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Analysis of Pupil Attendance Data in Excellence in Cities (EiC) Areas: An Interim Report

Marian Morris and Simon Rutt
National Foundation for Educational Research

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EXECUTIVE SUMMARY

Introduction

Levels of school attendance during the years of compulsory education have long been the focus of Government interest and, in recent years, a range of initiatives have been introduced, many under the National Behaviour and Attendance Strategy, with the aim of reducing truancy and improving pupil attendance and behaviour. Schemes such as the targeted Behaviour Improvement Programme (BiP) are key elements of that strategy. Pupil behaviour and attendance are also central to initiatives such as Excellence in Cities (EiC). This report provides an analysis of the pupil-level data that was collected by a consortium (led by the NFER) for the national evaluation of EiC. During this evaluation, attendance data was provided, on an annual basis, by secondary schools agreeing to take part in the longitudinal evaluation of EiC. The data included in this report was in the form of authorised and unauthorised absence (in half-day sessions) on young people in Year 7 through to Year 10 in 343 schools over a two-year period.

Key findings

- The majority of pupils in the 343 participating EiC schools (67 per cent) had no recorded periods of **unauthorised absence**. However, for a minority of pupils (just over five per cent) incidents of unauthorised absence amounted to up to two weeks per school year. For over one per cent this absence amounted to half a term or longer. Indeed, the majority of incidents of unauthorised absence were accounted for by a *minority* of pupils. Nearly half of the recorded sessions of unauthorised absence were attributable to just two per cent of the pupils in the study.
- For just over one-third of the pupils in the EiC schools **authorised absences** amounted to one week or less per year, although less than one-tenth of pupils had no authorised absences. However, nearly five per cent of the pupils in the EiC schools, and more than five per cent of those in Year 10 had authorised absence periods that equated to approximately half a term (80 half-day sessions).
- Once pupil and school background characteristics for young people in Year 9 and Year 10 were taken into account:
  - **Higher** than average levels of **authorised absence** were seen amongst girls; young people with special educational needs; those in receipt of free school meals; and those in comprehensive schools (for 11-16 year olds).
  - **Higher** than average levels of **unauthorised absence** were seen amongst young people with special educational needs; those in receipt of free school meals; girls in girls' schools in Year 9; Year 10 pupils in BIP schools, low performing schools, or in EiC schools in the south-west.

- **Lower** than average levels of **authorised** absence were seen amongst young people with lower levels of fluency in English; young people who were bi-lingual non-native speakers; young people in London schools, small schools (Year 10 only) and Specialist schools (Year 10 only). Amongst the 2002 cohort low levels of absence were also seen amongst Black African pupils (Year 9 and Year 10) and Year 9 pupils from Chinese, Black Caribbean, Black other, Indian and other minority ethnic groups.
- **Lower** than average levels of **unauthorised** absence were seen amongst young people with lower levels of fluency in English and girls who were bi-lingual non-native speakers; Year 9 Black African and Chinese pupils (2002 data); Year 9 pupils in Beacon schools.

- Once pupil and school background characteristics were taken into account, there appeared to be an association between absence rates and pupil attainment:
  - **Higher** than average levels of **absence** (authorised and/or unauthorised) were associated with **reduced attainment** at GCSE in Year 11, with a particular impact on boys; reduced probability of achieving five or more GCSEs at A*-C; increased likelihood of not obtaining any GCSEs at grade C or above; reduced attainment in Key Stage 3 English (and, for authorised absence alone, Key Stage 3 Maths), with a particular impact on boys.

The Research

Individual pupil-level data from over 60,000 young people in EiC schools was used to provide descriptive statistics on authorised absence, unauthorised absence and total attendance and to facilitate multilevel analyses in order to address some key research issues. These included:

- The extent to which there are any identifiable variations in authorised and unauthorised absence rates between young people from different year groups and with different background characteristics.
- The general pattern of absence and attendance amongst different groups of pupils.
- The relationship (if any) between attendance and attainment and the extent to which such relationships were apparent once individual pupil and school characteristics and pupil prior attainment were taken into account.
- The extent to which it was possible to identify a critical threshold at which levels of absence might affect attainment.

Individual authorised and unauthorised absence data, collected from EiC schools over a period from 2000/01 to 2001/02, was matched to pupil-level data held on the Pupil Level Annual School Census (PLASC) and the National Pupil Database (NPD) in order to obtain background characteristics of the pupils (including prior attainment) and to the NFER's Register of Schools to obtain school level information (such as school type, location, age range, status and aggregated attendance and attainment figures).

Findings from descriptive statistics

For just over one-third of the pupils (33.9%) in the 343 participating EiC schools **authorised absences** amounted to one week or less per year (10 half day sessions), although fewer than 10% of pupils had no authorised absences. Just over half of the pupils (54%) had no more than two weeks of authorised absence during the academic year, although there was some variation by year group, with lower levels of such absence amongst the younger pupils.

However, nearly five per cent of the pupils (4.5%) in the EiC schools, and more than five per cent of those in Year 10 (5.3%) had authorised absence periods that equated to approximately half a term (80 half day sessions). On average, one per cent of all of the pupils in such schools were absent for the equivalent of at least one school term or longer, although there was some minor variation by year group, with less than one per cent of Year 7 pupils (0.7%) and more than one per cent of Year 10 pupils (1.2%) having such long periods of authorised absence.

The story for **unauthorised absence** was rather different. The majority of pupils (67%) had no recorded periods of unauthorised absence, while a further 23.4% had incidents of unauthorised absence amounting to no more than one week. For over five per cent of pupils, however, unauthorised absence amounted to up to two weeks and for over one per cent this absence amounted to half a term or longer. Indeed, for some pupils (0.5%) this unauthorised absence was equivalent to more than one-third of the academic year, with two pupils (one in Year 9 and one in Year 10) having attended school for less than one week in the year.

The majority of incidents of unauthorised absence were accounted for by a *minority* of pupils. Nearly half of the recorded sessions of unauthorised absence (44.9%), for example, were attributable to just two per cent of the pupils in the study, each of whom had missed 51 or more half-day sessions (equivalent to five or more weeks in the academic year). Well over half of the missed half-day sessions were attributable to less than one twentieth of the pupils in the study: 59.8% of the recorded unauthorised absence was accounted for by 3.8% of the pupils.

Combined authorised and unauthorised absence data was available for 55,072 young people and was used to derive an **attendance** variable. This suggested that overall mean attendance was significantly higher (at 91.98%) in 2002 than in 2001 (at 91.54%). There were also some significant differences between year groups. Overall attendance was significantly higher in Year 7 (92.8%) than in all other year groups. Attendance in Year 8 (91.9%) was significantly higher than in Year 9 or 10. However, there were no statistically significant differences between young people in the older year groups, although attendance amongst the Year 10 2002 cohort (91.8%) was significantly higher than amongst those who had been in Year 10 in 2001 (91%).
The outcomes of analysis of variance suggested that there were some significant differences in authorised and unauthorised absence and attendance

rates between different groups of young people (girls had higher rates of authorised absence than boys, young people in Specialist schools had lower rates of authorised absence than other pupils and young people from Black African backgrounds had a lower incidence of unauthorised absence than their peers from all other groups, for example). However, this analysis did not indicate whether there were any variations between the absence rates of Black African girls in Specialist schools compared with Black African girls in non-Specialist schools, for instance. In order to examine the relative impact of background variables on attendance a multilevel modelling approach was taken.

Findings from the modelling process: authorised and unauthorised absence and attendance

Using hierarchical modelling techniques, models were constructed for authorised and unauthorised absence and attendance for young people in Years 9 and 10. Across both cohorts, and once other pupil and school characteristics were taken into account, there appeared to be a significant association between special educational needs and poor attendance, with comparatively high levels of both authorised and unauthorised absence particularly amongst those on stage 3 of the SEN Code of Practice. Young people who were non-native speakers of English had a better record of attendance than those for whom English was a first language. In both Year 9 and Year 10, those who were becoming familiar or confident with English and those who were fluent bi-lingual speakers had better attendance records (and a lower incidence of both authorised and unauthorised absence) than native English speakers. Indeed, amongst girls (whose attendance records were generally poorer than boys), those who were bi-lingual had better attendance records than all other girls and than boys.

Findings from the modelling process: the relationship between authorised and unauthorised absence and attainment

There appears to be a significant association between authorised and unauthorised absence and attainment at both Key Stage 3 and Key Stage 4, even when pupil and school level characteristics have been taken into account. At Key Stage 3, this was most evident in relation to achievement in English (where the impact of both authorised and unauthorised absence was negatively associated with attainment), while at Key Stage 4 higher levels of absence (though, particularly, higher levels of unauthorised absence) were negatively associated with lower capped eight scores, a reduced probability of attaining five A* to C grades and an increased probability that young people would not obtain any GCSEs above a grade D. Across both Key Stages, the impact of pupil absence on attainment was more apparent amongst boys than amongst girls, particularly in relation to unauthorised absence.

An examination of the coefficients for authorised and unauthorised absences suggest that higher levels of unauthorised absences may be more significant in determining the extent to which young people's performance at GCSE is affected by their attendance in school. However, it is worth acknowledging

that the impact of such non-attendance may have a bigger impact on boys' achievement than on girls' achievement.

Discussion

The statistical techniques that have been used in the analyses that are presented here do not imply causality. We cannot tell from the associations identified above whether the increased likelihood of low levels of attainment with higher levels of absence are the direct result of poor attendance, whether poor prior attainment has led to poor attendance or whether some other factor, not included in the modelling process, is having a significant impact.

For example, in the case of boys' apparent underperformance by comparison with girls with the same level of attendance, prior attainment and other characteristics, one would need to question whether this means that boys need more time in school in order to achieve the same results as their female peers, or whether, perhaps, other factors (particularly attitudinal factors) are contributing to this difference in outcome. In the analyses conducted for the national evaluation of EiC, one of the key factors associated with higher levels of performance was a positive attitude to education: girls were significantly more likely than boys to be associated with such attitudes.

It should also be noted that the apparent relationship between pupil absence and pupil attainment is not even. While a decrease in absence may be marked by an increase in the probability of higher level attainment, an increase in absence (particularly in authorised absence) does not necessarily lead to a concomitant decrease in such a probability. At Key Stage 3, the relationship between absence and attainment also appeared to vary by subject, with unauthorised absence, for instance, being more particularly associated with lower levels of performance in English than in Maths. Moreover, the apparent relationship between pupil absence and pupil attainment was not evident across all pupil groups: the higher rates of attendance amongst Black Caribbean pupils than amongst White UK pupils in Year 9 were not reflected in higher attainment at Key Stage 3.

To what extent, therefore, is it possible to find answers to the questions posed at the outset of this analysis? Clearly, there are variations in authorised and unauthorised absence rates between young people from different year groups and with different background characteristics and these rates vary by school type and location. There appears to be some relationship between attendance and attainment, although as indicated above, this relationship is not straightforward. However, further exploration is needed to ascertain both whether the impact on attainment of different levels of non-attendance can be quantified, and whether there is a critical threshold of attendance, beyond which levels of absence might affect attainment significantly. These questions will be explored in cross-sectional and longitudinal models to be developed once the NPD data for 2002/03 has been incorporated.

1. INTRODUCTION

Levels of school attendance during compulsory education have long been the focus of government interest and, in recent years, a range of initiatives have been introduced (many under the National Behaviour and Attendance Strategy) with the aim of reducing truancy and improving pupil attendance and behaviour. Schemes such as the targeted Behaviour Improvement Programme[1] are key elements of that strategy, while initiatives such as Excellence in Cities[2] have a focus on attendance and behaviour.

While existing data collection strategies enable the Department for Education and Skills (DfES) to monitor the impact of such schemes on aggregated attendance at a school level, the lack of nationally available pupil-level attendance data has hampered any detailed understanding of the relative impact of such schemes on groups of pupils, or, indeed, of any comprehensive awareness of the relationship between attendance levels and pupil attainment. The absence of such data means, moreover, that it is difficult to identify the critical points at which a *lack* of appropriate intervention to tackle poor attendance may lead to reduced attainment amongst vulnerable young people.

In order to address these needs, therefore, it was felt that there would be value in exploring further the data that had been collected (by a consortium led by the National Foundation for Educational Research [NFER] for the national evaluation of Excellence in Cities [EiC]). During this evaluation, attendance data was provided, on an annual basis, by secondary schools agreeing to take part in the longitudinal evaluation of EiC. This data, in the form of authorised and unauthorised absence (in half day sessions) was available on a pupil by pupil basis for each young person in the seven participating cohorts, for a time period from the academic year 2000/2001 to the academic year 2002/2003. A breakdown of the various cohorts, by size, year group and academic year is provided in Chapter 2.

Individual pupil-level data was used to provide both descriptive statistics on authorised absence, unauthorised absence and total attendance and to facilitate more complex multilevel analyses, in order to address some key research questions. These included:

- To what extent are there any variations in authorised and unauthorised absence rates between young people from different year groups and with different background characteristics? Do these rates vary by school type or location?
- What is the general pattern of absence and attendance amongst different groups of pupils?
- What is the relationship (if any) between attendance and attainment? Can the impact on attainment of different levels of non-attendance be

quantified? Is any relationship so identified still apparent once individual pupil and school characteristics and pupil prior attainment are taken into account?

- Is it possible to identify a critical threshold at which levels of absence might affect attainment significantly?

At the outset, it should be recognised that the profile of the EiC cohorts is not identical to that of all secondary schools nationally. To begin with, EiC schools are predominantly located in metropolitan areas (only 26% of EiC schools are in non-metropolitan areas) and represent those schools in which there are higher levels of socio-economic and educational disadvantage. Compared with non-EIC schools, for example, they have higher proportions of pupils who are entitled to free school meals (49% of EiC schools are in the top quintile of pupil eligibility, compared with 19% of all secondary schools) or who speak English as an additional language (13% of EiC schools are in the top quartile – where more than 50% of the population are identified as speakers of English as an additional language [EAL] – compared with only four per cent of all schools nationally). Mean levels of aggregated attainment are generally lower than in non-EiC schools. Only ten per cent of EiC schools are in the highest band of achievement at Key Stage 3, compared with 18% of non-EiC schools, while 41% are in the lowest band in contrast with only 20% of non-EiC schools. The picture is similar at Key Stage 4, with eight per cent of EiC schools in the highest band of achievement, compared with 15% of non-EiC schools, and 39% in the lowest band, in comparison with 20% of non-EiC schools.

Table 1 and **2** in **Appendix 1** provide a picture of the representativeness of the EiC schools (and of the participating EiC schools) compared with all schools in England. The figures are based on a consideration of two sets of cohorts (the Year 9 and Year 10 cohorts in 2000/01) and on those young people (and their schools) for whom complete data on authorised and unauthorised absence has been received (some 55,072 pupils from 343 schools). From this data it is evident that the sample of participating schools is more broadly representative of EiC schools than of the population of schools as a whole, even though the sample more closely represents all schools nationally in terms of local authority type (a higher proportion – 32% – of responding schools were in non-metropolitan areas). Despite these differences between EiC and non-EiC schools, the data that is available from the participating EiC schools provides a clearer picture of the distribution patterns of individual pupil attendance and of the apparent relationships between pupil attendance and pupil attainment than has been possible to access prior to this date.

The report as a whole draws on attendance data provided by schools for **77,630** pupils in 2001 and **42,583** pupils in 2002 and includes data on young people in Year 7 through to Year 10. Individual authorised and unauthorised absence data was matched to pupil-level data held on PLASC (the Pupil Level Annual School Census) and the NPD (National Pupil Database) in order to obtain background characteristics of the pupils (including prior attainment) and to the NFER's Register of Schools to obtain school level information

(such as school type, location, age range, status and aggregated attendance and attainment figures).

The report provides a series of different analyses that were carried out in June 2004.

- **Chapter 3** provides an overview of the distribution patterns and a series of descriptive statistics on the attendance patterns of young people in Years 7 to 11, split by a range of different pupil background characteristics (such as male/female, ethnic background, EAL, level of fluency in English, young people in receipt of free school meals, stage of special educational needs [SEN] and prior attainment at Key Stage 2) and school characteristics (including location, size, age range, status and involvement in the Behaviour Improvement Programme).
- **Chapter 4** examines the apparent relationship between pupil-level attendance and attainment that emerges from simple logistic modelling, prior to the inclusion of a full set of background characteristics.
- The findings from a set of multilevel models developed for the Year 9 and Year 11 cohorts for 2001 and 2002 are reported in **Chapter 5**. Three models were constructed for each year group and these comprise authorised absence, unauthorised absence and total attendance. Background variables at pupil and school level were included in these models.
- **Chapter 6** presents the findings from a series of multilevel cross-sectional models exploring the relationship between attendance and attainment outcomes for young people in 2001 and 2002. For pupils in Year 9, these include models examining the relationship between attendance in Year 9 and attainment outcomes for average level at Key Stage 3, average level in Key Stage 3 mathematics and average level in Key Stage 3 English. For pupils in Year 11, these include models that examine the relationship between attendance in Year 10 and best (or capped) eight GCSE scores, five or more GCSEs at A* to C and lower levels of attainment, specifically young people achieving no GCSEs above grade D (some 23% of the 15,886 cases in the Year 11 cohort).

The outcomes of these analyses are used to re-examine the apparent links between attendance and attainment and to question whether there are any potential critical thresholds for attendance. A later report will present the findings from further analyses to test these associations, using cross-sectional and longitudinal multilevel analyses, incorporating individual attendance and attainment data for the 2003 cohorts, once the latter becomes available to the research team.

Prior to the presentation of these various analyses, **Chapter 2** provides an overview of the various datasets that have been included in the study.

[1] The Behaviour Improvement Programme was established in July 2002 as part of the government's Street Crime Initiative and forms a central element of the £470,000,000 National Behaviour and Attendance Strategy. Currently operating in 60 local education authority areas (34 were included in Phase 1 of the programme with 26 further authorities incorporated in 2003), the package of measures available to LEAs include behaviour audits to identify schools' behaviour and attendance issues, systems to assist schools in monitoring attendance (such as electronic registration systems) and a series of strategies aimed at reducing truancy (including school-based educational welfare officers) and providing appropriate support to schools, staff, pupils and parents. In addition to staff training, these support measures include Behaviour and Education Support Teams (who can identify and provide intensive multi-agency help to pupils at risk of developing emotional, social and behavioural problems), Learning Mentors, 'Safer School Partnerships' (where a dedicated full-time police officer is based in selected schools) and 'extended schools' (with activities outside of the school day).

