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Effective Pre-School, Primary and Secondary Education Project (EPPSE 3-14)

Influences on Students' Dispositions in Key Stage 3: Exploring Enjoyment of School, Popularity, Anxiety, Citizenship Values and Academic Self-Concept in Year 9

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Executive Summary

There is increasing interest in studying a range of student outcomes in educational research because it is recognised that, while promoting good academic attainment is an essential function of schools, they also serve a range of other important purposes. Promoting student well being, social behaviour and positive attitudes or dispositions towards learning are also important. Schools are expected to promote positive values relating to citizenship, enjoyment of school and encourage favourable views of learning capabilities amongst students.

This report presents the results of analyses of students' dispositions in Year 9 (age 14). Reports on student's academic and social-behavioural development at this age are published separately (Sammons et al. 2011a, Sammons et al. 2011b). The original EPPE sample was recruited to the study at age 3 years plus and monitored to the end of Key Stage 3 (Year 9) in secondary school. An additional home sample of children (who had not attended a pre-school setting) was recruited when the pre-school sample started primary school. In addition to exploring pre-school influences, the EPPSE 3-14 research identifies the influence of primary and secondary school on students' later educational outcomes and trajectories, as well as investigating any continuing pre-school effects.

EPPSE 3-14 involves the collection and analysis of a wide range of quantitative data about student's development and its relation to individual student, family, home learning environment (HLE) characteristics and the characteristics of the pre-schools they attended. Additional 'value added' measures of primary school academic effectiveness have been derived from independent statistical analyses of national data sets conducted for all primary schools in England (Melhuish et al., 2006) as part of an earlier study. In addition, Contextual Value Added (CVA) national school indicators[1] of secondary school performance and Ofsted judgements[2] related to the secondary school attended have also been collected and incorporated into the EPPSE 3-14 data base to provide indicators of the quality of secondary schools attended to complement the measures on primary and pre-school settings. Thus it is possible to explore various features of pre-school, primary school and secondary influence on students' dispositions in Year 9.

Two separate questionnaire surveys were administered to students; the first asking students' views mainly about themselves (which we term dispositions) and the second asking them about their experiences of school and classroom life (which we term views or reports of school). Similar surveys, although somewhat shorter, had also been administered at younger ages when these students were in primary school in Year 2 (age 7) and Year 5 (age 10). Thus the research could link measures of individual students' dispositions in Year 2, Year 5 and Year 9 to explore changes over time. A range of statistical methods has been used to investigate results for 1766 students for whom at least one disposition outcome measure was collected in Year 9, representing 90% per cent of the students in the EPPSE 3-11 sample for whom valid baseline data had been collected on dispositions in Year 5.

The aims of the analyses were:

- to explore students' views on individual questions related to dispositions, compared to similar questions in Year 2 and Year 5;
- to examine students' responses for underlying dimensions (factors) related to their dispositions and views of school at the end of Key Stage 3;
- to explore the impact of individual, parent and early years home learning environment (HLE) characteristics on students' dispositions at the end of Year 9;
- to model students' dispositions to school and change in dispositions over Key Stage 3;
- to investigate any continuing impact of pre-school quality and effectiveness, including any variations in dispositions for students who had experienced different levels of quality of pre-school provision (and those who had not attended a pre-school centre i.e. the 'home' sample);

[1] From the Department of Education (DfE)
[2] From the Office for Standards in Education

- to investigate the influence of primary and secondary school academic effectiveness and quality on dispositions and changes in disposition (controlling for individual, family and HLE characteristics);
- to investigate how other measures of students' development including academic attainment and social behaviour relate to their dispositions;
- to investigate how students' perceptions of their secondary school experiences (views of school) relate to their dispositions.

Key findings

Views and experiences of school in Year 9

Six dispositions outcomes were identified using exploratory and confirmatory factor analysis of the Year 9 survey data.

Dispositions in Year 9
The analysis of the Year 9 student questionnaire revealed six underlying factors that we term dispositions, some overlapping with the outcomes at previous time points (Year 2, Year 5). The first two factors relate to *'Academic self-concepts for English and maths*', and are based on items taken from existing well established Academic self-concepts scales (Marsh 1990, Marsh & Hau 2003, Marsh & Craven 2006). The third factor *'Popularity'* relates to how popular students feel they are with other teenagers and how many friends they have. The fourth factor '*Anxiety'* reflects the degree to which the students feel unhappy, worried, nervous in new situations, fearful or suffer from minor ailments. The fifth factor *'Citizenship values'* relates to how important students feel certain behaviours are such as strong people not picking on weak people, respecting rules and laws, controlling your temper, respecting other's views, and sorting out disagreements without fighting. Lastly '*Enjoyment of school'* reflects the degree to which students reported they like lessons and being at school, like answering questions in class, but also how much the student experiences boredom in lessons or feels school is a waste of time.

