9	49	17.9
	fully fluent	236	22.4	54	19.8
SEN stage	No SEN	835	79.3	223	80.8
	School Action	103	9.8	20	7.2
	School Action Plus	78	7.4	28	10.1
	Full assessment/Statemented	37	3.5	5	1.8
ethnic group	White-British	239	22.7	21	7.6
	White-Other	73	6.9	32	11.6
	Portuguese	38	3.6	11	4.0
	Mixed White & Caribbean	35	3.3	3	1.1
	Mixed-Other	35	3.3	8	2.9
	Black-African	216	20.5	102	37.0
	Black-Caribbean	238	22.6	48	17.4
	Black-Other	81	7.7	9	3.3
	Indian	12	1.1	8	2.9
	Pakistani	6	0.6	7	2.5
	Bangladeshi	22	2.1	6	2.2
	Chinese	19	1.8	1	0.4
	Any Other	39	3.7	20	7.2
Age 11 tests	with a prior attainment score	985	93.5	74	26.8
	No prior attainment score	68	6.5	202	73.2
	KS2 English level 4+	664	68.3	44	60.3
	KS2 maths level 4+	655	67.4	42	58.3
	KS2 science level 4+	721	74.1	49	68.1
	average KS2 test marks	1059	53.0	74	48.6

Multivariate regression analyses

Multivariate multiple regression models were completed to explore the association between mobility and age 16 attainment while controlling for other measured pupil background variables. Listwise deletion was used to ensure the same pupils were included in all three models and the results were therefore comparable. The models are described below.

Model 1 - Simple association of mobility with age 16 attainment (base model)

The first model entered only mobility as an explanatory factor and so answers the question: is there any association between pupil mobility and examination attainment? The first line of Table 3 shows that pupil mobility has a strong and highly significant negative association with attainment. Mobile pupils have a mean TPS -0.41 of a SD below the 'stable' pupils. The negative association with mobility is also noted for the three separate subjects, although the co-efficient for science is smaller at -0.25 of a SD than for English (-.41) or maths (-0.37).

TABLE 3: Regression coefficients (and standard errors) for mobile pupils in three multiple regression models

Model	Mean TPS	GCSE English	GCSE maths	GCSE science
Simple: Only mobility included in the model	-0.41*** *(0.11)*	-0.41*** *(0.10)*	-0.37*** *(0.10)*	-0.25* *(0.11)*
Contextualised: control for all other pupil / school background variables	-0.33*** *(0.11)*	-0.33*** *(0.10)*	-0.27** *(0.10)*	-0.20 *(0.11)*
Pupil Progress: control for prior attainment plus all other pupil background variables and interactions	-0.31*** *(0.09)*	-0.31*** *(0.08)*	-0.24** *(0.08)*	-0.18 *(0.10)*

*Note: All analyses based on the 1053 pupils with both KS2 and exam results. *=p<.05, **=p<.01, ***=p<.001.*

Model 2 - Unique association of mobility with age 16 attainment (contextual model)

Pupil mobility is itself statistically associated with other pupil background factors, as shown in Table 2. The contextual model establishes whether there is an independent association between pupil mobility and attainment, after controlling for a range of other

educationally relevant variables. The outcomes of the model are shown in the second row of Table 3. For TPS, the association with mobility is reduced by around one-fifth (20%) from -0.41 to -0.33 of an SD. Similarly sized reductions are seen for each of the separate GCSE subjects. This reflects the fact that mobility is associated with other factors that have a negative association with attainment, most notably entitlement to FSM and EAL pupils stage of fluency in English. However even after controlling for these associations the negative impact of mobility is still statistically significant and, at around one-third of a SD, quite substantial.

Model 3 - Unique association of mobility with pupil progress age 11 to 16

This model includes all the pupil variables from model 2, plus pupils' average KS2 test marks at age 11. This model therefore determines whether pupil mobility has any association with *progress* during secondary school. The results are shown in the third row of Table 3. With the inclusion of prior attainment, the strength of the association between mobility and age 16 attainment is reduces a but further but remains substantial, at around a third of a SD for TPS and GCSE English and a quarter of a SD for GCSE maths. The coefficient for science was not significant.