[2] Launched in September 1999, Excellence in Cities is one of the Government's key policy initiatives for redressing educational disadvantage and under-performance in schools located within the most deprived urban areas of England. It has adopted a multi-strand approach to raising standards and performance and emphasises the use of locally based partnership approaches and targeted provision. While some of the policy strands (such as Excellence Action Zones, City Learning Centres, Learning Support Units, Beacon Schools and Specialist Schools) operate at either area or whole school level, others (the Gifted and Talented Strand and Learning Mentors) are specifically targeted at the individual student.

2. THE DATA SETS

As part of the national evaluation of EiC, the first pupil surveys took place in 2000/01 in EiC Phase 1 and 2 areas and in non-EiC comparison areas. Attendance data for pupils in the schools involved in those surveys was first collected from schools in the autumn of that year and represented pupil attendance during the *previous* academic year. The structure of the survey cohorts for whom attendance data is available is indicated in **Table 2.1** below. This demonstrates that, for the academic years 2000/01 and 2001/02, individual pupil attendance data is available for young people in Years 7 to 10. However, since all post-16 contact with pupils was via home addresses and not via schools, no attendance data was collected for Year 11 pupils (the multilevel models used Year 10 attendance data for the GCSE analysis). This report, compiled in June 2004, draws on the Year 7 to 10 attendance data for 2000/01 and 2001/02. A forthcoming report will draw on data collected on young people's attendance in 2002/03.

Table 2.1 Cohorts for whom individual attendance data is available

Cohorts	Year Group			
	Pre-EiC data	EiC Data		
	1999/2000 [a]	2000/2001 [b]	2001/2002 [c]	2002/2003 [d]
Cohort 1	–	7	8	9
Cohort 2	7	8	9	10
Cohort 3	8	9	10	
Cohort 4	9	10		–
Cohort 5	10		–	–
Cohort 6	–	–	7	8

Notes: [a] Collected in autumn 2000. [b] Collected in autumn 2001
[c] Collected in autumn 2002. [d] Collected in autumn 2003

In order to maximise the amount of data available for the analyses, all young people for whom a school provided individual data on authorised and unauthorised absence on pupil data forms were included in the initial matching process with PLASC and NPD (this data was included in the distribution analyses – see **Table 2.2**). At each stage of the descriptive data analysis, young people for whom the relevant individual data item (such as prior attainment at Key Stage 2) was missing were omitted. Such young people remained eligible for inclusion for subsequent analyses, however. This means that the population value (n) for the descriptive statistics varies across and within each year group, depending upon the amount of missing data. The total numbers of young people to which this stage of the analysis had access is indicated in **Table 2.3**.

Table 2.2 Total available data

Year	Numbers
2001	77,630
2002	42,583
Total	**120,213**

Table 2.3 Data included in distribution analyses

Distribution Data (attendance)	Authorised	Unauthorised
Year 7	13,822	12,076
Year 8	19,310	25,007
Year 9	14,074	12,678
Year 10	13,782	13,142
Total	**60,988**	**62,903**

In order to be included in the multilevel modelling process, however, *all* relevant background data (at pupil and school level) needed to be available. The number of young people for whom the various models were constructed is therefore lower than the number for whom the basic descriptive statistics were derived. **Table 2.4** provides an overview of the numbers of young people included in each of the various attendance and attainment models. The models were constructed to measure the relationship between attendance in Year 10 and outcomes at the end of Year 11 (Key Stage 4/GCSE) and the relationship between attendance in Year 9 and outcomes at the end of Year 9 (Key Stage 3).

Table 2.4 Data included in multilevel modelling

Multilevel models	Year 9	Year 11
Authorised absence	14,704	13,081 [a]
Unauthorised absence	12,352	12,913 [a]
Attendance	12,647	12,913
Key Stage 3 average level	9,710	–
Key Stage 3 English	9,456	–
Key Stage 3 Maths	9,584	–
Capped 8 GCSEs	–	10,878
5 A*–C grades	–	10,532
No GCSEs above grade D	–	11,101

[a] Absence Data for Year 10 is included because Year 11 data is not available

The numbers of pupils in each of the models is sufficiently large, therefore, to enable the research team to have confidence in the relative reliability of the findings.

3. KEY FINDINGS: DESCRIPTIVE STATISTICS

This Chapter examines some of the significant variations that exist within the data between the attendance patterns of young people from different backgrounds and from different schools. It also explores the *apparent relative impact* of each of these individual background factors on authorised and unauthorised absence and attendance for young people in Year 9 and Year 10, prior to an examination of the relative apparent impact of both authorised and unauthorised absence on attainment outcomes at Key Stages 3 and 4 (see Chapters 4 and 6).

The descriptive statistics presented in this chapter incorporate individual pupil-level data covering the whole of each academic year (that is, a mean of 380 half-day sessions[3]) to provide a picture of the distributions for authorised absence, unauthorised absence and attendance. National DfES statistics for this period, based on five half terms, suggests that, in 2000/01, the percentage of half-day sessions missed by pupils for authorised absence was 8%, while that for unauthorised absence was 1.1%.[4] Figures for 2001/02 were marginally lower, with authorised absence at 7.63% and unauthorised absence at 1.09%.[5] These figures, however, provide only an indication of mean aggregated absence across the whole secondary school population and do not provide any indication of the extent of absence. Are all young people engaged in unauthorised absence, for instance? What proportion of pupils have extended periods of absence, whether authorised or unauthorised? Is the picture of authorised and unauthorised absence the same for all year groups, or for all groups of young people? The pupil-level data collected for the national evaluation of EiC provides further insights into these questions.

For just over one-third of the pupils (33.9%) in the 343 participating schools **authorised absences** amounted to one week or less (10 half-day sessions), although fewer than 10% of pupils had no authorised absences (such low levels of authorised absence was more evident in Year 8 and Year 9 than in either Year 7 or Year 10). Just over half of the sample population (54%) had no more than two weeks of authorised absence during the academic year, although there was some variation by year group, with lower levels of such absence amongst the younger pupils. However, nearly five per cent of the pupils (4.5%) in the EiC schools, and more than five per cent of those in Year 10 (5.3%) had authorised absence periods that equated to approximately half a term (80 half-day sessions). On average, one per cent of all of the pupils in

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3 It should be noted that the school-level data that is analysed by the DfES to present national statistics is based on fewer half-day sessions, since the DfES data does not include information for the second half of the summer term.

4 http://www.dfes.gov.uk/rsgateway/DB/SFR/s000371/tab04.xls [online]. Accessed 09-08-04.

5 http://www.dfes.gov.uk/rsgateway/DB/SFR/s000434/tab005.xls [online]. Accessed 09-08-04.

such schools were absent for the equivalent of at least one school term or longer, although there was some minor variation by year group, with less than one per cent of Year 7 pupils (0.7%) and more than one per cent of Year 10 pupils (1.2%) having such long periods of authorised absence.

The story for **unauthorised absence** was rather different. The majority of pupils (67%) had no recorded periods of unauthorised absence, while a further 23.4% had incidents of unauthorised absence amounting to no more than one week. For over five per cent of pupils, however, unauthorised absence amounted to up to two weeks in the year and for over one per cent this absence amounted to half a term or longer. Indeed, for some pupils (0.5%) this unauthorised absence was equivalent to more than one third of the academic year, with two pupils (one in Year 9 and one in Year 10) having attended school for less than one week in the year.

The data also indicates that the majority of incidents of unauthorised absence were accounted for by a *minority* of pupils. Nearly half of the recorded sessions of unauthorised absence (44.9%), for example, were attributable to just two per cent of the pupils in the study. Each of these pupils had missed 51 or more half-day sessions (equivalent to five or more weeks in the academic year). Well over half of the missed half-day sessions, indeed, were attributable to less than one twentieth of the pupils in the study: 59.8% of the recorded unauthorised absence was accounted for by 3.8% of the pupils.

In order to obtain further insights into patterns of attendance and non-attendance, the data was split by sex (and by sex within year group), by EAL, by level of fluency in English, by young people in receipt of free school meals, by stage of SEN and by prior attainment at Key Stage 2 or Key Stage 3, as appropriate. Analyses by ethnic background were also carried out, although, for Year 10, these included the data from the 2002 datasets alone. Prior to the implementation of PLASC, the range of different coding mechanisms that were used by schools and local education authorities (LEAs) meant that no comparable ethnicity data was available at pupil level for the 2001 dataset.[6] **Tables 3.1** to **3.9** present a summary of the data for each of these different groups of pupils. It should be noted that, for clarity, statistically significant differences have *not* been indicated in these figures. The significant differences between groups (for example, male/female, those eligible for free school meals/not eligible for free school meals) and between multiple groups (such as between young people from different ethnic groups or from different types of schools) for authorised and unauthorised absence and attendance rates are summarised in the text.

[6] The analyses for the national evaluation of EiC in 2001 made use of young people's self-reported ethnicity in returned pupil questionnaires (subsequent analyses were able to make use of back-matching to PLASC for all year groups other than Year 10). Since not all of the young people included in the analysis for this report returned questionnaires, it was not considered appropriate to include ethnicity data for the 2001 Year 10 cohort.

Table 3.1 Authorised and unauthorised absence by: year group and sex

	Authorised absence			Unauthorised absence		
2001	**Median**	**Mean**	**Standard deviation**	**Median**	**Mean**	**Standard deviation**
Year 7	15	23.3	26.9	0.0	4.3	14.9
Year 8	18	25.8	28.7	0.0	3.4	16.2
Year 9	19	27.5	30.5	0.0	6.2	21.7
Year 10	20	28.7	32.2	0.0	6.8	25.4
2002						
Year 7	18	24.3	24.2	0.0	2.9	8.5
Year 8	17	25.6	29.8	0.0	3.5	11.4
Year 9	19	25.4	25.7	1.0	7.8	22.5
Year 10	21	27.8	25.6	0.0	3.6	11.4
2001 and 2002 combined						
Year 7	16	23.7	25.7	0.0	3.7	12.6
Year 8	18	25.7	29.1	0.0	3.4	15.4
Year 9	19	26.4	28.2	0.0	7.0	22.1
Year 10	20.5	28.4	30.1	0.0	5.8	22.1
All years and year groups	18.0	26.0	28.4	0.0	4.7	18.1
Male						
Year 7	16.0	23.9	26.0	0.0	4.0	12.7
Year 8	18.0	25.9	29.7	0.0	3.9	16.4
Year 9	19.0	25.8	27.7	0.0	5.8	17.1
Year 10	19.0	26.7	29.1	0.0	6.6	25.3
Female						
Year 7	17.0	24.2	25.8	0.0	3.8	12.8
Year 8	18.0	26.1	28.3	0.0	3.5	15.9
Year 9	20.0	27.5	28.4	0.0	8.1	25.6
Year 10	22.0	29.8	30.8	0.0	5.0	20.1

Prior to testing the data for significant differences between young people from different backgrounds, however, the difference between the aggregated absence data for 2000/01 and that for 2001/02 was tested in order to check whether any of the subsequent findings might be due simply to a year effect.

A difference at the $p<0.005$ level was noticed between **authorised absence** in 2000/01 (a mean of 26.3 half days) and 2001/02 (a mean of 25.6 half days). Yet, given the number of cases (60,988), this difference (of less than half a day) may be regarded as marginal. Indeed, a further investigation of the differences indicated that there was a significant difference in authorised absence in only one year group, Year 9, in which such absence was significantly lower in 2001/02 – 25.4 half days compared with 27.5 half days in 2000/01.

No overall statistically significant differences were found between the academic years in terms of **unauthorised absences** (a mean of 4.73 half days in 2000/01, compared to a mean of 4.65 half days in 2001/02). However, it

was noted that unauthorised absences were significantly lower in Year 7 (2.9 half days) and Year 10 (3.6 half days) in 2001/02 by comparison with Year 7 (4.34 half days) and Year 10 (6.8 half days) in 2000/01. By contrast, unauthorised absences were significantly *higher* in Year 9 in 2001/02 (7.8 half days) than in Year 9 in 2000/01 (6.2 half days). This is the year group in which, as already indicated, authorised absences were lower in 2001/02.

At this stage of the analysis, it is not possible to say whether or not the observed differences between the two Year 9 cohorts and between the Year 9 cohorts and other cohorts are educationally significant or not. This will be explored during the multilevel modelling process (see Chapters 5 and 6).

Table 3.2 Attendance rates: by year group and sex

	Attendance rates		
2001	**Median**	**Mean**	**Standard deviation**
Year 7	95.3	92.6	8.6
Year 8	94.7	91.8	9.8
Year 9	94.0	91.0	10.4
Year 10	94.2	90.7	11.6
2002			
Year 7	94.7	93.0	7.0
Year 8	94.7	92.1	9.6
Year 9	93.7	91.2	9.9
Year 10	93.7	91.8	7.9
2001 and 2002 combined			
Year 7	95.0	92.8	8.0
Year 8	94.7	91.9	9.8
Year 9	93.9	91.1	10.2
Year 10	93.9	91.0	10.6
All years and year groups	94.5	91.7	9.7
Male			
Year 7	95.0	92.6	8.1
Year 8	94.5	91.7	10.1
Year 9	93.9	91.5	9.3
Year 10	94.2	91.2	10.9
Female			
Year 7	95.0	92.8	7.9
Year 8	94.5	91.8	9.4
Year 9	93.7	90.6	10.9
Year 10	93.9	90.8	10.5

Combined authorised and unauthorised absence data was available for 55,072 young people and was used to derive an attendance variable. This suggested that overall mean attendance was significantly higher (at 91.98%) in 2002 than in 2001 (at 91.54%) at the $p<0.0001$ level. There were also some significant differences between year groups. Overall attendance was significantly higher in Year 7 (92.8%) than in all other year groups, while attendance in Year 8

(91.9%) was significantly higher than in Year 9 or 10. However, there were no significant differences between young people in these older year groups, although attendance amongst the Year 10 2002 cohort (91.8%) was significantly higher than amongst those who had been in Year 10 in 2001 (91%).

In the following sub-sections, the pattern of authorised and unauthorised absence and pupil attendance is explored and the apparent relative impact of individual factors (such as sex, ethnicity and special educational needs) is explored.

3.1 Differences in Rates of Absence and Attendance: Variations by Pupil Type

Tables 3.3 to **3.7** present a summary of the basic descriptive data for absence and attendance by pupil background characteristics. Analysis of variance techniques were used to assess the significance of the differences noted in the means between the groups. However, caution should be exercised in ascribing variations solely to the specific pupil variable in which they are observed. Authorised and unauthorised absence rates were significantly higher amongst young people in receipt of free school meals, for example, but this does not mean that all such young people would have higher rates of absence.

It should also be noted that, while Tables 3.4 and 3.5 indicate the differences between different ethnic groups by sex, the analysis of variance that was used at this stage was simply by ethnic group. While analysis of variance techniques facilitate an exploration of the attendance differences between young people from a range of minority ethnic groups, it does not allow an investigation of the differences in attendance between girls from Indian backgrounds in an all-girls' school and Indian boys in a mixed school. Such differences are more correctly assessed through the use of multilevel modelling (see Chapters 5 and 6).

Table 3.3 Authorised and unauthorised absence: by sex, free school meals, Special Educational Needs (SEN), English as an Additional Language (EAL) and level of English fluency

	Authorised absence			Unauthorised absence		
Sex	**Median**	**Mean**	**Standard deviation**	**Median**	**Mean**	**Standard deviation**
Male	18	25.6	28.3	0.0	4.8	18.0
Female	19	26.9	28.5	0.0	4.9	19.1
Free school meals						
Eligible	26	34.4	33.6	0.0	8.6	25.2
Not eligible	17	23.8	25.9	0.0	4.2	16.6
SEN status						
Statemented (4,5)	24	34.2	38.1	0.0	7.7	24.2
SEN non-statemented (1,2,3)	24	33.2	33.4	0.0	8.6	24.7
Non-SEN (0)	17	24.4	26.7	0.0	3.8	15.6
EAL						
EAL	13.5	20.3	23.1	0.0	5.6	17.8
not EAL	20.0	27.3	29.0	0.0	4.4	17.4
English fluency						
New to English	10.0	16.3	18.4	0.0	3.5	7.9
Becoming familiar	13.0	18.6	19.7	2.0	5.3	10.1
Becoming confident	14.0	21.2	25.4	1.0	4.7	13.3
Fluent user	13.0	19.9	22.4	0.0	6.2	21.5
First language	19.0	27.1	28.7	0.0	4.4	17.9
Prior attainment						
Key Stage 2						
Below level 2	25.0	32.8	32.1	2.0	12.2	39.3
Level 2	25.0	32.6	30.7	1.0	9.2	24.9
Level 3	23.0	30.7	29.2	1.0	9.1	26.1
Level 4 and above	18.0	25.0	25.5	0.0	5.2	17.3
Key Stage 3						
Below level 3	28.0	40.5	37.5	2.0	16.8	36.3
Level 3	28.0	37.7	36.6	2.0	11.8	29.9
Level 4	27.0	33.9	29.8	0.0	7.1	22.4
Level 5 and above	17.0	23.4	23.8	0.0	2.2	9.2

Table 3.4 Authorised absence: by sex and ethnicity

	Male			Female		
	Median	Mean	Standard deviation	Median	Mean	Standard deviation
UK White	20	26.2	26.9	22	28.3	26.7
White European	18	22.7	19.4	17	21.1	20.2
White, other (known)	23	27.8	24.5	23	28.5	22.6
Black, Caribbean	15	21.9	25.8	13	19.3	23.6
Black, African	7	11.9	14.2	8	13.5	17.9
Black, other	17	22.3	21.3	15	23.2	27.4
Indian	11	17.1	20.6	11	19.0	29.1
Pakistani	15.5	21.5	19.6	20	27.2	25.9
Bangladeshi	14	18.9	17.6	22	27.7	25.4
Chinese	6	11.1	13.5	5	8.8	10.0
Other (known)	16	22.0	26.6	13	19.8	22.6
Parent/pupil preferred not to say	26	35.2	27.5	32.5	40.2	31.3
Information not obtained	30.5	40.1	37.9	30	42.3	39.9
Mixed – White and Black Caribbean	–	–	–	11.5	21.9	31.5

Table 3.5 Unauthorised absence: by sex and ethnicity

	Male			Female		
	Median	Mean	Standard deviation	Median	Mean	Standard deviation
UK White	0.0	3.5	10.8	0.0	5.2	18.6
White European	0.0	6.0	17.4	0.0	4.6	14.5
White, other (known)	1.0	6.0	13.9	1.0	4.2	7.9
Black, Caribbean	0.0	7.5	20.3	1.0	5.1	13.3
Black, African	0.0	3.2	6.6	0.0	3.0	6.3
Black, other	1.5	10.7	29.5	3.0	14.3	35.8
Indian	0.0	3.2	8.2	0.0	3.9	8.4
Pakistani	1.0	4.0	10.1	2.0	5.5	11.8
Bangladeshi	4.0	8.0	12.9	2.0	5.3	11.0
Chinese	0.0	0.4	1.1	0.0	2.2	6.3
Other (known)	0.0	4.4	10.2	0.0	6.3	23.0
Parent/pupil preferred not to say	2.0	7.4	12.7	2.0	7.4	14.5
Information not obtained	3.0	9.8	16.8	10.0	46.2	62.1
Mixed – White and Black Caribbean	–	–	–	5.0	8.8	10.8

3.1.1 Authorised Absence

From the descriptive analyses, the following statistically significant findings emerged in relation to authorised absence.