Section 3 of the report shows the questionnaire items associated with each of these dimensions. Confirmatory factor analysis was the main method to identify these underlying dispositions because it produces more reliable and valid measures than using exploratory factor analysis alone.

At younger ages in primary education (in Year 2 and Year 5) the EPPSE students were found to be somewhat more positive towards school than they were in Year 9. In line with other research (MacBeath and Mortimore 2001) students tend to report 'enjoying' school less as they get older, and the results also suggest that their 'academic self-concepts' tends to decrease somewhat over time and the way they view their behaviour also becomes somewhat less favourable. Nonetheless, the majority of students still have fairly positive views in Year 9. For example, 51 per cent of Year 2 students reported liking school 'all the time' compared to 24 per cent of Year 5 students. This compares with 20 per cent of Year 9 strongly agreeing that they like being at school. Students' reports indicate that they feel they are less clever and are less likely to feel safe outside the classroom as they get older.

The findings that student's attitudes are less positive over time as they move through primary school has been commonly observed in a range of studies in different contexts (see Thomas et al. 2000; Keys and Fernandez 1992; Mortimore et al., 1989). It may reflect greater self awareness, and differences in schooling demands and life pressures, plus the growing importance of the peer group in adolescents' lives.

When asked how they felt about individual subjects, students' liking of individual subjects also showed a reduction over time for all subjects. However, the relative popularity of individual subjects remained fairly constant. Sport and the Arts/Creative subjects were still the most popular subjects in Year 9, the least popular being modern languages.

Students were generally confident about their overall ability in Year 9 (93% agreed/strongly agreed that they thought they could do most things well; 76% felt they were clever), but there was some variation in perceived ability in the individual subjects.

In Year 9 the majority of students still reported they liked school (69% agreed and 20% strongly agreed), and most liked their lessons (66% agreed and 18% strongly agreed with this statement) but boredom in lessons was reported by a substantial minority (36% of students agreeing and 5% strongly agreeing they get bored in class).

In terms of future plans, nearly all students believed it was important to get GCSEs and A levels, and the majority also felt it was important to get a degree. They had high aspirations, in total 77 per cent of students felt it was likely or very likely that they would go to university (41% think it is very likely, 36% fairly likely they will apply to go to university). It should be noted that most students in the EPPSE sample completed the surveys before current substantial increases in university fees were introduced.

Most students in Year 9 believe they are popular with their friends. Only a minority of students felt they don't make friends easily (10%) whereas 62 per cent agreed and 28 per cent strongly agreed that they make friends easily. Around a fifth felt unpopular (20%) whereas 65 per cent agreed and 12 per cent strongly agreed that they were popular with their peers.

Anxious behaviours were a common feature of students at this age group, with approximately half feeing nervous in new situations and worrying a lot. Approximately one in five students indicated that they felt unhappy or suffered regularly from minor ailments (14% agreed/ 3% strongly agreed they felt unhappy and 22% agreed/ 6% strongly agreed they suffer from minor ailments). Anxiety related behaviours were significantly more commonly reported by girls.

The impact of individual student, family and home characteristics on students' dispositions

The analyses highlight the influence of a range of student, family and home environment factors that predict variation in students' dispositions. An analysis that contextualised students' outcomes in terms of these factors was carried out. The results show that individual student and family background factors have weaker relationships with students' dispositions than with their academic outcomes in Year 9 (see Sammons et al 2011a), also that relationships are generally weaker than those found with some aspects of student's social behaviour (see Sammons et al 2011b). These results are in similar to those found previously when the sample was in primary school.

Student background

Girls reported significantly different dispositions than boys in terms of their 'maths academic self-concept', 'anxiety', 'popularity' and 'citizenship values'. Girls have a lower 'academic self-concept for maths', but there are no gender differences for 'English academic self-concepts' (even though girls at this age have significantly higher attainment in English). Girls also tend to have a poorer view of their 'popularity' and are more likely to report 'anxiety' than boys. However, girls show higher 'citizenship values' than boys.