Table 4 presents the regression coefficients for each pupil background variable derived from the value-added models for each age 16 outcome. Figure 1 graphs the effect sizes(d) for all variables with a statistically significant impact on age 16 total points score. Age 11 attainment was generally the strongest influence on age 16 attainment, pupils with above average KS2 test marks achieved higher exam scores than those with below average KS2 test marks (1.02 SD)[4]; girls made more progress than boys (0.21 SD); pupils entitled to FSM made less progress than those not entitled (-0.21SD); pupils from five ethnic groups made more progress than White British pupils, ranging from Black Caribbean (0.33 SD) to Indian (1.35 SD); and EAL pupils at stage 3 (some support) and stage 4 (fully fluent) made more progress than mono-lingual English speakers (around 0.36 SD on average). Finally there are four significant interaction effects, first while girls generally made more progress than boys, this was not true of Caribbean and Chinese girls compared to Caribbean and Chinese boys, and second

[4] *The effect size for KS2 corresponds to predicted scores one SD above and one SD below the mean, so is double the coefficient given in Table 4. See Strand (2004) for further details on the calculation and interpretation of effect sizes.*

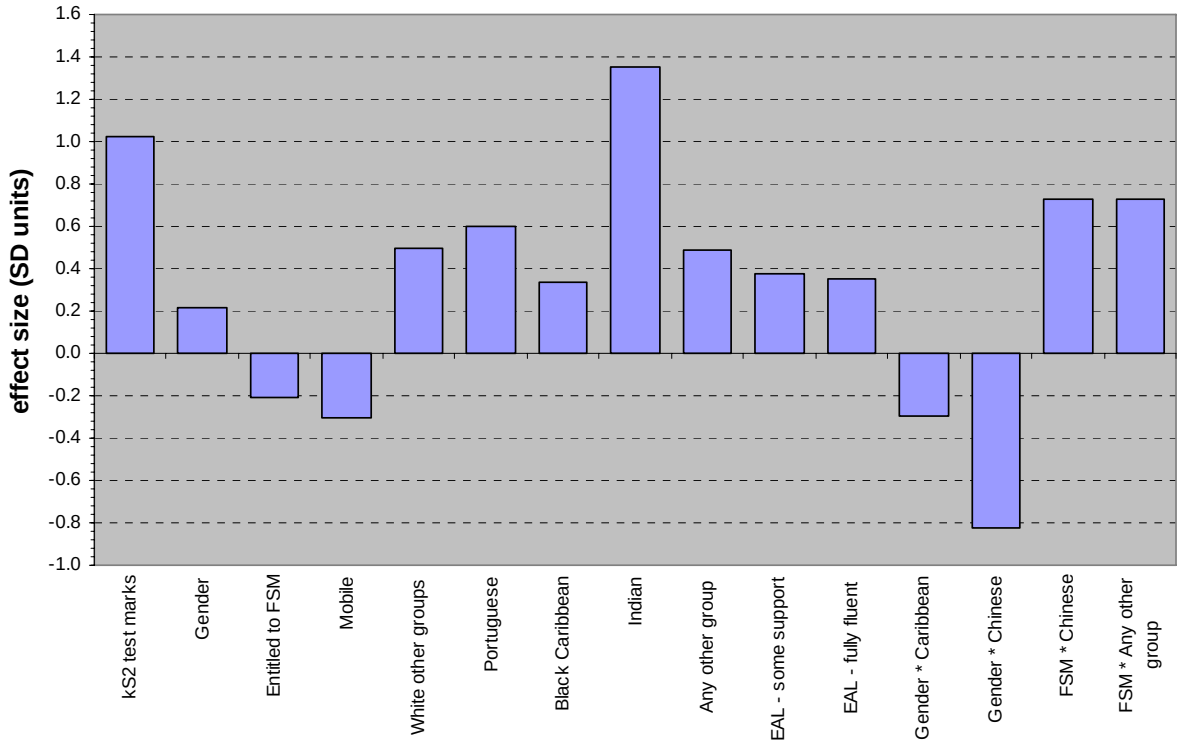
while pupils entitled to FSM generally made less progress than those not entitled to FSM, the reverse was true for Chinese and any other ethnic group.