- Authorised absence was higher amongst girls (26.9 half days) than boys (25.6 half days).
- Authorised absence was higher amongst those for whom English was a first language. Amongst the 39,277 young people in this category, the mean level of authorised absence was 27.1 half days. By contrast, such absence was significantly lower amongst all other groups (by 10.8 half days for new users, by 8.49 half days for those becoming familiar with the language, by 5.93 half days for those who were becoming confident and by 7.2 half days for those who were fluent users).

  On a different but related measure, exploring the use of **EAL**, the pattern was similar, with a significant difference between native speakers (27.3 half days) and non-native speakers (20.3 half days).
- Authorised absence was higher amongst those in receipt of **free school meals** (34.4 half days) than those who were not in receipt of them (23.8 half days).
- Authorised absence was significantly different between those on all stages of the **SEN** code of practice (10,163 young people) compared to those who were not (43,240 young people). Young people without any recorded special needs had a mean authorised absence of 24.45 half days. Such absence increased from stage 1 (30.76 half days) to stage 4 (49.27 half days) but then decreased to 33.43 half days for those at stage 5 – fully statemented – (1,267 young people). This level of authorised absence amongst young people with a statement of special needs was statistically different from the attendance of those without special needs and from those who were on stages 3 and 4 (though not 1 and 2) of the special needs code of practice.
- Authorised absence was significantly different between young people (across all age groups) with different levels of **attainment at Key Stage 2**. This was evident whether the score under scrutiny was for attainment in Key Stage 2 English, Maths or Science.
  - For example, when prior attainment at Key Stage 2 English was explored, the difference was equivalent to around 5 half days per level, with young people who were at level 3 at the end of Key Stage 2 (11,126 young people) subsequently recording a mean of 30.35 half days authorised absence while those on level 5 (6,773) had a mean of 19.29 half days. These differences were also evident for those young people (598) who were on level 2 by the end of Year 6 (35.13 half days) and those who were classified as 'below level' (2,052) who had a mean of 34.82 half days.
  - The differential associated with prior attainment at Key Stage 2 Maths was between three and six half days.
  - The differential associated with prior attainment at Key Stage 2 Science was between four and six half days.

- Amongst the **2002 cohort**, authorised absence was significantly higher amongst young people of **White UK heritage** (27.26 half days) than amongst young people of Black Caribbean (20.25 half days), Indian (17.97), Bangladeshi (22.23), Black African (12.51) or Chinese (9.85) heritage. Black Caribbean pupils, Indian, Pakistani and Bangladeshi pupils had significantly higher authorised absence than Black African pupils. The mean level of authorised absence amongst the 148 Chinese pupils was significantly lower than that amongst all other groups.

For authorised absence, therefore, a picture emerges of higher absence amongst girls, amongst native English speakers and (for the 2002 cohorts) those of white UK heritage, amongst those on free school meals, amongst lower attainers and amongst those with some level of special educational needs (but not yet statemented).

3.1.2 Unauthorised Absence

From the descriptive analyses, the following key findings emerged in relation to unauthorised absence:

- There was **no significant difference** in unauthorised absence between **girls** (4.93 half days) and boys (4.79 half days).
- Unauthorised absence was higher amongst those in receipt of **free school meals** (8.60 half days) than those who were not (4.19 half days).
- Non-native speakers of English had a significantly higher level of unauthorised absence (5.62 half days) than native speakers (4.36 half days). However, when levels of fluency were examined, unauthorised absence was only significantly different between those who were **fluent users** (6.21 half days) and those for whom **English was a first language** (4.40 half days). Although other differences were evident (the mean level of unauthorised absence amongst those becoming familiar with the language was 5.32 half days, for instance), these differences were not significant.
- Unauthorised absence was significantly different between those on all stages of the **SEN** code of practice (9,745 young people) compared to those who were not (39,830 young people). Young people without any recorded special needs had a mean unauthorised absence of 3.79 half days. Unauthorised absence for those on the SEN code of practice increased from stage 1 (6.44 half days) to stage 3 (11.66 half days) but then decreased to 10.8 half days for those at stages 4 and 5 (7.54 half days). Those on stage 4 only differed (statistically) from those without any record of special needs, while those on stage 5 differed from those without SEN and those at stage 3.
- Unauthorised absence was significantly different between young people (across all age groups) with different levels of **attainment at Key Stage 2**. This was evident whether the score under scrutiny was for attainment in Key Stage 2 English, Maths or Science. This equated to a difference of around three half days between the lower levels of attainment, but only one and a half days for those at the higher levels (between level 4 and level 5).

- There were **few significant differences** in unauthorised absence between young people from different **minority ethnic backgrounds in 2002**. However, those from Black other heritage (405 pupils) had a mean of unauthorised absence that was significantly higher than all other minority ethnic groups (12.54 half days). Those from Bangladeshi backgrounds (694 pupils) had a significantly higher level of mean unauthorised absence (6.99 half days) than the 889 young people from Black African (3.03 half days) and Indian (3.51 half days) backgrounds (1,793 pupils).

The picture for unauthorised absence, therefore, differed in some respects from that for authorised absence. Significantly higher levels of unauthorised absence were observed amongst those in receipt of free school meals and lower attainers, as in the case of authorised absence. However, there was no sex difference in unauthorised absence, whilst those who were fluent users (though not first language speakers) of English were associated with higher levels of unauthorised absence than native speakers. Young people with any level of special educational needs (including those with statements) had higher levels of unauthorised absence than young people without any such identified need. Amongst the 2002 cohorts, high levels of unauthorised absence were more evident amongst young people from Black other backgrounds than those from White UK or European backgrounds or other minority ethnic groups.

3.1.3 Overall Attendance

Tables 3.6 and 3.7 illustrate the pattern of attendance data for the 55,072 for whom complete data was available. An analysis of this data indicated the following.

- Overall attendance was significantly higher amongst **boys** (91.79%) than girls (91.49%).
- Attendance was significantly lower amongst those in receipt of **free school meals** (88.6%) than those who were not (92.59%).
- Attendance was lowest amongst those for whom **English was a first language**. Amongst the 34,503 young people in this category, the mean level of attendance was 91.6% half days. By contrast, such attendance was significantly higher amongst all other groups (by 3.19% points for new users of English, by 2.14% for those becoming familiar with the language, by 1.63% for those who were becoming confident and by 1.62% for those who were fluent or bilingual users).
- On a different, but related measure, exploring the use of **English as an additional language**, the pattern was similar, with a significant difference between native speakers (91.56%) and non-native speakers (93.25%).
- Attendance was significantly different between those on all stages of the **SEN** code of practice (9,525 young people) compared to those who were not (39,052 young people). Young people without any recorded special needs had a mean attendance of 92.53%. Attendance for those on the SEN code of practice decreased from stage 1 (90.21%) to stage 4 (84.15%) but then increased to 89.16% for those at stage 5 – fully statemented – (1,187 young people). This level of attendance for those at stage 5 was also

statistically different from the attendance of those without special needs and from those who were on stages 1, 3 and 4 (though not 2) of the special needs code of practice.

- Mean attendance amongst the **2002 cohort** was significantly lower amongst those from W**hite UK backgrounds** (91.46%) than amongst those from Chinese (96.84%), Black African (95.75%), Indian (94.49%) and Black Caribbean (93.21%). The mean attendance amongst young people from Black African heritage was significantly greater than amongst those from all other minority ethnic groups except Indian and Chinese pupils (no significant difference in attendance).

In summary, school attendance was highest amongst boys, those not in receipt of free school meals and those who were non-native speakers of English (whatever their level of fluency). Amongst the 2002 cohort, attendance was lowest amongst those from White UK backgrounds.

Table 3.6 Attendance rates: by sex, free school meals, SEN, EAL and level of English fluency

	Attendance rates		
Sex	**Median**	**Mean**	**Standard deviation**
Male	94.5	91.8	9.7
Female	94.2	91.5	9.8
Free school meals			
Eligible	91.8	88.6	11.7
Not eligible	95.0	92.6	8.7
SEN status			
Statemented (4,5)	92.6	88.9	12.6
SEN non-statemented (1,2,3)	92.1	88.9	11.6
Non-SEN (0)	95.0	92.5	8.8
EAL			
EAL	95.8	93.3	8.3
not EAL	94.2	91.6	9.6
English fluency			
New to English	96.3	94.8	5.6
Becoming familiar	95.3	93.7	6.0
Becoming confident	95.8	93.2	8.1
Fluent user	95.8	93.2	8.9
First language	95.3	93.3	7.4
Prior attainment			
Key Stage 2			
Below level 2	91.6	88.2	13.4
Level 2	92.4	88.9	11.2
Level 3	92.6	89.5	11.3
Level 4 and above	94.2	91.9	8.7
Key Stage 3			
Below level 3	88.9	83.3	16.4
Level 3	90.7	86.3	14.1
Level 4	92.1	88.8	11.6
Level 5 and above	95.5	93.7	7.2

Table 3.7 Attendance rates: by sex and ethnicity

	Male			Female		
	Median	Mean	Standard deviation	Median	Mean	Standard deviation
UK White	94.2	92.0	8.5	93.4	91.0	9.4
White European	93.9	92.3	7.7	93.9	92.3	7.7
White, other (known)	94.7	93.1	7.0	92.6	91.0	7.9
Black, Caribbean	95.0	92.1	10.2	96.1	94.0	8.2
Black, African	97.1	95.9	4.3	97.4	95.6	5.5
Black, other	94.6	91.0	10.6	94.2	89.9	13.6
Indian	96.6	94.8	6.1	96.3	94.1	8.3
Pakistani	95.5	93.3	6.3	93.4	91.3	8.2
Bangladeshi	94.7	93.1	5.8	93.2	91.2	7.9
Chinese	97.9	96.7	3.8	97.9	97.0	3.2
Other (known)	95.0	93.0	8.5	96.1	93.3	9.3
Parent/pupil preferred not to say	91.7	89.3	7.9	90.7	88.2	9.7
Information not obtained	90.3	86.7	11.8	85.8	78.4	20.6
Mixed – White and Black Caribbean	–	–	–	95.3	91.8	10.1

3.2 Differences in Rates of Absence and Attendance: Variations by School

Tables 3.8 and **3.9** summarise some of the key findings related to absence and attendance patterns in EiC schools.

Table 3.8 Authorised and unauthorised absence: by school size, type and location

	Authorised absence			Unauthorised absence		
	Median	Mean	Standard deviation	Median	Mean	Standard deviation
School size						
0–500	18	26.5	29.8	0.0	1.8	10.2
501–750	19	26.7	28.4	0.0	3.9	16.2
751–1000	18	25.9	27.5	0.0	4.9	17.2
1001–1500	18	25.4	28.1	0.0	4.7	17.9
over 1500	18	25.8	28.1	0.0	7.4	26.0
School type						
Boys only	16	23.9	28.1	0.0	3.1	12.1
Girls only	16	23.3	26.7	0.0	5.7	21.9
Mixed	19	26.2	28.2	0.0	4.9	18.5
Beacon						
Yes	15	21.8	25.0	0.0	3.3	14.7
No	19	26.5	28.5	0.0	5.1	19.1
Special						
Yes	17	24.5	26.6	0.0	5.1	18.9
No	19	26.4	28.8	0.0	4.8	18.4
Government office region						
North East	18	24.7	25.6	0.0	2.2	12.2
North West/Merseyside	22	29.4	28.9	0.0	5.2	20.1
Yorkshire and The Humber	18	25.8	28.9	0.0	6.3	21.5
East Midlands	16	24.4	28.1	0.0	4.9	17.1
West Midlands	20	28.7	31.1	0.0	4.2	16.0
Eastern	17	24.4	23.3	0.0	0.9	8.0
London	13	20.0	24.3	0.0	4.7	15.5
South East	17.5	26.5	30.4	0.0	0.6	4.9
South West	21	30.2	32.6	16.5	31.4	46.7
Behaviour Improvement Programme						
BIP Phase 1 school	21	28.2	29.4	2.0	13.6	30.3
BIP Phase 2 school	21	27.6	27.4	0.0	4.4	16.9
EiC non-BIP school	18	25.2	28.0	0.0	4.2	17.1

Table 3.9 Attendance rates: by school size, type and location

	Attendance rates		
	Median	**Mean**	**Standard deviation**
School size			
0–500	94.5	92.0	9.0
501–750	94.2	91.7	9.6
751–1000	94.5	91.8	9.3
1001–1500	94.5	91.9	9.5
over 1500	94.2	91.0	11.3
School type			
Boys only	95.0	92.4	9.1
Girls only	95.3	92.3	10.1
Mixed	94.2	91.6	9.7
Beacon			
Yes	95.5	93.3	8.2
No	94.2	91.5	9.9
Special			
Yes	94.7	92.1	9.4
No	94.2	91.6	9.9
Government office region			
North East	95.0	92.9	7.9
North West/Merseyside	93.2	90.5	10.4
Yorkshire and The Humber	94.2	91.5	10.2
East Midlands	95.3	92.3	9.2
West Midlands	93.7	91.0	10.3
Eastern	95.3	93.0	7.3
London	96.1	93.4	8.3
South East	95.3	92.5	8.9
South West	87.6	83.9	15.6
Behaviour Improvement Programme			
BIP Phase 1 school	92.4	89.0	12.0
BIP Phase 2 school	93.9	91.5	9.1
EiC non-BIP school	94.7	92.1	9.5

Tests for analysis of variance revealed significant difference in authorised absences, unauthorised absences and attendance between the following.

- **Schools of different types** – for instance, grammar schools had lower levels of authorised absence than all other school types; 11–16 comprehensive schools had higher levels of authorised absence but lower levels of unauthorised absence than 11–18 schools.
- **Single sex and mixed schools** – Girls' schools had lower levels of authorised absence but higher levels of unauthorised absence than either boys' schools or mixed schools.

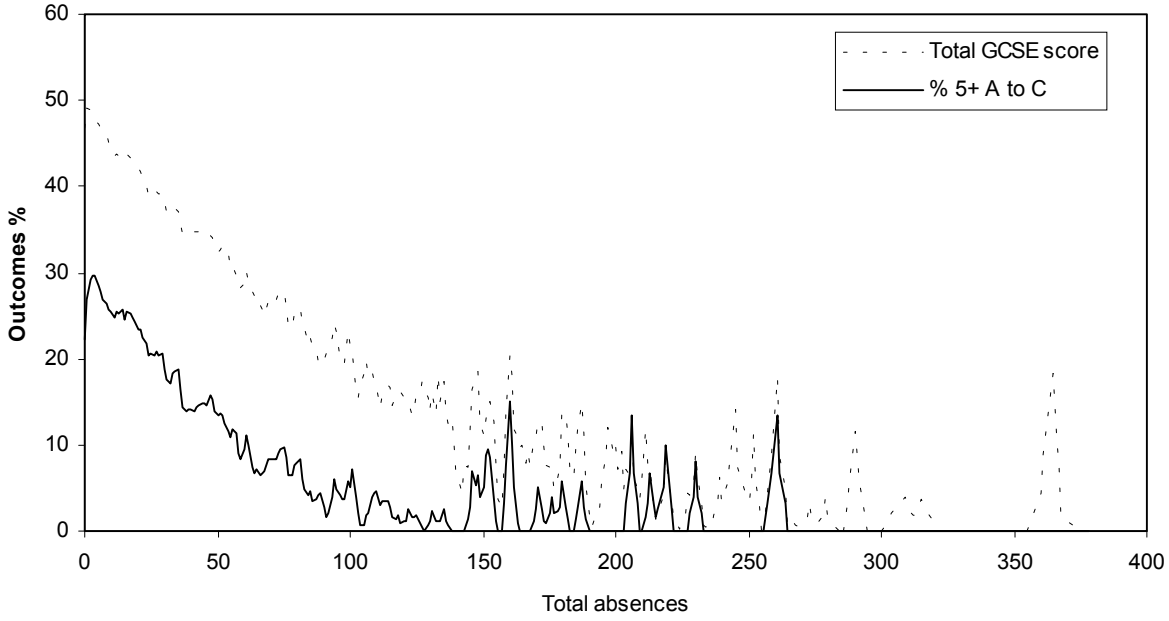
- **Schools of different sizes** – Large schools had lower authorised absence than all other schools, but higher levels of unauthorised absence than small schools.
- **Beacon and non-Beacon schools** – Beacon schools had lower levels of authorised and unauthorised absence than non-Beacon schools.
- **Specialist and non-Specialist Schools** – Specialist Schools had lower levels of authorised absence than non-Specialist Schools (there was no significant difference for unauthorised absence).
- **Schools in different government office regions** – for example, schools in London had lower levels of authorised absence than schools in any other region, whilst EiC schools in the South West had higher levels of unauthorised absence than schools in any other region (note that this refers to 960 pupils in EiC schools, not to the whole of the South West).
- **Schools in BIP and non-BIP areas** – BIP schools had higher levels of both authorised and unauthorised attendance than other schools. BIP Phase 1 schools had higher levels of unauthorised than BIP Phase 2 schools.

These variations, while apparently significant at the school level, may not be significant, however, once pupil characteristics are taken into account. The high unauthorised absences noted in schools in the South West may be a function of the background characteristics of the pupils (such as high proportions of young people on free school meals or a high proportion with low prior attainment) rather than of location. The multilevel models that were constructed for the next stage of the analysis (see Chapter 5) explored the interaction between pupil and school type in order to identify the factors most associated with high levels of authorised or unauthorised absence. Prior to developing those models, however, an initial exploration was made of the apparent relationship between attendance and attainment (see Chapter 4).