Students from different ethnic groups were compared to the majority ethnic group, White UK, to explore any significant differences in their dispositions towards school. Most ethnic groups did not differ in their perceptions from the White UK heritage group, but there were some statistically significant patterns;

- Pakistani heritage students tended to report more favourable outcomes for all dispositions, especially for 'English and maths academic self-concepts' and 'enjoyment of school'.

- Indian students also reported greater 'enjoyment of school', had higher 'maths academic self-concepts' scores, were more positive in assessing their 'popularity' with peers and also reported lower levels of 'anxiety'.
- Black African heritage group also, on the whole, had a higher 'English and maths academic self-concepts' and were more positive in assessing their 'popularity with peers than the White UK group.
- Black Caribbean heritage group also, on the whole, had a higher 'English academic self-concepts' and were more positive in assessing their 'popularity' with peers than the White UK group.
- White European students reported higher 'citizenship values' than the White UK group.

Given the small numbers such ethnic differences should be treated with caution but the findings do not suggest that ethnic minority students have slightly different (as a group) views of school or views of themselves than the majority White UK group.

Students who had been identified by their parents as having behavioural problems in the early years also tended to report enjoying school less, being more anxious, and had a lower 'Maths academic self-concepts than other students in Year 9. Students who had been identified by their parents as having developmental problems in the early years also tended to report higher 'citizenship values', this may be because such students are more likely to experience SEN (as identified in our reports on academic and behavioural outcomes) and perhaps face more bullying.

Students who had very low birth weight reported they felt less 'popular 'with their peers in Year 9. This may reflect long term developmental difficulties. The student's number of siblings at entry to pre-school was also significant. Students with two or more siblings tended to 'enjoy' school less than singletons. For only children the company of other young people at school may be of special importance in adolescence.

Lastly, students who were older in the year group tended to have a better 'maths academic self-concepts' than younger students within the year group. This effect at this age appears to relate to developmental differences in attainment as it fails to be significant once attainment measured by KS3 Teacher Assessment (TA) levels is taken into account (there is a well known association between age in months and differences in attainment within a year group, hence the development of age standardised tests).

Family background

Poverty status was measured using the Free Schools Meals (FSM) entitlement measure. Students entitled to FSM had lower 'Maths academic self-concepts' scores. The highest socio-economic level of either parent (family SES) was also tested, based on their occupation in KS2. Students from 'Other Professional Non-Manual', 'Skilled Non-Manual' and 'Skilled Manual' families had a lower 'Maths academic self-concepts than students from a Professional Non-manual household. No other categories were found to differ from this group significantly in their dispositions.

The employment status of fathers was also found to be related to 'maths academic self-concepts'. Students who had fathers who were employed full time and those who were studying were found to have higher 'Maths academic self-concepts' than students whose fathers were not working.

The qualification level of both parents was also examined. There were no clear patterns with regard to mother's or father's qualifications in contrast to findings for academic and social-behavioural outcomes in Year 9 (Sammons et al, 2011a&b).

Students from families with the highest earned income band measured earlier in KS1 when students were age 6 or 7 years were more likely to report higher 'popularity' and higher 'enjoyment of school' than students from a family with no earned income.

The marital status of parents showed a small but significant effect. Compared to students living in married households in KS2, students from widow/widower households reported higher levels of 'anxiety' than students from married households. Students from households where their parents were living together but not legally married reported higher 'popularity' with peers than students from married households. This is in contrast to findings on academic attainment and social behaviour (as rated by teachers) where students from single parent families showed poorer outcomes in year 9.

Home learning environment
The student's early years HLE has been found to be a positive predictor of other academic and social-behavioural outcomes at age 14. There was a positive association found between higher early years HLE index scores and students' later self-reported 'enjoyment of school' in Year 9. Students with higher HLE scores in the early years (top three groups) had significantly higher 'enjoyment of school' in Year 9 than students who had the lowest levels of home learning. Early learning experiences had given these children a better start to primary school and this advantage continued throughout primary education and on into secondary school.

Later home learning indicators also showed a positive link to 'popularity' and 'English academic self-concepts'. Students with high and medium levels of 'parent/child interaction' in KS1 reported higher 'popularity' levels in Year 9 compared to those with low levels of 'parent/child interaction'. In addition, students with high and medium levels of a global index of HLE in KS2 also showed more positive views of their 'popularity' with peers than students with low levels. Students who had high and medium levels of 'Individual Child Activities' in KS2 had higher 'English academic self-concepts' to those with low levels of 'Individual Child Activities'. These results confirm the continuing importance of parental support for learning in the home for all round child development with benefits that last into adolescence.