TABLE 4: Regression coefficients and standard errors (SE) in a model of pupil progress from age 11 to age 16 for four separate examination outcomes.

	Total Points Score		English		Maths		Science	
Variable	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
(Constant)	-0.22	(0.07)	-0.03	(0.07)	0.06	(0.06)	-0.03	(0.08)
kS2 test marks (normal)	0.51 ***	(0.03)	0.49 ***	(0.02)	0.57 ***	(0.02)	0.38 ***	(0.03)
Age	0.00	(0.02)	0.02	(0.02)	-0.04	(0.02)	-0.06 *	(0.03)
Gender	0.21 *	(0.09)	0.18 *	(0.08)	-0.04	(0.08)	0.02	(0.1)
Entitled to FSM	-0.21 *	(0.1)	-0.30 **	(0.1)	-0.16	(0.09)	0.01	(0.12)
SEN - School Action Plus	-0.17	(0.09)	-0.34 ***	(0.08)	-0.15	(0.08)	-0.08	(0.1)
SEN - FA/Statemented	-0.21	(0.13)	-0.38 **	(0.12)	-0.13	(0.11)	-0.24	(0.14)
Mobility	-0.31 ***	(0.09)	-0.31 ***	(0.08)	-0.24 **	(0.08)	-0.18	(0.1)
White other groups	0.50 **	(0.16)	0.19	(0.15)	0.34 *	(0.14)	0.32	(0.18)
Portuguese	0.60 **	(0.21)	0.21	(0.19)	0.51 **	(0.19)	0.57 *	(0.24)
Mixed White & Caribbean	0.00	(0.21)	-0.15	(0.19)	-0.08	(0.19)	-0.10	(0.24)
Mixed other groups	-0.20	(0.2)	0.09	(0.18)	-0.17	(0.17)	-0.30	(0.22)
Black African	0.24	(0.13)	0.28 *	(0.12)	0.27 *	(0.11)	0.32 *	(0.14)
Black Caribbean	0.33 **	(0.12)	0.13	(0.11)	0.13	(0.11)	0.15	(0.14)
Black Other groups	0.17	(0.15)	0.32 *	(0.14)	0.24	(0.13)	0.21	(0.16)
Indian	1.35 ***	(0.27)	0.34	(0.24)	0.82 ***	(0.23)	0.64 *	(0.3)
Pakistani	0.79	(0.47)	0.38	(0.43)	0.87 *	(0.41)	0.20	(0.52)
Bangladeshi	0.35	(0.4)	-0.02	(0.37)	0.20	(0.35)	0.75	(0.45)
Chinese	0.44	(0.36)	0.24	(0.33)	0.73 *	(0.31)	-0.77	(0.39)
Any other ethnic group	0.48 *	(0.24)	0.10	(0.22)	0.43 *	(0.21)	0.21	(0.26)
EAL - beginner	-0.45	(0.53)	-0.48	(0.49)	-0.31	(0.47)	-0.58	(0.59)
EAL - considerable support	0.15	(0.29)	0.08	(0.27)	-0.11	(0.26)	-0.22	(0.33)
EAL - some support	0.38 ***	(0.1)	0.03	(0.09)	0.05	(0.09)	-0.21	(0.11)
EAL - fully fluent	0.35 ***	(0.08)	0.15 *	(0.08)	0.06	(0.07)	0.06	(0.09)
Gender * Caribbean	-0.29 *	(0.14)	-0.07	(0.13)	-0.12	(0.12)	-0.03	(0.16)
Gender * Pakistani	-0.81	(0.54)	-0.11	(0.49)	-0.97 *	(0.47)	-0.24	(0.6)
Gender * Chinese	-0.83 *	(0.36)	-0.50	(0.33)	-0.45	(0.31)	0.35	(0.4)
FSM * Pakistani	1.03	(0.54)	0.46	(0.5)	0.95 *	(0.48)	0.92	(0.6)
FSM * Chinese	0.73 *	(0.37)	0.17	(0.34)	-0.05	(0.32)	1.09 **	(0.41)
FSM * Any other ethnic group	0.73 **	(0.26)	0.57 *	(0.24)	0.22	(0.23)	-0.22	(0.29)
Multiple correlation=	0.66		0.67		0.71		0.50	
Adjusted R^2	40.4%		42.7%		48.6%		21.0%	

*Notes: *=p<.05, **=p<.01, ***=p<.001.*

FIGURE 2: Effect size for variables with a statistically significant association with progress between age 11 and age 16.