4. THE RELATIONSHIP BETWEEN ATTENDANCE AND ATTAINMENT?

A simple plot of attendance data (by number of sessions missed) against attainment at GCSE suggests that there might be a relationship between attainment in Year 11 and attendance in Year 10, but that it is not a simple one, particularly at the higher levels of non-attendance (see **Figure 4.1**).

Figure 4.1 Relationship between total number of sessions missed and attainment at GCSE



When the data on authorised absence was examined in relation to attainment there appeared to be some clear and statistically significant variations (see **Tables 4.1** and **4.2**). Once such absence was divided into quartile groups, based on the distribution statistics for Years 9 and 10, analysis of variance suggested that those with higher levels of absence in Year 9 (**Table 4.1**) had lower levels both of prior attainment and attainment in the year in which attendance was recorded. There was a significant variation in attainment between each of the quartile groups identified for attendance.

Table 4.1 Statistically significant differences in attainment by level of half day authorised absence: Year 9 cohorts

	Average prior attainment at Key Stage 2	Average attainment at Key Stage 3
Authorised absences		
0–7 absences	3.75*	5.07*
8–19 absences	3.71*	4.95*
20–37 absences	3.63*	4.80*
38+ absences	3.46*	4.42*

* Statistically significant differences at p<0.0001

The picture was repeated for the Year 11 cohort, with significant differences in outcome at Key Stage 4 also associated with different levels of attendance in Year 10 (see **Table 4.2**).

Table 4.2 Statistically significant differences in attainment by level of half day authorised absence: Year 11 cohorts

	Average Key Stage 3 prior attainment	Average attainment for Year 11 cohort			
		Total GCSE score	Best 8 GCSE score	Number of grades A*–C	Number of grades A*–G
Authorised absences					
0–8 absences	5.15*	45.85*	39.03*	6.02*	9.28*
9–21 absences	4.98*	42.55*	36.77*	5.29*	9.04*
22–39 absences	4.74*	37.60*	33.02*	4.24*	8.73*
40+ absences	4.36*	28.16*	25.39*	2.63*	7.73*

* Statistically significant differences at p<0.0001

However, it is worth noting that attainment also varied significantly by, for example, sex and free school meals (see **Tables 4.3 and 4.4**). Amongst the Year 9 cohort, mean prior attainment was lower amongst girls than boys, but mean Key Stage 3 attainment was higher for girls, suggesting that girls made more progress than boys through Key Stage 3. Those in receipt of free school meals appeared to have significantly lower levels both of prior attainment and attainment at the end of Year 9.

Table 4.3 Statistically significant differences in attainment by sex and free school meals: Year 9 cohorts

	Average prior attainment at Key Stage 2	Average attainment at Key Stage 3
Sex		
Boy	3.67*	4.81*
Girl	3.63*	4.87*
Free school meals		
With free school meals	3.32*	4.26*
No free school meals	3.76*	5.10*

* Statistically significant differences at p<0.0001

Table 4.4 Statistically significant differences in attainment by sex and free school meals: Year 11 cohorts

	Average Key Stage 3 prior attainment	Average attainment for Year 11 cohort			
		Total GCSE score	Best 8 GCSE score	Number of grades A*–C	Number of grades A*–G
Sex					
Boy	4.81*	37.04*	32.38*	4.21*	8.57*
Girl	4.89*	41.68*	36.04*	5.15*	8.91*
Free school meals					
With free school meals	4.20*	29.71*	26.50*	2.83*	7.81*
No free school meals	5.00*	41.79*	36.15*	5.15*	8.97*

* Statistically significant differences at p<0.0001

The story at each Key Stage was similar, with the girls' attainment greater than boys (both in terms of Key Stage 3 average levels and outcomes at GCSE) and those in receipt of free school meals achieving mean Key Stage 3 and Key Stage 4 results that were significantly lower than those in different socio-economic circumstances.

As with authorised absence, however, there were significant differences in the attainment of groups of young people with different levels of unauthorised absence. When the data for unauthorised absence was divided into such groups, with young people with no unauthorised absence in one group and the remaining pupils divided into three groups to reflect amounts of unauthorised absence, a difference of over half a level at Key Stage 3 for the Year 9 cohort was observed between those with no unauthorised absence and those with more than 10 half days. By Key Stage 4, this difference was even greater, with young people who had high levels of unauthorised absence achieving mean GCSE scores that were less than half the number of points achieved by young people with no unauthorised absence (see **Tables 4.5 and 4.6**).

Table 4.5 Statistically significant differences in attainment: by level of half day authorised absence: Year 11 cohorts

	Average Key Stage 3 prior attainment	Average attainment for Year 11 cohort			
		Total GCSE score	Best 8 GCSE score	Number of grades A*–C	Number of grades A*–G
Unauthorised absences					
0 absences	5.05*	43.54*	37.49*	5.48*	9.18*
1–3 absences	4.56*	35.29*	31.37*	3.70*	8.51*
4–10 absences	4.35*	30.14*	27.13*	2.74*	7.98*
11+ absences	3.96*	18.25*	16.94*	1.35*	6.20*

* Statistically significant differences at p<0.0001

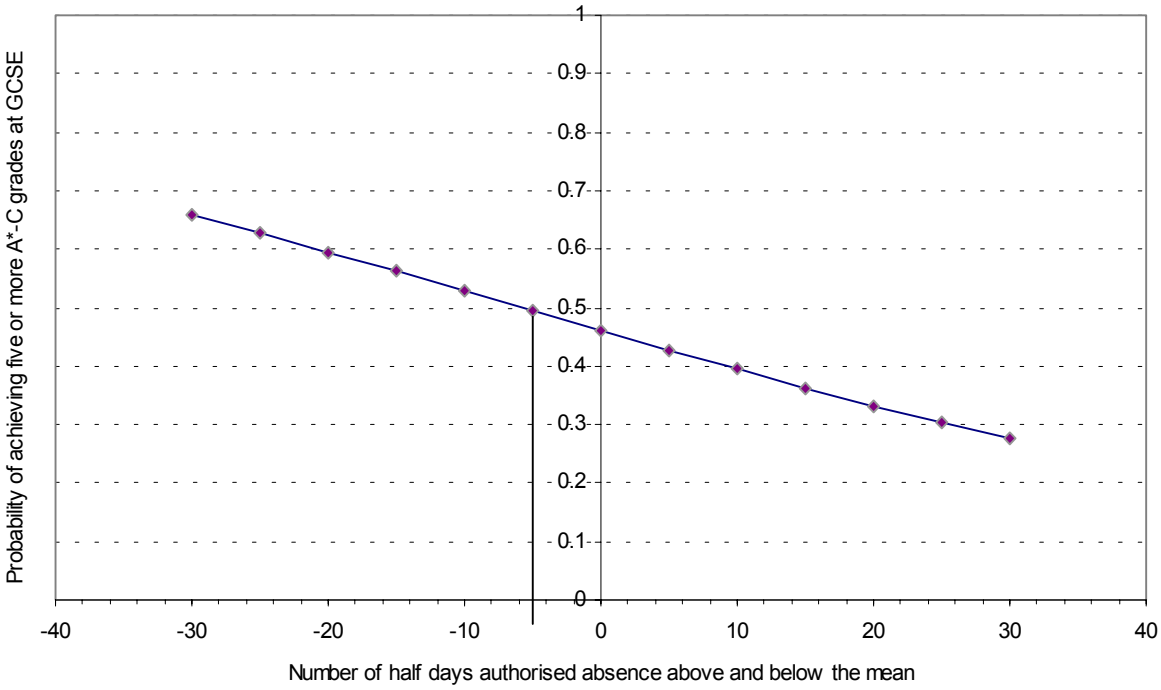
Table 4.6 Statistically significant differences in attainment: by level of half day authorised absence: Year 9 cohorts

Unauthorised absences	Average prior attainment at Key Stage 2	Average attainment at Key Stage 3
0 absences	3.71*	4.96*
1–3 absences	3.57*	4.70*
4–10 absences	3.48*	4.48*
11+ absences	3.38*	4.26*

* Statistically significant differences at p<0.0001

Using logistic models, a clearer picture of the apparent relationship between pupil level attendance and attainment can be obtained. **Figure 4.2** illustrates the link that appears to exist between authorised absence and attainment at GCSE for the 2002 Year 11 cohort. This suggests that, in order to have a 50% chance of achieving five A* to C grades, young people's authorised absence in Year 10 needed to be five half days *less* than the mean for the cohort in that year. For the cohort under scrutiny, this means that authorised absence would have to be no more than 22.76 half days, compared to a mean of 27.76 half days for the whole cohort. It is also evident that as authorised absence decreased, the probability of achieving five A* to C grades increased to just under 65% for those with no authorised absence. Conversely, as authorised absence increased, the probability of achieving five A* to C grades decreased.

Figure 4.2 Authorised absence and the probability of achieving 5 or more A*–C grades at GCSE



The story with respect to unauthorised absence was even more evident, with a rapid decline in the probability of higher levels of achievement amongst those with even two half days more unauthorised absence than the mean of 3.56 half days for the 2002 cohort (see **Figure 4.3**). Those with high levels of unauthorised absence (such as the 12.54 half days noted amongst those young people from Black other minority ethnic group backgrounds – see Section 4.2) had less than a 25% probability of achieving five A* to C grades.

Figure 4.3 Unauthorised absence and the probability of achieving 5 or more A*–C grades at GCSE

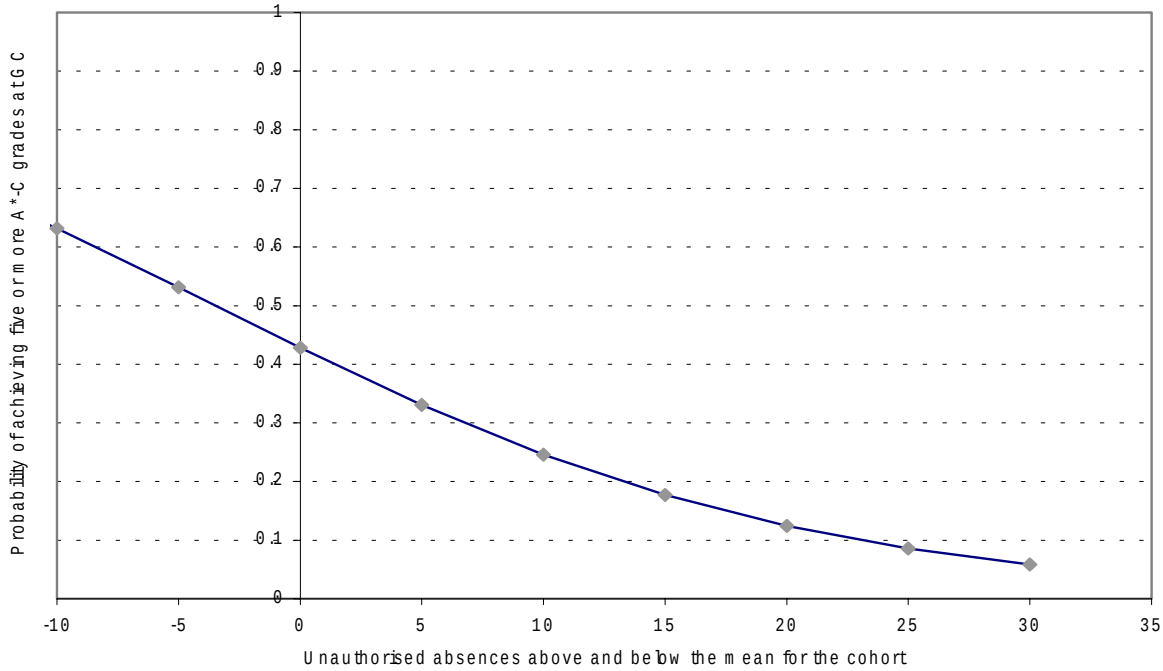
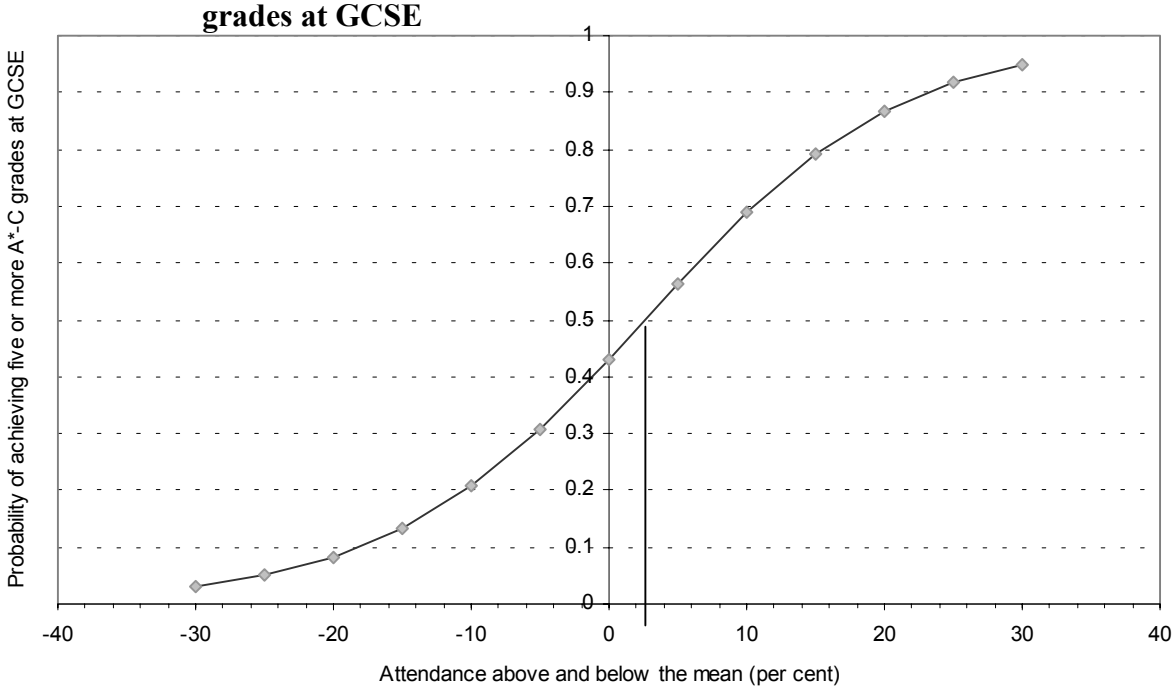


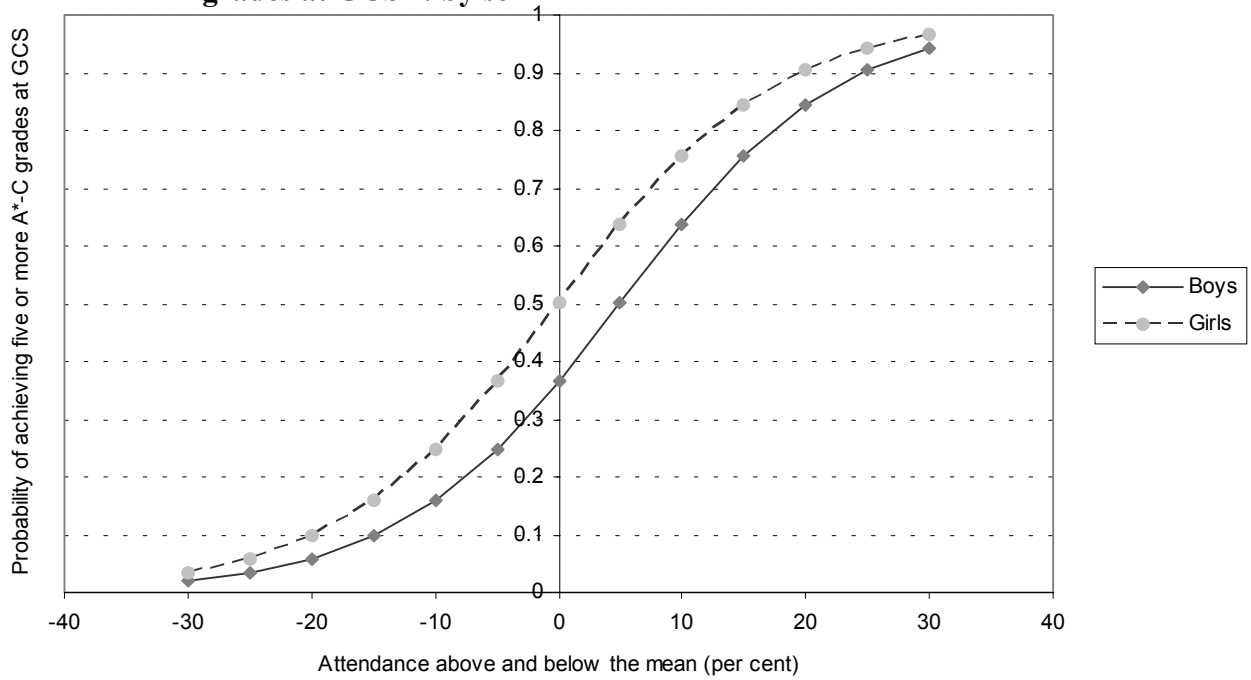
Figure 4.4 illustrates the picture in relation to overall attendance. This suggests that, in order to have a 50% probability of achieving five A* to C grades, young people's attendance needed to be at least three per cent greater than the mean for the cohort (91.69%).

Figure 4.4 Attendance and the probability of achieving 5 or more A*–C grades at GCSE



The story was not identical for boys and girls, however. Girls whose mean attendance was the same as the mean for the cohort appeared to have a 50% probability of achieving five A* to C grades. Boys, in contrast, needed an attendance that was some five per cent higher than the mean to achieve the same result at GCSE (see **Figure 4.5**).

Figure 4.5 Attendance and the probability of achieving 5 or more A*–C grades at GCSE: by sex



Clearly the picture presented here, while indicating a relationship between attendance and attainment, oversimplifies the actual relationship. The sex differences, for instance, suggest that the outcomes from boys and girls with the same levels of attendance may well be different. Other factors, related to prior attainment, individual background characteristics (such as ethnicity, fluency in English and home circumstances) and school factors (including performance levels, type and location) have emerged from previous research as significant indicators of attainment. To what extent do these factors interact with attendance? Is it possible to identify different patterns of attendance amongst different groups of young people? To what extent do these attendance patterns have an impact on young people's attainment over and above the other characteristics that may be influencing pupil outcomes? Chapters 5 and 6 seek to address these questions.