Relationship to Special Educational Needs
Students who have been identified as having SEN show less favourable dispositions for all factors except 'citizenship values'. SEN students have significantly less favourable scores for 'academic self-concepts', 'popularity' and especially 'anxiety'. Students who have been identified as having a special need (SEN) also show a number of less favourable dispositions. Students who are at the School Action stage of the SEN register report lower 'academic self-concepts' (English and maths) and 'enjoyment of school'. Students who are at the School Action plus stage of the register or have a full statement report higher 'anxiety' levels, lower 'popularity' and lower 'English academic self-concepts' than their peers.

After attainment was taken into account students on the SEN register show no significant differences in 'academic self-concepts' compared with other students. This suggests that the lower attainment of students with SEN in Year 9 accounts for differences in their 'academic self-concepts' rather than their SEN status per se although the two (academic attainment and SEN status) are strongly related and so relationships will tend to be reciprocal.

Relationship to academic attainment and social-behavioural outcomes
Academic attainment was found to be significantly associated with students' dispositions for four dispositions ('academic self-concepts in English and maths', 'anxiety' and 'enjoyment of school'). Attainment in maths proved to be a strong predictor of 'maths academic self-concepts', 'anxiety' and 'enjoyment of school'. English was the strongest predictor of #English academic self-concepts#. In Year 5 attainment was not found to be related to 'enjoyment of school' but by Year 9 it showed a significant association. This may reflect a greater awareness of students' relative levels of attainment in KS3 and its implications for future educational choices and GCSE entry in secondary schools.

In addition, students rated more highly by their teachers for 'self regulation' in Year 9, after controlling for background characteristics had higher 'academic self-concepts in English and maths' higher 'citizenship values' and greater reported 'enjoyment of school'. These findings emphasise the

importance of 'self regulation' in shaping students' outcomes and predicting success in school (Sammons et al 2011b).

Relationship to experiences of secondary school

There was a strong link between students' self perceptions and their self-reported 'views of school'. Various factors were identified that relate to students' views and experiences of their secondary school strongly predicted their 'enjoyment of school' especially in relation to 'teacher support', 'valuing students', 'emphasis on learning' and the 'school environment'.

Students' experiences of their secondary school's 'emphasis on learning', 'learning resources' how much they 'valued students' and 'teacher discipline' were strong predictors of 'maths academic self-concepts'.

'Teacher support' and 'emphasis on learning' were also predictive of 'English academic self-concepts'. Students' reported experiences of 'teacher support', 'emphasis on learning' and 'valuing students' were also quite strongly predictive of the disposition outcome 'citizenship values'.

The link between the students' views and experiences of their secondary school and their dispositions was weaker for 'anxiety' and 'popularity', although less favourable views for the perceived 'behavioural climate' (scores of 'poor behaviour climate') of the school was found to be quite strongly predictive of increased 'anxiety' scores.

Pre-school quality and effectiveness and primary school effectiveness

Continuing pre-school influences

The analyses of EPPSE students' dispositions at the end of KS3 produced little evidence of any continuing pre-school effects for dispositions towards school, when comparing students who had attended pre-school with those who had not.

When investigating the quality of different aspects of pre-school experiences (comparing only those who had pre-school experience), higher levels of quality of experience in terms of 'positive relationship' scores (measured by the ARNETT instrument), lower 'punitiveness' scores and lower 'detachment' scores predicted higher 'English academic self-concepts' later on in KS3. Lower 'detachment' scores for pre-school experiences also predicted higher 'enjoyment of school' in Year 9 while poorer quality 'positive relationship' in pre-school predicted higher 'anxiety' scores in Year 9.

Quality of the pre-school was also measured through two environmental rating scales ECERS-E (Sylva et al., 2003) and ECERS-R (Harms et al., 1998). Neither of these measures predicted dispositions in Year 9. This is in contrast to findings for academic and social-behavioural outcomes in Year 9. Thus we can conclude that earlier pre-school influences tend to be less important as predictors of students' later dispositions than of academic or social-behavioural outcomes at the end of KS3.