To summarise, mobility had a statistically significant impact on pupil progress age 11 to age 16 of around 0.30 of a SD. The impact was significant for TPS and in the GCSE results for English and maths, although it did not achieve statistical significance in science. But how substantial is this effect? One means of gauging this is to compare the effect size to other variables, and the impact of mobility is clearly larger than the impact of either gender or entitlement to a FSM. Another means is to convert the effect size measure back into the original units. For example, the SD of age 16 total points score is 151 (see Table 1), so an effect of size 0.31 SD is equal to approximately 50 points. This is equivalent to achieving an additional GCSE qualification at grade A, or to converting 8 GCSEs at grade D into 8 GCSEs at Grade C[5]. By the same logic, the effective size for each of the three GCSE subjects represents an average of half a GCSE grade in each of the three subjects.

Differentiation within the group of mobile pupils

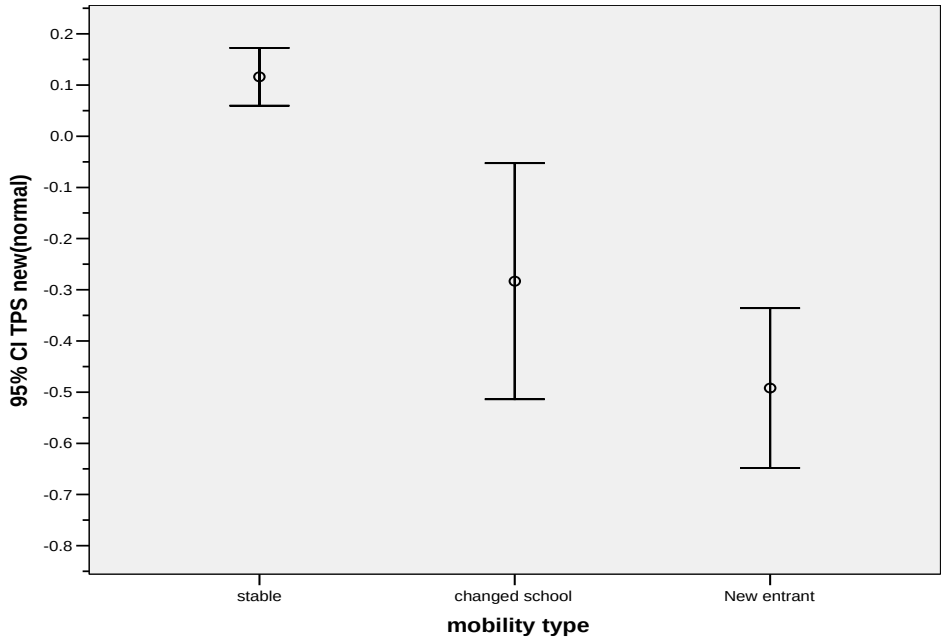
Previous research (Strand, 2002; Strand & Demie, 2006) has drawn a clear distinction between mobile pupils who have completed prior national tests in England and those who have not. In locating prior KS2 results in the current study the Department for

Education and Skills (DfES) School2School website was used, which contains the national test results for all pupils in state schools in England. Thus prior KS2 test results were located for any pupil who had transferred from a school in England. This included pupils who had been eligible for KS2 assessment, even if they were disapplied or were absent from the actual tests. Results were only found for just over one-quarter (27%) of mobile pupils. The remaining three-quarters of mobile pupils had presumably transferred in from outside England. As a shorthand notation, the mobile pupils who had a prior KS2 score are referred to as the 'mobile-school transfer' group while those who had no prior KS2 record are termed the 'mobile-new entrant' group. A small proportion of the later group may have entered the LA from the independent sector, or from other parts of the UK such as Scotland, Wales or Northern Ireland. However in Inner London the vast majority of these pupils are likely to be new arrivals to the UK. For example, around 70% of children aged 5-15 who moved into London during the year before the 1991 census came from overseas (Dobson & Henthorne, 1999, p59). The assumption of international migration is supported by the fact that approximately 51% of the 'new entrants' were at one of the three stages of learning English, compared to only 12% of the 'school transfer' group and only 12% of the 'stable' group (see Table 2).