5. KEY FINDINGS: MULTILEVEL MODELS FOR ATTENDANCE

Using hierarchical modelling techniques (outlined in Appendix 2), models were constructed for authorised and unauthorised absence and attendance for the Year 10 cohorts and the Year 9 cohorts. The models included a year variable (2000/01 and 2001/02) but did not include, in the first instance, either ethnicity (which was included in a separate model for 2001/02) or prior attainment (this will be included in subsequent models exploring the relationship between attainment and attendance – see Section 6). Full tables showing the co-efficients for the modelling process can be found in Appendix 3.

5.1 Authorised Absence

Complete data on authorised absence in Year 10 was available for 13,081 pupils. Across the two cohorts (2000/01 and 2001/02), the background pupil factors that were associated with levels of authorised absence were SEN, free school meals, levels of fluency in English and sex.

The analysis of variance had suggested that the authorised absence of the 226 young people with statements of SEN (those at stage 5 on the SEN code of practice) was statistically lower than those at stages 3 and 4 but higher than those without any identified needs. The modelling process revealed that SEN 5 was indeed associated with a mean additional 11.24 half days of authorised absence, over and above young people without any identified special educational needs (who had a mean authorised absence of 26 half days during Year 10) but lower than those 269 pupils at level 3 (who were associated with an additional 11.59 half days), once other pupil and school background characteristics were taken into account.[7] The final model also indicated that those at level 2 (627 pupils) had a mean additional 6.23 half days of authorised absence and those at level 1 (616 pupils) a mean additional 7.15 half days.

By contrast, young people with lower **levels of fluency in English** were associated with *lower* levels of authorised absence. Those becoming familiar with English (134 pupils) were associated with a mean of 10.9 fewer half days of authorised absence during Year 10 than those for whom English was a first language, while those who were becoming confident (329 pupils) and those who were fluent users (1,195 pupils) were associated with means of 9.69 and 9.8 fewer half days, respectively.[8]

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7 It should be noted that only six young people in the model were recorded at level 4.

8 Those who were new to English were associated with 7.6 fewer half days of authorised absence than those for whom English was a first language. However, this included only a very small number of young people (14).

Young people in receipt of **free school meals** (2,286 pupils) were associated with a mean additional 9.47 half days, while **girls** (5,805 pupils) were associated with an additional 3.09 half days compared with boys (7,276 pupils). Girls in low performing schools[9] were associated with a further 3.92 half days of authorised absence. Thus, for a girl with special educational needs (at level 3), in a low performing school and in receipt of free school meals, the model would predict an average authorised absence, all other things being equal, of 54.2 half days, or just over five weeks.

The school level variables that were associated with authorised absence during Year 10 were:

- **school type** (young people in 11–16 comprehensive schools – 5,695 pupils – were associated with 4.71 more half days of authorised absence than their peers in other schools, once pupil background characteristics were taken into account)
- **school size** (the 3,937 young people in small schools – those with fewer than 935 pupils – were associated with 5.37 fewer half days of authorised absence than their peers in other schools)
- **Specialist Schools** (young people in Specialist Schools – 5,150 pupils – were associated with 4.43 fewer half days of authorised absence than their peers in other schools)
- young people in **London** schools (2,190 of the 13,081 pupils were based in London) were associated with a significantly lower rate of authorised absence (6.03 fewer half days) than those in other schools.

Thus, were the girl described above to attend an 11–18, small Specialist School in London, it is likely that her 54.2 days of authorised absence would be reduced by 15.8 half days to 38.4 half days.

Amongst the **Year 10** cohort for whom **ethnicity data** was available (4,824 young people), the only pupil level differences that were noted were the significantly lower levels of authorised absence (in Year 10) amongst black African pupils (some 11.28 half days lower than their peers from all other minority ethnic groups).

The story for the **14,074** pupils in the **Year 9** dataset was very similar to that for Year 10, with significant associations with special educational needs, receipt of free school meals, levels of fluency in English, sex, school type and location. The relationship with Specialist Schools and with small schools was not evident, however, while the variation in girls' attendance by level of school performance did not emerge. However, there were far more variations by ethnic group than amongst the year 10 cohort. Amongst the 5,931 young people for whom ethnicity data was available, authorised absence was lower

[9] 1,297 girls were in schools in which fewer than 30% of the pupils had achieved five or more GCSEs at grade C or above in the year preceding that in which the young people had embarked on their Key Stage 4 course.

amongst Chinese (12.1 half days) Black African (11.77 half days), Black Caribbean (6.1 half days), Black other (5.54 half days), Indian (3.69 half days) and 'other' pupils (5.78 half days), by comparison with pupils from White UK and other minority ethnic backgrounds.

While the pictures that emerged from the initial analysis of variance and the modelling process are broadly similar, the variations (particularly for SEN) and emerging interactions (such as between girls and school performance levels) suggest that the modelling process provides a more helpful insight into the investigation of factors associated with authorised absence.

5.2 Unauthorised Absence

As with authorised absence, the models indicated that SEN, free school meals and levels of fluency in English were key factors associated with levels of unauthorised absence amongst the Year 10 and Year 9 pupils. In addition, school level factors (level of overall GCSE performance, year, Phase of BIP and geographical location) emerged as significant. There was, however, no association with sex, other than in relation to levels of English fluency and, in the case of Year 9 pupils, single sex schools.

Significantly higher levels of unauthorised absence were noted amongst young people on stages 1, 2, 3 and 5 of the **SEN** code of practice. Such absence in Year 10 for those on stage 1 by Year 11 (585 pupils) was nearly double the mean of 2.66 half days noted for other pupils, once other background characteristics at pupil and school level had been controlled for. Unauthorised attendance was even higher for those on stage 2 (a mean additional 6.96 half days) and stage 5 (a mean additional 6.93 half days) but were markedly higher for those at stage 3 (a mean additional 12.5 half days). This picture was also evident amongst the Year 9 cohorts, with stage 3 (365 pupils) associated with a mean additional 8.1 half days, stage 2 (605 pupils) with a mean additional 5.58 half days, stage 5 (309 pupils) with a mean additional 4.02 half days and stage 1 (775 pupils), a mean additional 2.73 half days.

Young people for whom **English was not a first language**, but who were becoming confident in its use, were associated with a mean of 5.5 half days *fewer* unauthorised absences than all other young people in Year 10 (and 3.08 fewer half days in Year 9), once other pupil- and school-level characteristics were taken into account. Those who were becoming familiar with English were also associated with a mean of 4.39 fewer half days' unauthorised absence in Year 10 and a mean of 4.89 fewer half days' unauthorised absence in Year 9. Girls who had become fluent users of English (though were not native speakers) were associated with a mean of 4.05 half days fewer unauthorised absences in Year 10 and 7.6 half days in Year 9. **Girls in girls' schools** in Year 9 (1,978 of the 6,305 girls in the model), however, were associated with an *additional* 10.71 half days of mean unauthorised absence, once all other pupil and school characteristics were incorporated into the model. Amongst the 2002 cohorts for whom ethnicity data was available,

there were no significant differences between groups in Year 10, once prior attainment and fluency had been taken into account. However, Chinese and Black African pupils in Year 9 were associated with fewer unauthorised absences than their peers (by 7.56 half days and 3.31 half days, respectively).

As with authorised absences, young people in receipt of **free school meals** were associated with higher levels of unauthorised absence, both in Year 10 and Year 9. This was equivalent to a mean of 4.1 half days amongst the Year 10 cohorts (2,320 pupils) and a mean of 4.06 half days amongst those in Year 9 (2,892 pupils).

The association with school-level variables was more evident with Year 10 pupils than with Year 9 pupils. Young people in Year 10 in **BIP Phase 1** schools (1,801 pupils) were associated with significantly higher levels of unauthorised absence than young people in all other schools (a mean of 4.53 additional half days), while the 3,666 pupils in **low-performing schools** (an additional 6.01 half days) and those in schools in the **South West** (the 505 pupils in EiC schools in the South West were associated with a mean of 5.91 additional half days) had a poorer record of unauthorised absence than all other pupils. Such unauthorised absence was generally better in 2001/02 than in 2000/01, with a mean reduction of 3.39 half days per pupil in 2001/02. This means, for example, that a boy or girl in Year 10 in a low-performing EiC BIP school in the South West in 2000/01 could have an unauthorised absence record that was around 16.45 half day sessions (equivalent to nearly two school weeks) worse than a similar pupil in Year 10 in a mid- or high-performing school in 2001/02 elsewhere in the country.

The only school-level variable, other than single sex girls' school, that was associated with unauthorised absence in Year 9 was whether or not a school was a Beacon school: such schools were associated with a reduction of 8.72 half days of unauthorised absence.[10] In other words, a fluent non-native English speaking girl in Year 9 in a mixed Beacon school would be likely to have an unauthorised absence record that was better by 16.32 half days than a similar girl in an all-girls' Beacon school.

5.3 Overall Attendance

The mean of overall attendance for the 12,913 young people in Year 10 in the models was 92.67%, while that for the 12,467 young people in Year 9 was 91.96%. Once pupil and school background characteristics had been taken into account, attendance in Year 10 was highest amongst:

- those new to English (99.76%), becoming familiar with English (96.94%), becoming confident with English (96.8%) and becoming fluent in English (95.27%)

[10] Nearly 12% (1,453) of the young people in the Year 9 unauthorised absence model were in Beacon schools.

- girls who were non-native speakers of English, but were fluent in the language (95.77%)
- young people in schools in the West Midlands (94.98%) and London (94.95%)
- young people in small schools (94.17%).

For each of these groups, mean overall attendance was 1.2% higher amongst the 2001/02 cohort.

Attendance was lowest amongst:

- those on stage 3 (85.74%), stage 5 (87.77%), stage 2 (88.95%) and stage 1 (89.74%) of the SEN code of practice
- girls in low performing schools (87.68%)
- those on free school meals (88.92%)
- boys in low performing schools (89.55%)
- girls (91.72%).

There were fewer variations in overall mean attendance amongst the Year 9 cohorts. Once pupil and school background characteristics had been taken into account, attendance in Year 9 was highest amongst:

- young people in schools in London (95.65%)
- those becoming familiar with English (95.32%), becoming fluent in English (94.86%) and becoming confident with English (94.34%)
- Chinese (96.4%), Black African (95.648%), Black Caribbean (94.33%) and Indian (93.18%) pupils in the **2002 cohort**.

Attendance was lowest amongst:

- those on free school meals (88.46%)
- those on stage 3 (86.65%), stage 2 (88.25%), stage 5 (89.49%) and stage 1 (89.35%) of the SEN code of practice
- girls (91.13%).

5.4 The Story so Far

Across both cohorts, and once other pupil and school characteristics were taken into account, there appeared to be a significant association between SEN and poor attendance, with comparatively high levels both of authorised and unauthorised absence particularly amongst those on stage 3 of the SEN code of practice. Young people who were non-native speakers of English had a better record of attendance than those for whom English was a first language.

In both Year 9 and Year 10, those who were becoming familiar or confident with English and those who were fluent bilingual speakers had better attendance records (and a lower incidence both of authorised and unauthorised absence) than native English speakers. Indeed, amongst girls (whose attendance records were generally poorer than boys), those who were bilingual had better attendance records than all other girls and than boys.

The improvement in attendance noted between the two different Year 10 cohorts (which, according to the models, seems primarily related to a reduction in unauthorised absence) was not evident amongst the Year 9 cohorts. However, in constructing the models for the 2000/01 and 2001/02 cohorts a number of potential further interactions have emerged and these will be investigated using the cross-sectional and longitudinal models to be developed once the data for the 2002/03 data has been incorporated later in 2004. These include potential interactions between type and size of school (including BIP schools) and between levels of English fluency and the proportion of pupils with EAL in a school.

6. KEY FINDINGS: MULTILEVEL MODELS FOR ATTAINMENT

A series of models were constructed for attainment outcomes for young people in Years 9 and 11, incorporating (as background variables) prior attainment (at Key Stage 2 and Key Stage 3, respectively) and their authorised and unauthorised absence for Year 9 and (for the Year 11 cohort) Year 10. The models were constructed for the 2000/01 and 2001/02 data initially, omitting ethnicity. This information (which was available for the 2001/02 cohorts alone) was then included in the models and any significant differences observed and recorded.

6.1 Attainment at Key Stage 4

Amongst the Year 11 cohorts in 2001 and 2002, the highest levels of attainment at GCSE (in terms of capped eight scores), once all other pupil characteristics, prior attainment and school variables were taken into account, were associated with:

- non-native speakers who were fluent/bilingual in English (a mean additional 4.4 points at GCSE, equivalent to raising four grade Ds to four grade Cs), who were confident in the use of English (an additional 4.2 points) or who were becoming familiar with the language (an additional 6.3 points)[11]
- girls, who achieved a mean of 2.7 more GCSE points than boys with the same prior attainment and characteristics. The difference in attainment between bilingual girls and bilingual boys, however, was marginally lower, at 1.7 GCSE points
- young people from city technology colleges (a mean additional 4.9 points) and Beacon schools (a mean additional 1.6 points)
- young people in high-performing schools (an additional 2.4 GCSE points).

Lower levels of attainment, however, were associated with:

- young people on different stages of the SEN code of practice. Those on stage 3 (253 pupils) achieved 3.3 GCSE points fewer across their capped eight GCSEs than young people with the same prior attainment and background characteristics, those on stage 5 (202 pupils) achieved 1.9 fewer points, those on stage 1 (619 pupils) achieved 1.8 fewer points and those on stage 2 (564 pupils) achieved 1.7 fewer points

[11] This group was small and included only 85 young people.

- young people on free school meals (a mean reduced attainment of 0.95 GCSE points amongst the 20% of young people in this cohort who were in receipt of free school meals).

For *all* young people, higher levels of **authorised or unauthorised absence** during year 10 reduced attainment by a further 0.08 GCSE points and 0.1 GCSE points, respectively for each session missed. For girls, the relative impact of high levels of unauthorised attendance appeared to be greater than for boys, with the differential in GCSE outcomes between girls with high unauthorised absence and boys with high unauthorised absence (2.35 GCSE points) being marginally lower than the difference between girls and boys with no unauthorised absence (2.7 GCSE points).

The factors identified above were also significant in terms of the probability of achieving five or more A*–C grades. Girls were more than twice (2.3 times) as likely to achieve such grades as boys with the same prior attainment, while pupils in high-performing schools and Beacon schools (again, with the same prior attainment and other background characteristics) were 1.89 times and 2.66 times as likely, respectively, to achieve a level 2 qualification at age 16. Bilingual pupils were 2.68 times as likely to achieve five A*–C grades as other pupils with the same prior attainment, although the probability of bilingual girls achieving such grades was lower than non-bilingual girls, though still 1.66 times higher than bilingual boys. For all pupils, however, high levels of **authorised** and/or **unauthorised absence reduced the probability of achieving level 2 qualifications**.

High levels of **authorised** and **unauthorised absence** also **increased the likelihood that young people would not achieve any GCSEs at grade C**, although the effect appeared greater for boys than for girls. The impact of such absence, though significant (young people with higher than average unauthorised absence were more likely than their peers with average unauthorised absence to fail to achieve any grade Cs at GCSE), was marginally less than the influence of factors such as SEN or social deprivation, however. Young people at stage 3, for example, were more than twice as likely not to have achieved any GCSEs at grade C than young people with the same level of prior attainment and other background characteristics, but without any identified needs. Those in receipt of free school meals were 1.29 times as likely as their peers to be lower attainers.

Amongst the **2002 Year 11** cohort, for whom ethnicity data was available (3,912 pupils), the picture varied little from that outlined above, with fluency in English, confidence in English and girls associated with higher levels of performance. Those on stages 1, 2, 3 and 5 of the SEN register and those in receipt of free school meals were associated with lower levels of performance. Authorised and unauthorised absence were associated with a significant (though small in aggregate) impact on the attainment of all young people (note that this was more associated with male underperformance than female underperformance). However, two groups, young people from Black African

and Bangladeshi backgrounds, achieved higher capped eight GCSE scores than would have been anticipated from their levels of prior attainment.

6.2 Attainment at Key Stage 3

For the **Year 9** cohorts, authorised and unauthorised absence was significantly associated with levels of performance at Key Stage 3. **Unauthorised absence** was more clearly associated with low levels of performance in English (by minus 0.07 of a level for each additional ten half day sessions missed) than Maths (by minus 0.04 of a level for each additional ten half day sessions missed), while **authorised absence** was more or less equally associated with lower performance in Maths (-0.038) and English (-0.035). However, factors other than absence were more strongly associated with differences in lower levels of performance (each of the figures quoted below refers to the impact on attainment associated with an additional ten half day sessions missed).

- Young people at some stage on the **SEN** register had lower levels of performance than their peers with similar levels of prior attainment at Key Stage 2 and with similar background characteristics and in similar schools. This was most evident for those at stage 3 (underperformance by 0.62 of a level), but was also evident for those at stage 5 (-0.49 of a level), stage 2 (-0.45) and stage 1 (-0.3).
- Young people who were **new to English or just becoming familiar with it** were associated with lower levels of attainment than their peers (-0.67 and -0.4, respectively). This was evident for both groups in English, but not in Maths: those becoming familiar with English performed at a level that was not significantly different from their peers. However, those who were **fluent** though non-native, English speakers performed at a *higher* level than their peer native speakers (+0.19 of a level), a difference that was evident in both Maths (+0.26 of a level) and English (+0.27 of a level).
- Young people in receipt of **free school meals** were associated with lower levels of attainment than their peers (-0.11 of a level). Young people in schools in which a high proportion of young people were in receipt of free school meals performed at a lower level than young people in other schools (-0.008 of a level).

Higher levels of performance were associated with:

- **Girls** (0.94 of a level) and **girls in single sex schools** (who performed at 0.14 of a level higher than girls in mixed schools). The difference between girls and boys was even more marked for those who had been high attainers at Key Stage 2: these girls made progress from Key Stage 2 to 3 that was 0.036 of a level higher than boys at that same prior attainment level.

  Moreover, the impact of **unauthorised** absence on girls' attainment at Key Stage 3 was less than on boys' attainment. The mean effect of such

absence for boys was to reduce their overall levels of performance by 0.16 of a level. A girl with similar levels of unauthorised absence would perform at 0.1 of a level lower than a similar girl without any unauthorised absence but still at 0.16 of a level higher than a boy with unauthorised absence.

However, there was a difference by **subject**. Girls' performance in Key Stage 3 **Maths** was *lower* than boys with similar prior attainment by 0.04 of a level, except for:

- high attaining girls at Key Stage 2, who maintained a marginal differential over boys
- girls in girls' schools, whose performance was higher than boys by 0.1 of a level. **Unauthorised absence reduced Maths attainment** further *both* for girls and boys (by 0.04 of a level). **English** scores, in contrast, remained higher for girls than for all boys, even for girls with recorded unauthorised absence: girls with average levels of unauthorised absence performed better than boys with average levels of unauthorised absence (by 0.5 of a level) and by 0.4 of a level than all other boys with similar prior attainment and background characteristics.

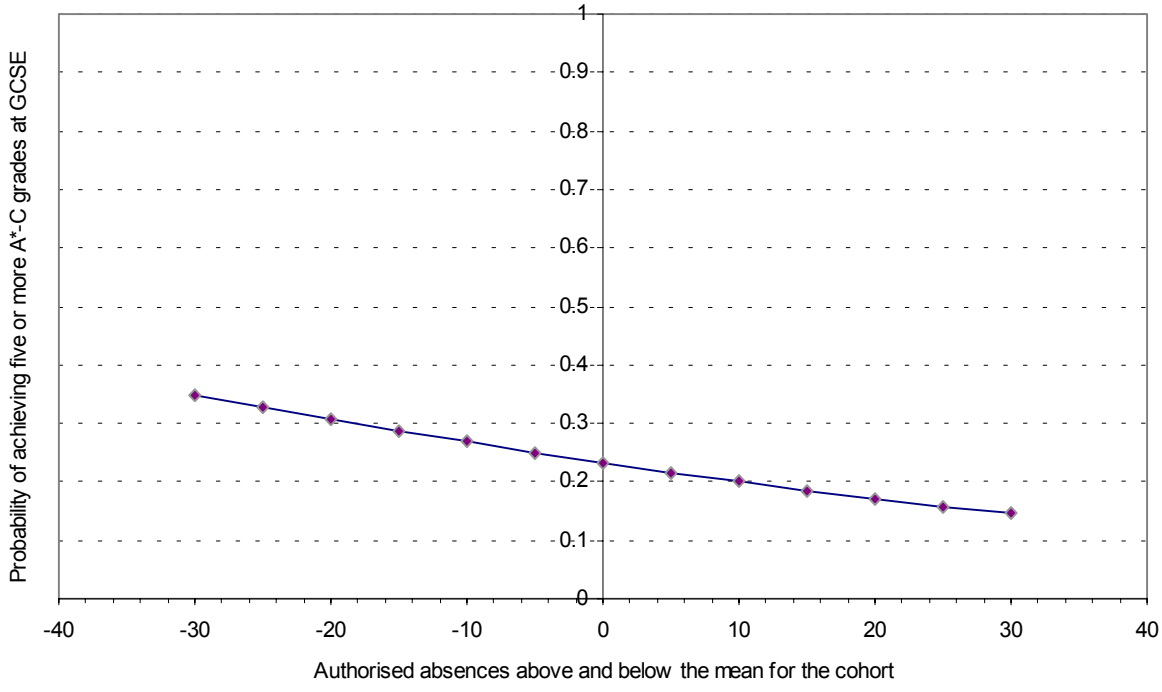
- Young people in schools in the North West and East were associated with higher average Key Stage 3 scores than young people from other schools (by 0.1 and 0.2 of a level, respectively).
- For the **2002 Year 9** cohort for whom ethnicity data was available (7,265 young people), some differences between different minority ethnic groups emerged.
  - Young people from Indian and Chinese backgrounds attained *higher* than expected scores at Key Stage 3 than would have been anticipated from their Key Stage 2 results (at 0.08 and 0.4 of a level, respectively). (Both of these groups had higher levels of attendance than their White UK peers.)
  - Young people from Black Caribbean and Pakistani backgrounds *underperformed* at Key Stage 3 (by 0.14 and 0.09 of a level, respectively). It was noted previously that Black Caribbean pupils had higher levels of attendance than their White UK peers, but this does not appear to be associated with higher levels of performance at Key Stage 3.
- There was no significant difference in Key Stage 3 English levels between different minority ethnic groups in 2002, once levels of English fluency and prior attainment and other background variables had been taken into account. However, the Maths models revealed that Black Caribbean and Black African pupils were associated with lower than expected levels of attainment, while Indian and Chinese pupils were associated with higher than expected levels of attainment.

6.3 Summary

There appears to be a significant association between authorised and unauthorised absence and attainment both at Key Stage 3 and Key Stage 4, even when pupil- and school-level characteristics have been taken into account. At Key Stage 3, this was most evident in relation to achievement in English (where the impact both of authorised and unauthorised absence was negatively associated with attainment), while at Key Stage 4 higher levels of absence (though, particularly, higher levels of unauthorised absence) were negatively associated with lower capped eight scores, a reduced probability of attaining five A*–C grades and an increased probability that young people would not obtain any GCSEs above a grade D. Across both Key Stages, the specific impact of pupil absence on overall attainment was more apparent amongst boys than amongst girls, particularly in relation to unauthorised absence.

However, the relationship that emerges between attendance and attainment is not quite as overt as an examination of the raw data alone would suggest. An initial review of the distribution data suggested, for example, that in order to have a 50% chance of achieving five A*–C grades, young people's authorised absence in Year 10 needed to be only five half days less than the mean for the cohort in that year – that is, no more than 22.76 half days (see pages 26 and 27 and **Figure 4.2**). The outcomes of the modelling process, however, in which background characteristics are incorporated, suggest that, for a boy from a White UK background, who was a native speaker and who was not in receipt of free school meals, was not on any level of the SEN code of practice and had an average level of prior attainment (4.85 at Key Stage 3 for this cohort), an authorised absence of five days fewer than the mean for the cohort would be associated with only a 25% probability of achieving five A*–C grades (see **Figure 6.1**).

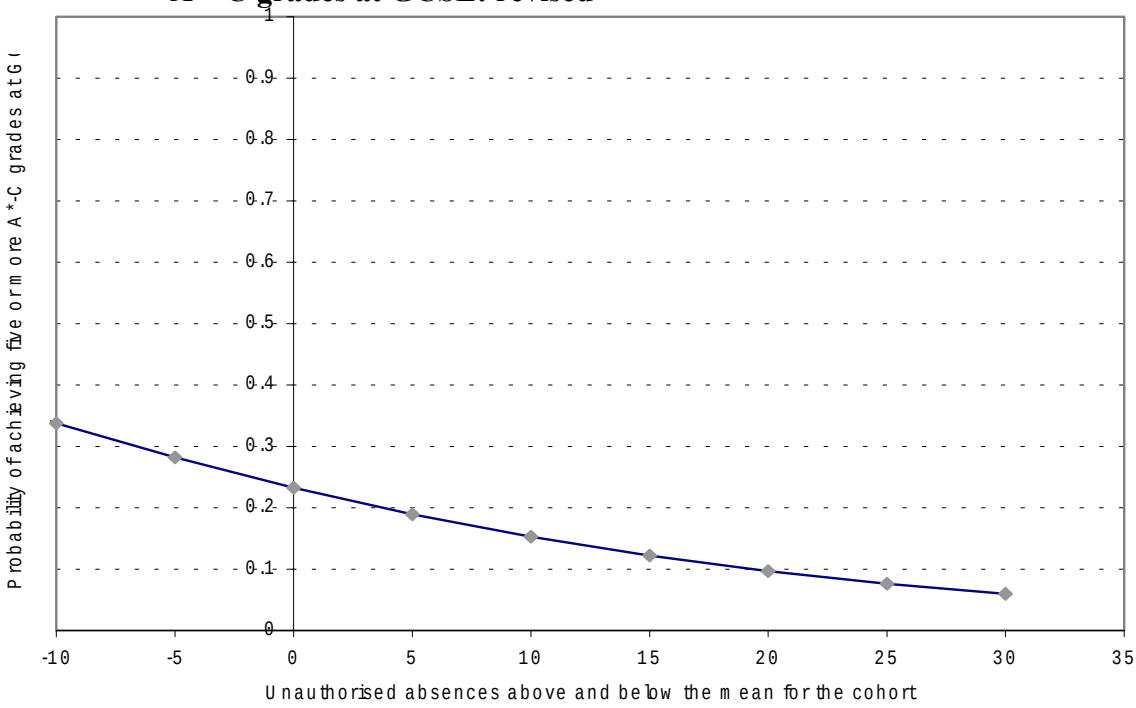
Figure 6.1 Authorised absences and the probability of achieving 5 or more A*–C grades at GCSE: revised probabilities



The model also suggested that (as in the initial logistic models) the probability of this young person achieving five A* –C grades continued to increase as their authorised absences decreased to zero. However, while this increase was at a similar rate to that in the initial models, it was to a lower level of probability; that is, to just over 32% (a 12 percentage point increase from a mean probability of 20%) rather than the 65% indicated by the initial analysis (a 14 percentage point increase from a mean probability of 51%). Moreover, the probability of achieving five A*–C grades did not decrease as rapidly as originally predicted with an increased record of authorised absence. The picture presented in Figure 4.2 suggested an 18% reduction in probability with a doubling of authorised absence above the mean, whilst the reduction indicated by the logistic multilevel model was only in the order of eight per cent. In other words, while the analysis revealed that a reduction in authorised absence led to an increased probability of achieving higher grade GCSEs, it also suggested that an increase in authorised absence did not lead to as marked a decrease in the probability of high attainment.

The relationship with unauthorised absence was more marked, but was still not as big as suggested in the simple logistic models. For the average pupil at Key Stage 4, the probability of higher levels of attainment at GCSE reduced more rapidly with increases in unauthorised absence than it had with increases in authorised absence (see **Figure 6.2**), but not as rapidly as an examination of the raw data alone would imply.

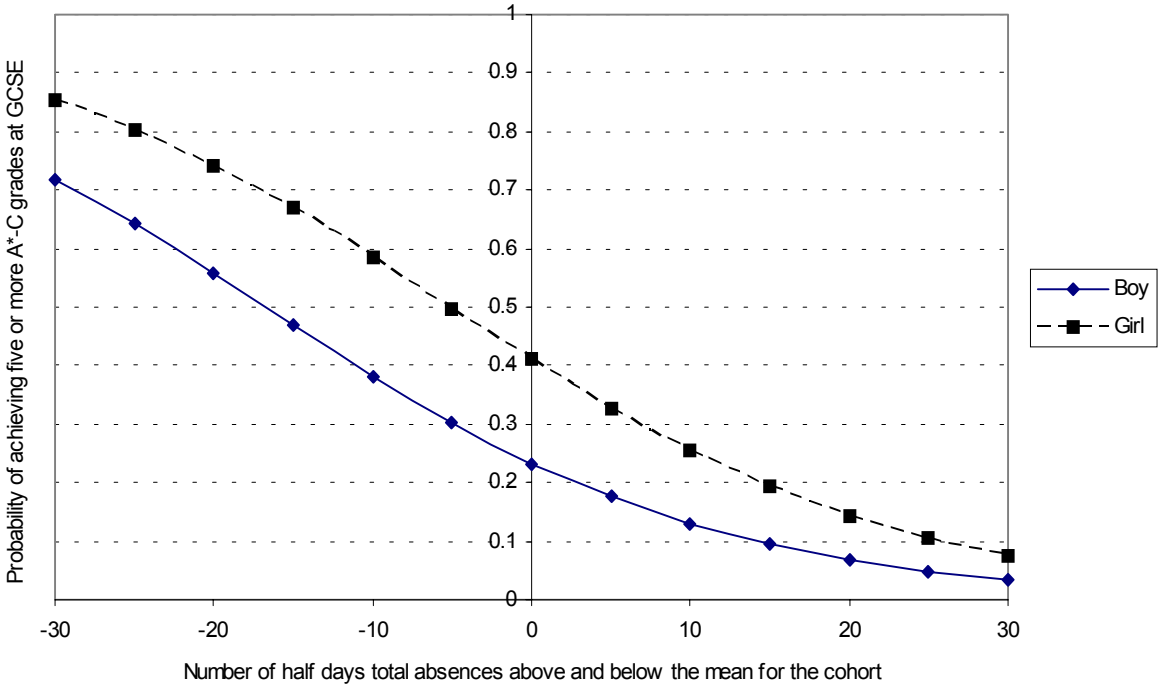
Figure 6.2 Unauthorised absences and the probability of achieving 5 or more A*–C grades at GCSE: revised



An examination of the coefficients for authorised and unauthorised absences suggest that higher levels of unauthorised absences may be more significant in determining the extent to which young people's performance at GCSE is affected by their attendance in school. However, it is worth acknowledging

that the impact of such non-attendance may have a bigger impact on boys' achievement than on girls' achievement. As **Figure 6.3** suggests, a girl whose combined authorised and unauthorised absence was five days fewer than the mean for the cohort (approximately 26 half days, or just over two and a half weeks, instead of 31 half days) would have a 50% probability of achieving five or more A*–C grades, all other things being equal. By contrast, it suggests that a boy with similar background characteristics would need to have at least 18 fewer half days absence than the mean for the cohort (that is, no more than around 13 half days, or just over one week's absence in a school year) in order to achieve the same results. However, an increase in absences appeared to lead to a more rapid decline in attainment amongst girls than amongst boys, even though a girl with 30 days more non-attendance than the mean for the cohort still had a higher probability (8%) of achieving five or more GCSEs at grade C or above than a boy (3%) with similar background characteristics and prior attainment.

Figure 6.3 Total absences and the probability of achieving 5 or more A*–C grades at GCSE: by sex



7. DISCUSSION

In addressing the two key questions posed at the outset of this analysis (the identification of a critical threshold of attendance and the quantification of different levels of non-attendance), the analysis of the cross-sectional data for 2000/01 and 2001/02 first identified some key patterns of authorised and unauthorised absence, taking into account variables at pupil-level (sex, ethnicity, socio-economic circumstances and SEN) and school-level (size, age range, management type, location and involvement in BIP and other initiatives). The key findings are summarised below:

Patterns of authorised and unauthorised absence

Once pupil and school background characteristics were taken into account the following patterns emerged.

- **Higher** than average levels of **authorised** absence were seen amongst:
  - young people with SEN (but particularly amongst those at stage 3 of the SEN code of practice)
  - those in receipt of free school meals
  - those in 11–16 comprehensive schools
  - girls and, for Year 10 only, girls in low-performing schools.
- **Lower** than average levels of **authorised** absence were seen amongst:
  - Black African pupils (2002 Year 10 and Year 9) and Year 9 pupils from Chinese, Black Caribbean, Black other, Indian and other minority ethnic groups (2002 data)
  - young people with lower levels of fluency in English and young people who were bilingual non-native speakers
  - young people in London schools (Year 9 and Year 10), small schools (Year 10 only) and Specialist Schools (Year 10 only).
- **Higher** than average levels of **unauthorised** absence were seen amongst:
  - young people with SEN, but particularly amongst those at stage 3 of the SEN code of practice
  - girls in girls' schools in Year 9
  - Year 10 pupils in BIP schools, in low performing schools or in EiC schools in the South West
  - young people in receipt of free school meals.

- **Lower** than average levels of **unauthorised** absence were seen amongst:
  - young people with lower levels of fluency in English and girls who were bilingual non-native speakers
  - Year 9 Black African and Chinese pupils (2002 data)
  - Year 9 pupils in Beacon schools.

In the second stage of the multilevel analysis, the apparent relationship between authorised and unauthorised absence and attainment was explored.

The apparent relationship between absence and attainment

Once pupil and school background characteristics were taken into account, **higher** than average levels of **authorised** absence were associated with:

- reduced attainment at GCSE (capped eight scores), with a particular impact on boys
- reduced probability of achieving five or more GCSEs at A*–C
- increased likelihood of not obtaining any GCSEs at grade C or above
- reduced attainment in Key Stage 3 Maths and English, with a particular impact on boys.

Once pupil and school background characteristics were taken into account, **higher** than average levels of **unauthorised** absence were associated with:

- reduced attainment at GCSE (capped eight scores), with a particular impact on boys
- reduced probability of achieving five or more GCSEs at A*–C
- increased likelihood of not obtaining any GCSEs at grade C or above
- reduced attainment in Key Stage 3, particularly in English and with a particular impact on boys.

It should be emphasised, however, that the statistical techniques that have been used in the analyses presented here do not imply causality. We cannot tell from the associations identified above whether the increased likelihood of low levels of attainment with higher levels of absence are the direct result of poor attendance, whether poor prior attainment has led to poor attendance or whether some other factor, not included in the modelling process, is having a significant impact. For instance, it should be noted that, while the background pupil-level and school-level variables reduced the pupil-level variance by 73%, over one quarter of the variance at pupil level was left unexplained in the model constructed for capped eight GCSE scores.

In the case of boys' apparent underperformance by comparison with girls with the same level of attendance, prior attainment and other characteristics, one would need to question whether this means that boys need more time in school

in order to achieve the same results as their female peers or whether, perhaps, other factors (particularly attitudinal factors) are contributing to this difference in outcome. In the analyses conducted for the national evaluation of EiC, for instance, one of the key factors associated with higher levels of performance was a positive attitude to education: girls were significantly more likely than boys to be associated with such attitudes. Were it possible to change boys' attitudes to education to more closely reflect that of girls, would boys' outcomes then match girls' outcomes with the same level of attendance?

It should also be noted (and as the discussion in Chapter 6 indicated) that the apparent relationship between pupil absence and pupil attainment is not even. While a decrease in absence may be marked by an increase in the probability of higher level attainment (see **Figure 6.1**), an increase in absence (particularly in authorised absence) does not necessarily lead to a concomitant decrease in such a probability. At Key Stage 3, the relationship between absence and attainment also appeared to vary by subject, with unauthorised absence, for instance, being more particularly associated with lower levels of performance in English than in Maths. This cannot be attributed (statistically) to fluency levels amongst young people in the cohort; young people with lower levels of fluency were associated with fewer half days either of authorised or unauthorised absence than their peers for whom English was a first language. Moreover, the apparent relationship between pupil absence and pupil attainment was not evident across all pupil groups: the higher rates of attendance amongst Black Caribbean pupils than amongst White UK pupils in Year 9 were not reflected in higher attainment at Key Stage 3.

To what extent, therefore, is it possible to find answers to the questions posed at the outset of this analysis? Clearly, there are variations in authorised and unauthorised absence rates between young people from different year groups and with different background characteristics and these rates vary by school type and location. There appears to be some relationship between attendance and attainment, although as indicated previously, this relationship is not straightforward. However, further exploration is needed to ascertain both whether the impact on attainment of different levels of non-attendance can be quantified, and whether there is a critical threshold of attendance, beyond which levels of absence might affect attainment significantly. Some of the issues related to these questions will now be outlined, along with an indication of the further analyses that will be carried out in order to address them.