There are differences in the age 16 attainment of the two groups of mobile pupils. The mean TPS of the 74 pupils in the 'mobile-school transfer' group is -0.26 SD, compared to -0.50 SD for the 198 'new entrants'. The results are presented in Figure 3. Both mobile groups differ significantly from the stable group, but the contrast between the mobile groups is not statistically significant, probably because of the small sample size of the school-transfer group. Nevertheless, the results highlight the importance of analysing the reasons for mobility rather than treating mobile pupils as an homogeneous group.

[5]. *The QCA new point scheme allocates as follows: A*=58, A=52; B=46; C=40; D=34; E=28; F=22; G=16, U/X=0.*

FIGURE 3: Mean TPS with 95% confidence bands separately for those mobile pupils with and without prior age 11 attainment scores.



DISCUSSION

The main conclusions are:

- Pupil mobility is strongly associated with attainment in age 16 examinations;

- the size of the association is reduced only slightly (by around 20%) when account is taken of the influence of other pupil background factors, such as sex, stage of SEN, EAL pupils stage of fluency in English, entitlement to Free School Meals and ethnicity;

- The association remains significant when prior attainment is included, indicating that as well as having lower attainment at age 16, mobile pupils make less *progress* during secondary school than their stable peers.

The continuing influence of pupil mobility on educational progress, even after controlling for pupil background, contrasts with research in the primary schools in this LA and in a neighbouring borough (Strand, 2002; Strand & Demie, 2006). In these studies the low attainment of mobile pupils could be explained by disadvantaging factors in their

background, such as low prior attainment at the start of the key stage, low family income, lack of fluency in the English language, a higher incidence and greater severity of special educational need. These risk factors were also important at secondary school, since the negative effect of mobility was reduced by 25% from -0.41 SD to -0.31 SD following appropriate controls, but they did not explain the mobility effect. What factor might account for these contrasting results across the primary and secondary phases?

Why is the impact of mobility greater in secondary than primary?

Nationally, levels of mobility are twice as high in primary schools as they are in secondary schools. The national SISRs (2005) indicate that 16.5% of primary pupils are mobile compared to only 8.8% of secondary pupils. This confirms the general perception that parents are more reluctant to move their pupils during secondary school than primary school, and the movement that does occur during secondary school may therefore reflect more extreme or unavoidable circumstances, circumstances which themselves are more likely to be associated with negative impacts on attainment (e.g., family breakdown, bereavement, temporary housing, school exclusion, international migration etc). Superficially, this explanation does not appear to fit the current data since the level of mobility in the LA primary schools is 24%, only slightly higher than the 21% reported here for secondary schools. However these overall levels of mobility conceal substantial differences in reasons for moving. In the secondary schools almost three-quarters of the mobility was related to international migration and only one-quarter was related to 'school-transfer' (see p18). In contrast in primary schools only one-third of the mobility was related to international migration and two-thirds was related to 'school-transfer'. Only the school-transfer groups can be included in the analysis of pupil progress since only they have prior attainment scores. Thus in the primary school study 25%[6] of those in the pupil progress analysis were mobile, compared to only 6.4% of those in the secondary school pupil progress analysis. In sum, the lack of a significant finding in the primary study may arise because the greater amount of mobility masks a strong negative association for a 'hard core' of mobile pupils.