Question 1 Can the impact on attainment of different levels of non-attendance be quantified?

To date, the analysis has sought to quantify the impact on attainment of different levels of non-attendance by examining the analysis of variance between the mean attainment levels of young people with different levels of attendance (see **Tables 4.1** and **4.2**). While this demonstrated a number of statistically significant differences, with lower levels of attainment at each Key Stage amongst young people with higher levels of absences, it needs to be recognised that, unlike the multilevel modelling analyses, these tests did not control for different background characteristics. Moreover, the divisions that

were made to identify the various levels of non-attendance were founded upon an arbitrary partition of the data into quartiles on the basis of the distribution statistics. During the next stage of the analysis the research team will explore a number of different strategies for identifying (if possible) critical levels of non-attendance.

Question 2 What is the critical threshold at which poor attendance might affect attainment?

Notwithstanding the caveats outlined above, the initial analysis of the 2000/01 and 2001/02 attendance data suggests that it may be possible to identify some **critical thresholds** for attendance. For the Year 9 cohorts, and from the analysis of variance, it would appear that an authorised absence of more than 37 half day sessions (18 days or three and a half weeks) was associated with less than one level of progress from Key Stage 2 to Key Stage 3. An unauthorised absence of more than 10 half days (that is, one week) was associated with less than one level of progress between the two Key Stages (i.e. less than the amount of progress that young people would be expected to make between Key Stages 2 and 3). It is worth emphasising that this is not a matched dataset, but represents the mean for Key Stage 2 and Key Stage 3 for the cohorts. Nonetheless, this initial analysis suggests that these may be a useful starting point for the investigation of a critical threshold (or thresholds) of attendance during Key Stage 3.

For Year 11, the analysis to date has only been explored in relation to higher levels of attainment (see Section 6). From the cohort data that has been examined so far it would appear that, in order to have a 50% probability of achieving five or more GCSEs at grades A*–C, a girl who was not in a low-performing school and who was of average prior attainment for the cohort (4.85 at Key Stage 3), was not in receipt of free school meals and had no SEN would need an attendance record of at least 97%. For a boy with similar characteristics the minimum attendance record would need to be higher, at 98%.

Following receipt of the 2002/03 NPD a series of cross-sectional and longitudinal multilevel models will be constructed that will help to begin to address this issue. The next stage of the analysis is also likely to include an examination of different (and lower) levels of attainment. It would be possible to explore for instance, whether the use of a dichotomous outcome for Year 11 pupils (such as the probability of achieving five or more GCSEs at A*–G, achieving five or more GCSEs at A*–G including English and Maths, achieving no GCSEs above grade C or achieving no graded GCSEs) might be of more use in addressing the threshold question than the outcome of capped eight GCSE scores. This investigation would consider whether the use of dichotomous variables (such as achievement or non-achievement of specific Key Stage levels or progress of at least one level between Key Stage 2 and Key Stage 3) might better address the issue of identifying a critical threshold measure of attendance at Key Stage 3. The team may also seek to carry out an examination of the probability of achieving different outcomes for different groups of young people with different levels of attendance.

APPENDIX 1 Sample Representativeness Tables

Table 1. School sample representation for attendance data (Year 9 and Year 10)

		EIC Schools					
		Schools in sample		All EIC schools		All schools	
		Number	%	Number	%	Number	%
Metropolitan							
	Non-Metropolitan	103	30.0	271	25.8	2312	67.0
	Metropolitan	240	70.0	778	74.2	1139	33.0
Region	North	183	53.4	519	49.5	1008	29.2
	Midlands	78	22.7	229	21.8	1191	34.5
	South	82	23.9	301	28.7	1252	36.3
% EAL pupils							
	None	96	28.0	256	24.4	1220	35.4
	1–5%	84	24.5	258	24.6	1353	39.2
	6–49%	111	32.4	365	34.8	669	19.4
	50% +	46	13.4	136	13.0	150	4.3
	Not available	6	1.7	34	3.2	59	1.7
% eligible Free school meals 2001							
	Lowest 20%	3	0.9	10	1.0	212	6.1
	2nd lowest 20%	16	4.7	63	6.0	814	23.6
	Middle 20%	46	13.4	158	15.1	932	27.0
	2nd highest 20%	100	29.2	296	28.2	840	24.3
	Highest 20%	178	51.9	518	49.4	648	18.8
	Not available	0	0.0	4	0.4	5	0.1
Achievement band (KS3 overall performance)							
	Lowest band	146	42.6	430	41.0	684	19.8
	2nd lowest band	73	21.3	232	22.1	657	19.0
	Middle band	66	19.2	156	14.9	594	17.2
	2nd highest band	24	7.0	98	9.3	580	16.8
	Highest band	32	9.3	106	10.1	609	17.6
	Not available	2	0.6	27	2.6	327	9.5
Achievement band (GCSE total point score)							
	Lowest band	139	40.5	412	39.3	695	20.1
	2nd lowest band	89	25.9	240	22.9	654	19.0
	Middle band	51	14.9	166	15.8	626	18.1
	2nd highest band	34	9.9	113	10.8	606	17.6
	Highest band	25	7.3	86	8.2	510	14.8
	Not available	5	1.5	32	3.1	360	10.4
Beacon School							
	No	296	86.3	914	87.1	3138	90.9
	Yes	47	13.7	135	12.9	313	9.1
Specialist School							
	No	241	70.3	743	70.8	2470	71.6
	Yes	102	29.7	306	29.2	981	28.4
Total schools		**343**	**100.0**	**1049**	**100.0**	**3451**	**100.0**

Since percentages are rounded to the nearest integer, they may not always sum to 100.

Table 2. Pupil sample representation for attendance data (Year 9 and Year 10)

		EIC Schools					
		Pupils in sample		All EIC schools		All schools	
		Number	%	Number	%	Number	%
Metropolitan							
	Non-Metropolitan	17523	31.8	237563	23.1	2066736	64.2
	Metropolitan	37549	68.2	788792	76.9	1152257	35.8
Government office region							
	North East	9416	17.1	114059	11.1	181539	5.6
	North West/Merseyside	12169	22.1	219521	21.4	454642	14.1
	Yorkshire and The Humber	11008	20.0	184757	18.0	317713	9.9
	East Midlands	3813	6.9	42313	4.1	310145	9.6
	West Midlands	5734	10.4	133442	13.0	367891	11.4
	Eastern	1254	2.3	32040	3.1	370249	11.5
	London	9995	18.1	260764	25.4	410530	12.8
	South East	723	1.3	19701	1.9	490646	15.2
	Not available	960	1.7	19758	1.9	315638	9.8
% EAL pupils							
	None	17133	31.1	251541	24.5	1070844	33.3
	1–5%	14431	26.2	267717	26.1	1326585	41.2
	6–49%	15500	28.1	350597	34.2	638469	19.8
	50% +	7060	12.8	138593	13.5	151108	4.7
	Not available	948	1.7	17907	1.7	31987	1.0
% eligible Free school meals 2001							
	Lowest 20%	513	0.9	9770	1.0	212367	6.6
	2nd lowest 20%	2708	4.9	70599	6.9	819188	25.4
	Middle 20%	8310	15.1	177688	17.3	890803	27.7
	2nd highest 20%	18597	33.8	313473	30.5	758621	23.6
	Highest 20%	24944	45.3	454825	44.3	538014	16.7
Achievement band (KS3 overall performance)							
	Lowest band	19601	35.6	387886	37.8	577699	17.9
	2nd lowest band	13241	24.0	226416	22.1	617857	19.2
	Middle band	12130	22.0	174696	17.0	616797	19.2
	2nd highest band	4934	9.0	114165	11.1	612336	19.0
	Highest band	5042	9.2	115595	11.3	643149	20.0
	Not available	124	0.2	7597	0.7	151155	4.7
Achievement band (GCSE total point score)							
	Lowest band	19622	35.6	356638	34.7	571351	17.7
	2nd lowest band	15714	28.5	258162	25.2	648453	20.1
	Middle band	8721	15.8	181240	17.7	644088	20.0
	2nd highest band	6783	12.3	130889	12.8	659827	20.5
	Highest band	3653	6.6	90263	8.8	537566	16.7
	Not available	579	1.1	9163	0.9	157708	4.9
Beacon School	No	47611	86.5	874686	85.2	2875759	89.3
	Yes	7461	13.5	151669	14.8	343234	10.7
Specialist School	No	35701	64.8	679636	66.2	2123155	66.0
	Yes	19371	35.2	346719	33.8	1095838	34.0
Total schools		**55072**	**100.0**	**1026355**	**100.0**	**3218993**	**100.0**

Since percentages are rounded to the nearest integer, they may not always sum to 100.

APPENDIX 2 Towards Multilevel Modelling – A Summary

An exploration of the relative impact of attendance on attainment requires a systematic approach to the analysis of the available statistical data. In order to assess the ways in which, for example, young people's levels of attainment at Key Stages 3 and 4 are associated with different levels of authorised and unauthorised absence, cognizance needs to be made of a range of different variables. Young people come from a variety of home and school backgrounds, have different academic abilities and have been exposed, to varying degrees, to a range of different educational experiences. All of these could be expected to have an impact on their attendance and their levels of attainment.

Since the data to which the research team has access is hierarchical (variables can be identified at distinct levels – that of the school and the student) the decision was made to use a multilevel modelling approach to data analysis. In multilevel modelling, the process is begun by identifying an outcome variable (for example pupil attainment), then for each level of the data, the background variables that might be thought to influence that outcome are defined. Regardless of the outcome variables that are selected, it is expected that there will be differences of outcome at each level:

- **individuals** will be different from each other
- individuals within one **school** will be **collectively different** from those in other schools
- individuals within schools implementing a specific policy, initiative or activity will be **collectively different** from those in schools not implementing the policy, initiative or activity.

These differences can be measured in terms of the extent to which each outcome variable is 'conditioned' by the background variables at each level. For example, the effect that a high level of unauthorised absence may be having on any pupil can be assessed through comparing the mean observed difference in the attainment of that young person with the expected mean for all young people in the dataset, taking into account the relevant background variables at school and pupil level (including prior attainment).

By analysing the data in this way, it is possible to see the overall effects of each of the variables and identify the variables that have a significant impact. However, it should be noted that:

- No multilevel model is likely to include every possible variable. The background variables included in the models for the assessment of the

impact of attendance on attainment included those pupil- and school-level variables that are known from past and current research to be relevant to pupil outcomes.

- The models do not identify causality in a definitive way, but simply indicate significant factors that appear to bear some relationship to the outcomes. For instance, the analysis of the data indicated that young people in receipt of free school meals had higher levels of authorised and unauthorised absence than young people not in receipt of free school meals. This does not mean that being in receipt of free school meals caused lower levels of attendance, but simply indicates that the level of absence amongst such young people was higher than would have been expected by comparison with young people with the same level of prior attainment and other background characteristics.
- A multilevel model is only as good as our understanding of the educational processes at work in influencing young people's attendance and attainment.

In order to prepare the data for inclusion in the models, the items in the questionnaires need to be reduced to a more manageable data set. Ideally, data needs to be either *dichotomous* (for example, male or not male) or *continuous* (in which the variable can take any value over a given range). The data in the surveys had, therefore, to be manipulated in order to provide information that could be used in the models.

The Models

The multilevel models of pupil outcomes (attendance and attainment) included data obtained from a number of sources.

- Individual data on pupil attendance and level of English fluency obtained from pupil data forms returned by schools (these forms also included data on young people designated as part of the gifted and talented or widening participation cohorts under EiC and Aimhigher, although this information was not included in the current analysis).
- Data on young people's sex, eligibility for free school meals, special educational needs, English as an additional language and (for 2001/02 only) ethnicity, obtained from pupil data forms in 2000/01 and PLASC in 2001/02.
- Data on pupil prior attainment (at Key Stages 2 and 3) and attainment (at Key Stages 3 and 4) obtained from either the DfES's valued-added analysis (2000/01) or the National Pupil Database (2001/02).
- Background data obtained from the NFER's Register of Schools (ROS). This included data on schools' location, size, age range, management type (Foundation, maintained, voluntary aided, etc.), school type (grammar, comprehensive, modern, etc.), aggregated profiles of SEN, free school meal eligibility, attainment profile, etc.

- Policy specific data (e.g. Phase of EiC, school in an EAZ, designation as Beacon or Specialist School, Phase of BIP, etc.).

To date, and as indicated above, the analysis has focused on the outcomes for the Year 9 and Year 11 cohorts, for whom end of Key Stage attainment data (average levels at Key Stage 3 and GCSE and equivalent scores) is available. The construction of the models was an iterative, stepwise process. To begin with, each model was constructed at two levels, with simple residuals at school and pupil levels. In order to identify all significant variables, a procedure was adopted whereby the models were first set up without the background variables in order to establish the amount of variance at school and pupil level for each of the outcome variables. Subsequently, sets of the pupil-level variables were included and those that were not significant were removed. School-level variables were then fitted and all non-significant variables were removed in order to get the most 'parsimonious' overall model (that is, the model that would explain the greatest amount of variance with the removal of all non-significant variables).

During this process, a number of further strategies were introduced at each stage in order to make sure that the various derived variables and background data were not overly weighted in the models. As in all such modelling, background variables were checked to examine their interaction with other variables and, where necessary, specific interaction variables were derived for inclusion in the analysis. For example, one such interaction variable was noted amongst the Year 11 cohort in relation to girls and the performance level of the school. In the final authorised absence model it emerged that girls in low-performing schools had higher levels of authorised absence (an additional 3.9 half days) than girls in all other schools.

Where data was recorded on a continuous scale (particularly in terms of prior attainment and free school meals) investigations were undertaken to see whether quadratic functions 'fitted' the input data better than a straight line function. Using this function reduced the likelihood that the impact of such data (such as the percentage of young people eligible for free school meals in a school) would be over-emphasised. In the final model, however, no variables to which quadratic functions were fitted emerged as significant.

APPENDIX 3 Outcomes of Multilevel Modelling

Effect sizes are used as a way of directly comparing the impact of independent variables on the dependent variable in question, when the independent variables all have different scales (such as dichotomous or continuous). There are a variety of ways in which effect sizes can be displayed and this has resulted in much debate between statisticians and educationalists.

In the models presented in Appendix 3, the following approach to effect sizes has been adopted. For dichotomous variables, the change that is displayed is that which is seen in the dependent variable when the independent variable is present (that is the pupil has that characteristic). An example of this is seen in the model for Capped 8 Total GCSE score. The coefficient for 'gender' is 2.67. This shows that a girl, on average, has 2.67 more GCSE points than a boy. For continuous variables (an area over which there is more debate), the $\sqrt{2}$*standard deviation has been used to determine the effect size. The effect size shown for these variables is therefore the change in the dependent variable for the same proportional change in the standard deviation of the independent variable.

Table 1. Coefficients for Year 11 authorised absence model

Authorised Absence	Multilevel results				
				95% Confidence interval	
Parameter	Estimate	Standard error	Sig.	Min.	Max.
Base case					
School variance	68.630	11.498	*	46.094	91.166
Pupil variance	839.812	10.148	*	819.922	859.702
Final model					
School variance	31.297	5.816	*	19.898	42.696
Pupil variance	787.316	9.765	*	768.177	806.455
Fixed coefficients					
CONS	26.133	1.332	*	23.522	28.744
GENDER	3.088	0.657	*	1.800	4.376
GENDER MISS	4.539	1.051	*	2.479	6.599
FSM	9.474	0.699	*	8.104	10.844
SEN 1	7.152	1.203	*	4.794	9.510
SEN 2	6.227	1.223	*	3.830	8.624
SEN 3	11.586	1.772	*	8.113	15.059
SEN 5	11.238	1.907	*	7.500	14.976
FLUENCY 1	-19.642	7.604	*	-34.546	-4.738
FLUENCY 2	-10.900	2.867	*	-16.519	-5.281
FLUENCY 3	-9.688	1.848	*	-13.310	-6.066
FLUENCY 4	-9.806	1.197	*	-12.152	-7.460
SPECIAL	-4.425	1.473	*	-7.312	-1.538
COMP16	4.705	1.451	*	1.861	7.549
SMALL	-5.366	1.433	*	-8.175	-2.557
SEXLOW	3.923	1.174	*	1.622	6.224
LONDON	-6.031	1.877	*	-9.710	-2.352

Percentage reduction = 6% of pupil variance
Model does not control for prior attainment or pupil attitudes

Table 2. Coefficients for Year 11 unauthorised absence model

Unauthorised Absence		Multilevel results			
				95% Confidence interval	
Parameter	Estimate	Standard error	Sig.	Min.	Max.
Base case					
School variance	34.803	6.037	*	22.970	46.636
Pupil variance	453.550	5.662	*	442.452	464.648
Final model					
School variance	14.864	2.859	*	9.260	20.468
Pupil variance	443.356	5.535	*	432.507	454.205
Fixed coefficients					
CONS	2.657	0.711	*	1.263	4.051
FSM	4.109	0.516	*	3.098	5.120
SEN 1	4.474	0.923	*	2.665	6.283
SEN 2	6.964	0.913	*	5.175	8.753
SEN 3	12.498	1.284	*	9.981	15.015
SEN 5	6.930	1.438	*	4.112	9.748
FLUENCY 3	-5.512	1.335	*	-8.129	-2.895
SWEST	5.909	2.070	*	1.852	9.966
LOW	6.007	1.075	*	3.900	8.114
SEXFLU4	-4.047	1.031	*	-6.068	-2.026
YEAR	-3.391	0.996	*	-5.343	-1.439
BIPPH1	4.530	1.410	*	1.766	7.294
FLUENCY 2	-4.389	2.108	*	-8.521	-0.257

Percentage reduction = 2% of pupil variance
Model does not control for prior attainment or pupil attitudes