6. *This figure includes 233 pupils transferring from Infant schools to Junior schools, but even if these pupils are excluded mobility for primary would still be 14.2%, more than double the secondary figure.*

Other explanations are also possible. The findings may relate to the different structure of primary and secondary schools. Secondary schools are much larger organisations and have more complex social structures. The curriculum is delivered by many teachers in specialised lessons, with complex curriculum and examination pathways, rather than the predominant primary model where a single teacher delivers all aspects of the curriculum and has a good overview of the academic and pastoral needs of each pupil. As a consequence of their size there are also more complex rules and routines and older pupils may have greater problems in adjusting to these strictures. The content of the curriculum also varies. Primary schools in England are largely focussed on basic skills in English and maths, and these may be acquired outside of school in community groups or the home. In contrast, the curriculum in secondary schools consist of much more specialised content which is difficult to learn outside of the school environment. Movement between schools, possibly with prolonged periods out of school between moves, may therefore have a bigger impact on performance in secondary school. For those that do enter from other countries, it may be that learning English is more difficult for older pupils, hampering their access to the curriculum and wider integration into the school. HMCI (2003) also commented that while primary schools were well resourced to cope with pupils at the very early stages of English acquisition, many secondary schools did not always provide adequate continuing help for more advanced bilingual learners, a group that were over-represented among the mobile pupils.

Whichever explanation is favoured, the results do reflect a limitation of this study, namely that we have no measure of the intensity of mobility, such as the total number of times pupils have moved school or the amount of time out of school between moves. It may be that those in secondary school have made more moves than those in primary, increasing the risk of a negative impact on attainment. Further research is required using improved measures of mobility.

There are also demographic changes at primary-secondary school transfer in this LA which should be noted. The typical Y6 cohort comprises 2,300 pupils while the typical Y7 cohort comprises only around 1,300 pupils. This represents an overall reduction of 40% in the cohort size, and is particularly pronounced for Black African and Black Caribbean boys (Strand, 2006a, p44). This reduction in the size of the state-maintained

school population is not unusual for inner London, where many families move out of the capital or opt for private education in the secondary phase, but may affect comparisons between the two phases to some (unknown) extent.

For all the above reasons the current results, while from a large sample, require further corroboration from other LAs or national data. This is being addressed through analysis of the 2004 national age 16 examination data for all 580,000 pupils in England. Preliminary analysis (Strand, 2006b) suggest that the current results are replicated nationally, and that mobile pupils do make less progress than their stable peers even after controls for age, sex, social disadvantage, SEN, EAL and ethnicity.[7]

Does pupil mobility cause low attainment?

It is not possible to determine causal relationships from correlational data. However, where a pupil is having difficulties then changing schools could well exacerbate the problem. A review of research on family relocation suggests the risk of impairment to children's psychosocial adjustment are mediated by: negative parental attitudes to the move, moving due to family disruption (e.g. divorce or bereavement); poor premove adjustment; number of moves and distance of moves (Humke & Schafer (1995). Similarly change of school will not necessarily result in poor attainment, the reason for the move of school will be an important mediating factor. Where the mobility reflects new entrants to England then the association with attainment is most pronounced. These pupils faced substantial social, cultural and linguistic adjustments, beyond a simple change of school. More generally, children of refugees, asylum seekers or labour migrants who have just entered the country directly from overseas, and pupils admitted following family breakdown, domestic difficulties, the imprisonment of a parent or school problems such as exclusion may all be more likely to experience problems. At the same time there is little evidence to demonstrate a negative impact of mobility for children of professional and managerial workers and other high income groups who are mobile for career reasons (Dobson & Henthorne, 1999) or children of military families (Marchant & Medway, 1987). The individual circumstances of pupils, the attitudes and

7. *However it is notable that the results do NOT support the current Contextualised Value Added (CVA) definition of mobility, which specifically excludes pupils joining in July-September of Y8 or Y9. The results suggest a consistent impact of -0.2 SD for mobile pupils entering at any point after September of Y7.*

actions of parents and the effectiveness of the school support for newcomers are all relevant to pupils' adjustment and progress.

Resource implications

Whatever the association between pupil mobility on attainment, there are significant resource implications for the effective management of mobility in the school and classroom. Substantial time has to be spent on enrolment, assessment, obtaining records, arranging SEN or language support, getting to know the parents and child, integrating the new pupil with their classmates and fostering a feeling of class identity. One factor that is likely to influence the educational outcomes for mobile pupils is the effectiveness of the school's policy, planning and procedures for integrating new pupils (OFSTED, 2002). Schools with high levels of pupil mobility need to be resourced to meet this challenge.

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