Table 3. Coefficients for Year 11 attendance model

Attendance			Multilevel results			
	Parameter	Estimate	Standard error	Sig.	95% Confidence interval Min.	Max.
Base case						
School variance		10.030	1.708	*	6.682	13.378
Pupil variance		102.497	1.280	*	99.988	105.006
Final model						
School variance		3.826	0.718	*	2.419	5.233
Pupil variance		97.599	1.218	*	95.212	99.986
Fixed coefficients						
CONS		92.668	0.459	*	91.768	93.568
GENDER		-0.945	0.247	*	-1.429	-0.461
GENDER MISS		-1.538	0.400	*	-2.322	-0.754
FSM		-3.752	0.245	*	-4.232	-3.272
SEN 1		-2.926	0.435	*	-3.779	-2.073
SEN 2		-3.720	0.431	*	-4.565	-2.875
SEN 3		-6.925	0.604	*	-8.109	-5.741
SEN 5		-4.896	0.676	*	-6.221	-3.571
FLUENCY 1		7.105	2.678	*	1.856	12.354
FLUENCY 2		4.271	1.010	*	2.291	6.251
FLUENCY 3		4.131	0.654	*	2.849	5.413
FLUENCY 4		2.602	0.539	*	1.546	3.658
COMP16		-1.425	0.502	*	-2.409	-0.441
SMALL		1.497	0.523	*	0.472	2.522
SEXLOW		-0.917	0.430	*	-1.760	-0.074
LONDON		2.247	0.692	*	0.891	3.603
LOW		-3.122	0.546	*	-4.192	-2.052
WESTMID		2.309	0.798	*	0.745	3.873
SEXFLU4		1.449	0.625	*	0.224	2.674
YEAR		1.208	0.524	*	0.181	2.235

Percentage reduction = 5% of pupil variance
Model does not control for prior attainment or pupil attitudes

Table 4. Coefficients for Year 9 authorised absence model

Authorised Absence		Multilevel results			
				95% Confidence interval	
Parameter	Estimate	Standard error	Sig.	Min.	Max.
Base case					
School variance	80.288	12.768	*	55.263	105.313
Pupil variance	725.482	8.678	*	708.473	742.491
Final model					
School variance	55.407	9.051	*	37.667	73.147
Pupil variance	698.519	8.355	*	682.143	714.895
Fixed coefficients					
CONS	22.171	1.288	*	19.647	24.695
GENDER	3.192	0.507	*	2.198	4.186
SEN 1	7.036	0.987	*	5.101	8.971
SEN 2	8.287	1.085	*	6.160	10.414
SEN 3	11.624	1.372	*	8.935	14.313
SEN 5	6.104	1.490	*	3.184	9.024
FSM	9.477	0.576	*	8.348	10.606
FLUENCY 2	-6.996	3.083	*	-13.039	-0.953
FLUENCY 3	-5.935	1.763	*	-9.390	-2.480
FLUENCY 4	-4.986	1.344	*	-7.620	-2.352
FLUENCY MISS	-3.579	1.407	*	-6.337	-0.821
COMP16	3.890	1.644	*	0.668	7.112
LONDON	-12.070	2.228	*	-16.437	-7.703

Percentage reduction = 4% of pupil variance
Model does not control for prior attainment or pupil attitudes

Table 5. Coefficients for Year 9 unauthorised absence model

Unauthorised Absence		Multilevel results			
				95% Confidence interval	
Parameter	Estimate	Standard error	Sig.	Min.	Max.
Base case					
School variance	118.636	18.384	*	82.603	154.669
Pupil variance	348.240	4.396	*	339.624	356.856
Final model					
School variance	107.924	16.954	*	74.694	141.154
Pupil variance	343.643	4.389	*	335.041	352.245
Fixed coefficients					
CONS	-4.692	3.903		-12.342	2.958
SEN 1	2.730	0.723	*	1.313	4.147
SEN 2	5.583	0.800	*	4.015	7.151
SEN 3	8.091	1.013	*	6.106	10.076
SEN 5	4.016	1.085	*	1.889	6.143
FSM	4.061	0.428	*	3.222	4.900
FLUENCY 2	-4.881	2.198	*	-9.189	-0.573
FLUENCY 3	-3.079	1.318	*	-5.662	-0.496
FTEQT	0.143	0.060	*	0.025	0.261
GIRLS	10.710	3.396	*	4.054	17.366
BEACON	-8.717	3.952	*	-16.463	-0.971
SEXFLU4	-7.594	1.263	*	-10.069	-5.119

Percentage reduction = 1% of pupil variance
Model does not control for prior attainment or pupil attitudes

Table 6. Coefficients for Year 9 attendance model

Attendance		Multilevel results			
				95% Confidence interval	
Parameter	Estimate	Standard error	Sig.	Min.	Max.
Base case					
School variance	16.171	2.566	*	11.142	21.200
Pupil variance	88.221	1.114	*	86.038	90.404
Final model					
School variance	14.093	2.259	*	9.665	18.521
Pupil variance	83.927	1.059	*	81.851	86.003
Fixed coefficients					
CONS	91.956	0.504	*	90.968	92.944
GENDER	-0.830	0.187	*	-1.197	-0.463
SEN 1	-2.609	0.353	*	-3.301	-1.917
SEN 2	-3.707	0.387	*	-4.466	-2.948
SEN 3	-5.302	0.489	*	-6.260	-4.344
SEN 5	-2.471	0.535	*	-3.520	-1.422
FSM	-3.492	0.208	*	-3.900	-3.084
FLUENCY 2	3.367	1.092	*	1.227	5.507
FLUENCY 3	2.383	0.661	*	1.087	3.679
FLUENCY 4	2.911	0.513	*	1.906	3.916
FLUENCY MISS	1.581	0.579	*	0.446	2.716
LONDON	3.692	1.079	*	1.577	5.807

Percentage reduction = 5% of pupil variance
Model does not control for prior attainment or pupil attitudes

Table 7. Coefficients for Year 11 model: capped 8 total GCSE score

Capped 8 Total score		Multilevel results						
				95% Confidence interval				
Parameter	Estimate	Standard error	Sig.	Min.	Max.			
Base case								
School variance	50.566	8.200	*	34.494	66.638			
Pupil variance	181.285	2.292	*	176.793	185.777			
Final model								
School variance	17.365	4.238	*	9.059	25.671			
School KS3 covar.	-2.404	0.712	*	-3.800	-1.008			
School KS3 variance	0.466	0.134	*	0.203	0.729			
Pupil variance	48.299	0.659	*	47.007	49.591		**Effect Size**	
Fixed coefficients								
CONS	-11.072	0.667	*	-12.379	-9.765	**Lower**	**Mean**	**Upper**
KS3AV	9.529	0.113	*	9.308	9.750	15.29	15.65	16.01
AUTHAB	-0.075	0.003	*	-0.081	-0.069	-3.18	-2.95	-2.71
UNAUTHAB	-0.101	0.005	*	-0.091	-0.111	-2.35	-2.60	-2.85
GENDER	2.668	0.154	*	2.366	2.970	2.37	2.67	2.97
FSM	-0.951	0.184	*	-1.312	-0.590	-1.31	-0.95	-0.59
FLUENCY 1	-17.676	7.034	*	-31.463	-3.889	-31.46	-17.68	-3.89
FLUENCY 2	6.274	0.940	*	4.432	8.116	4.43	6.27	8.12
FLUENCY 3	4.218	0.546	*	3.148	5.288	3.15	4.22	5.29
FLUENCY 4	4.436	0.427	*	3.599	5.273	3.60	4.44	5.27
BEACON	1.594	0.716	*	0.191	2.997	0.19	1.59	3.00
CTC	4.910	2.306	*	0.390	9.430	0.39	4.91	9.43
HIGH	2.380	1.034	*	0.353	4.407	0.35	2.38	4.41
SEN 1	-1.814	0.316	*	-2.433	-1.195	-2.43	-1.81	-1.19
SEN 2	-1.664	0.340	*	-2.330	-0.998	-2.33	-1.66	-1.00
SEN 3	-3.344	0.474	*	-4.273	-2.415	-4.27	-3.34	-2.41
SEN 5	-1.863	0.523	*	-2.888	-0.838	-2.89	-1.86	-0.84
SEXUNAUTH	-0.018	0.008	*	-0.034	-0.002	-0.65	-0.35	-0.04
SEXFLU4	-0.996	0.465	*	-1.907	-0.085	-1.91	-1.00	-0.08

Percentage reduction = 73% of pupil variance
Model controls for prior attainment
Model does not control for pupil attitudes

Table 8. Coefficients for Year 11 model: 5+ A*-C grades

5+ A* to C Grades		Multilevel results						
				95% Confidence interval				
Parameter	**Estimate**	**Standard error**	**Sig.**	**Min.**	**Max.**			
Base case								
School variance	0.58	0.097	*	0.390	0.770			
Final model								
School variance	0.453	0.093	*	0.271	0.635			
School KS2 covar.	-0.108	0.072		-0.249	0.033			
School KS2 variance	0.333	0.107	*	0.123	0.543			
Fixed coefficients							**Odds multiplier**	
CONS	-1.194	0.113	*	-1.415	-0.973	**Lower**	**Mean**	**Upper**
KS3AV	3.02	0.098	*	2.828	3.212	16.910	20.491	24.831
GENDER	0.832	0.074	*	0.687	0.977	1.988	2.298	2.657
FSM	-0.259	0.091	*	-0.437	-0.081	0.646	0.772	0.923
FLUENCY 4	0.986	0.193	*	0.608	1.364	1.836	2.680	3.913
FSM School	-0.029	0.022		-0.072	0.014	0.930	0.971	1.014
FSM QUAD School	0.008	0.003	*	0.002	0.014	1.002	1.008	1.014
BEACON	0.634	0.229	*	0.185	1.083	1.203	1.885	2.953
HIGH	0.977	0.389	*	0.215	1.739	1.239	2.656	5.694
SEX-FLUENCY 4	-0.444	0.219	*	-0.873	-0.015	0.418	0.641	0.985
AUTH ABS	-0.019	0.001	*	-0.021	-0.017	0.979	0.981	0.983
UNAUTH ABS	-0.052	0.006	*	-0.064	-0.040	0.938	0.949	0.961

Model controls for prior attainment
Model does not control for pupil attitudes

Table 9. Coefficients for Year 11 model: no GCSE grades above grade C

No C Grades		Multilevel results						
				95% Confidence interval				
Parameter	**Estimate**	**Standard error**	**Sig.**	**Min.**	**Max.**			
Base case								
School variance	0.51	0.09	*	0.34	0.68			
Final model								
School variance	0.31	0.08	*	0.17	0.46			
School KS2 covar.	0.03	0.06		-0.08	0.14			
School KS2 variance	0.33	0.08	*	0.17	0.48			
Fixed coefficients							**Odds multiplier**	
CONS	-1.55	0.09	*	-1.725	-1.381	**Lower**	**Mean**	**Upper**
KS3AV	-1.918	0.08	*	-2.081	-1.755	0.12	0.15	0.17
GENDER	-0.735	0.07	*	-0.864	-0.606	0.42	0.48	0.55
FSM	0.254	0.07	*	0.111	0.397	1.12	1.29	1.49
AUTH ABS	0.011	0.00	*	0.009	0.013	1.01	1.01	1.01
UNAUTH ABS	0.03	0.00	*	0.022	0.038	1.02	1.03	1.04
SEN 1	0.27	0.12	*	0.035	0.505	1.04	1.31	1.66
SEN 3	0.74	0.20	*	0.356	1.124	1.43	2.10	3.08
FLUENCY 2	-2.386	0.42	*	-3.215	-1.557	0.04	0.09	0.21
FLUENCY 3	-0.732	0.23	*	-1.173	-0.291	0.31	0.48	0.75
FLUENCY 4	-0.716	0.16	*	-1.022	-0.410	0.36	0.49	0.66
HIGH	-1.842	0.55	*	-2.910	-0.774	0.05	0.16	0.46
SEXAUNAUTH	-0.01	0.01	*	-0.020	0.000	0.98	0.99	1.00

Model controls for prior attainment
Model does not control for pupil attitudes

Table 10. Coefficients for Year 9 model: Key Stage 3 average level

KS3 Average		Multilevel results						
				95% Confidence interval				
Parameter	Estimate	Standard error	Sig.	Min.	Max.			
Base case								
School variance	0.283	0.041	*	0.203	0.363			
Pupil variance	1.147	0.013	*	1.121	1.172			
Final model								
School variance	0.245	0.050	*	0.147	0.343			
School KS3 covar.	-0.061	0.013	*	-0.086	-0.036			
School KS3 variance	0.017	0.004	*	0.009	0.025			
Pupil variance	0.379	0.005	*	0.369	0.389		Effect	
Fixed coefficients							Size	
CONS	1.656	0.088	*	1.479	1.823	Lower	Mean	Upper
KS2AV	0.923	0.019	*	0.888	0.962	1.02	1.06	1.10
AUTHAB/10	-0.036	0.003	*	-0.042	-0.030	-0.16	-0.13	-0.11
UNAUTHAB/10	-0.060	0.008	*	-0.077	-0.045	-0.20	-0.16	-0.12
GENDER	0.094	0.014	*	0.068	0.122	0.07	0.10	0.12
FSM	-0.110	0.016	*	-0.141	-0.079	-0.14	-0.11	-0.08
SEN 1	-0.302	0.029	*	-0.357	-0.243	-0.36	-0.30	-0.24
SEN 2	-0.454	0.030	*	-0.511	-0.393	-0.51	-0.45	-0.39
SEN 3	-0.624	0.040	*	-0.700	-0.544	-0.70	-0.62	-0.54
SEN 5	-0.493	0.047	*	-0.583	-0.399	-0.58	-0.49	-0.40
FLUENCY 1	-0.688	0.216	*	-1.110	-0.264	-1.11	-0.69	-0.26
FLUENCY 2	-0.404	0.099	*	-0.598	-0.210	-0.60	-0.40	-0.21
FLUENCY 4	0.192	0.038	*	0.116	0.264	0.12	0.19	0.26
YEAR	0.155	0.040	*	0.077	0.233	0.08	0.16	0.23
PCFSM	-0.008	0.001	*	-0.010	-0.006	-0.18	-0.15	-0.11
GIRLS	0.143	0.052	*	0.041	0.245	0.04	0.14	0.24
NWEST	0.100	0.042	*	0.018	0.182	0.02	0.10	0.18
EAST	0.180	0.071	*	0.040	0.318	0.04	0.18	0.32
SEXUNAUTH	0.024	0.009	*	0.006	0.042	0.02	0.06	0.10
SEXKS2	0.036	0.017	*	0.002	0.068	0.00	0.03	0.06

Percentage reduction = 67% of pupil variance
Model controls for prior attainment
Model does not control for pupil attitudes

Table 11. Coefficients for Year 9 model: Key Stage 3 English

English Level		Multilevel results						
Parameter	Estimate	Standard error	Sig.	95% Confidence interval Min.	Max.			
Base case								
School variance	0.307	0.045	*	0.219	0.395			
Pupil variance	1.365	0.016	*	1.334	1.396			
Final model								
School variance	0.423	0.090	*	0.247	0.599			
School KS3 covar.	-0.092	0.022	*	-0.135	-0.049			
School KS3 variance	0.025	0.006	*	0.013	0.037			
Pupil variance	0.691	0.010	*	0.671	0.711		**Effect Size**	
Fixed coefficients								
CONS	2.152	0.110	*	1.936	2.368	**Lower**	**Mean**	**Upper**
KS2AV	0.774	0.021	*	0.733	0.815	0.84	0.88	0.93
AUTHAB/10	-0.035	0.004	*	-0.043	-0.027	-0.16	-0.13	-0.10
UNAUTHAB/10	-0.072	0.012	*	-0.096	-0.048	-0.25	-0.19	-0.13
GENDER	0.432	0.019	*	0.395	0.469	0.39	0.43	0.47
FSM	-0.139	0.022	*	-0.182	-0.096	-0.18	-0.14	-0.10
SEN 1	-0.419	0.040	*	-0.497	-0.341	-0.50	-0.42	-0.34
SEN 2	-0.640	0.042	*	-0.722	-0.558	-0.72	-0.64	-0.56
SEN 3	-0.946	0.055	*	-1.054	-0.838	-1.05	-0.95	-0.84
SEN 5	-0.835	0.065	*	-0.962	-0.708	-0.96	-0.84	-0.71
FLUENCY 1	-0.660	0.292	*	-1.232	-0.088	-1.23	-0.66	-0.09
FLUENCY 2	-0.572	0.135	*	-0.837	-0.307	-0.84	-0.57	-0.31
FLUENCY 4	0.274	0.052	*	0.172	0.376	0.17	0.27	0.38
PCFSM	-0.005	0.002	*	-0.009	-0.001	-0.17	-0.09	-0.02
SEXUNAUTH	0.030	0.013	*	0.005	0.055	0.01	0.07	0.13

Percentage reduction = 49% of pupil variance
Model controls for prior attainment
Model does not control for pupil attitudes

Table 12. Coefficients for Year 9 model: Key Stage 3 mathematics

Maths Level		Multilevel results						
				95% Confidence interval				
Parameter	Estimate	Standard error	Sig.	Min.	Max.			
Base case								
School variance	0.310	0.045	*	0.222	0.398			
Pupil variance	1.621	0.019	*	1.584	1.658			
Final model								
School variance	0.411	0.085	*	0.244	0.578			
School KS3 covar.	-0.105	0.023	*	-0.150	-0.060			
School KS3 variance	0.030	0.006	*	0.018	0.042			
Pupil variance	0.635	0.009	*	0.617	0.653		**Effect Size**	
Fixed coefficients								
CONS	1.240	0.190	*	0.868	1.612	**Lower**	**Mean**	**Upper**
KS2AV	1.111	0.025	*	1.062	1.160	1.21	1.27	1.32
AUTHAB/10	-0.038	0.003	*	-0.044	-0.032	-0.16	-0.14	-0.12
UNAUTHAB/10	-0.036	0.006	*	-0.048	-0.024	-0.12	-0.09	-0.06
GENDER	-0.042	0.018	*	-0.077	-0.007	-0.08	-0.04	-0.01
FSM	-0.107	0.021	*	-0.148	-0.066	-0.15	-0.11	-0.07
SEN 1	-0.273	0.038	*	-0.347	-0.199	-0.35	-0.27	-0.20
SEN 2	-0.377	0.040	*	-0.455	-0.299	-0.46	-0.38	-0.30
SEN 3	-0.471	0.052	*	-0.573	-0.369	-0.57	-0.47	-0.37
SEN 5	-0.391	0.061	*	-0.511	-0.271	-0.51	-0.39	-0.27
FLUENCY 1	-0.576	0.279	*	-1.123	-0.029	-1.12	-0.58	-0.03
FLUENCY 4	0.260	0.050	*	0.162	0.358	0.16	0.26	0.36
PCFSM	-0.006	0.002	*	-0.010	-0.002	-0.18	-0.11	-0.04
GIRLS	0.149	0.070	*	0.012	0.286	0.01	0.15	0.29
SEXKS2	0.057	0.023	*	0.012	0.102	0.01	0.05	0.09

Percentage reduction = 61% of pupil variance
Model controls for prior attainment
Model does not control for pupil attitudes

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