Primary and secondary school academic effectiveness (contextualised value added)

Various measures of primary school academic effectiveness were tested as predictors but these were not found to relate to students' dispositions in Year 9. This is in contrast to findings for academic attainment measured by TA levels in Year 9 where those who had attended a more academically effective primary school showed continued benefits in their attainment at age 14 (see Sammons et al 2011a).

The contextualised and value added multilevel analyses show that there is not much secondary school-level variance (Year 9) in students' dispositions or in models of changes in dispositions, when account is taken of intake differences and students' dispositions in Year 5.

The small amount of secondary school level variation was found only for 'English academic self-concepts' in the contextualised model (4.3%), but this just failed to reach statistical significance for the value added model (4.1%). However, an additional analysis of peer data from 66 schools that EPPSE students attend was also carried out where the average number of students per school was much higher (mean=24) showed significant school level variation for all outcomes except 'anxiety' (variation=0.2%).

The largest variation amongst school for dispositions was found for 'enjoyment of school' (11.2%) followed by 'maths academic self-concepts' (6.2%), 'English academic self-concepts' (5.3%), 'popularity' (4.7%) and 'citizenship values' (2.9%). This contrasts with the much greater school level variance found for some of the views of school factors based on students' survey responses in Year 9.

Particularly high variation between schools was found for the factor that measured students' views of 'headteacher qualities' (14.5%), 'poor behaviour climate' (27.5%) and 'school environment' (27.6%)[3]. Some evidence of school level variation in specific areas was also found when individual questions were investigated. These were mainly related to 'enjoyment of school' items (feeling out of place, feeling school was a waste of time and feeling the school was a friendly place) and the importance students indicated they attached to gaining academic qualifications (this can be seen as a measure of educational aspirations).

There was also some variation between secondary schools in how much students reported they liked and felt they were good at Modern languages. These results show that secondary schools do vary in the quality of various features of school experiences, as reported by students in KS3. Some students show benefits from more favourable and supportive secondary school environments during KS3.

Ofsted inspection data was used to provide measures of secondary schools' quality and effectiveness for a range of areas, and tested in the contextualised multi level models. 'Enjoyment of school' was found to be predicted by a number of secondary school quality indicators derived from Ofsted inspection judgments. Schools that were judged to be 'outstanding' in 'meeting the needs of learners', 'how well learners achieve', 'the standard reached by learners', 'progress made by learners (including those with learning difficulties and disabilities)', and in developing student's skills to promote 'economic well-being in the future' had students that reported greater 'enjoyment of school' than students from schools judged as 'inadequate' in these aspects, controlling for differences in student, family and HLE characteristics.

Schools judged as 'outstanding' in the extent to which learners adopt healthy lifestyles and the extent to which 'learners develop workplace and other skills that will contribute to their future economic well-being' had students that reported lower levels of 'anxiety' than student who attended schools judged to be 'inadequate' in these areas. These findings suggest that these features of the quality of the secondary school can have a significant positive impact on certain affective outcomes in terms of our self report student disposition measures.

The secondary school academic effectiveness measure (derived from DfE CVA scores) was not found to be a significant predictor any of the other disposition outcomes. These results indicate that academically effective secondary schools do not seem to shape secondary students' 'enjoyment of school' in KS3.

[3] School level variation for null models. School level variation for other factors was lower but still significant for all but one factor: Teacher discipline (4%, ns), Valuing students (5%), Teacher support (5%), Emphasis on learning (6%) and Learning resources (11%). School variation after pupil, family and home learning environment was taken into account was still significant for all but one outcome: Headteacher qualities (14%), Behaviour climate (16%), School environment (24%), Teacher discipline (3% ns), valuing students (4%), Teacher support (5%), Emphasis on learning (6%), Learning resources (7%).

Estimating changes in dispositions over time

We studied changes in students' dispositions over time using value added analyses for the six outcomes to explore how dispositions altered from Year 5 to Year 9. Dispositions in Year 5 were used as a baseline, to assess the degree of change over the four year period. For these analyses we added to the contextualised multilevel models a prior measure, using the dispositions collected at Year 5 in addition to the background factors presented above. These analyses were undertaken to explore whether the student, family and HLE characteristics, found to be significant in predicting aspects of their dispositions measured at the end of Year 9, were also associated with differential change in these dispositions between Year 5 of primary school and Year 9 of secondary school.

Dispositions in Year 5 were used as a baseline, to assess the degree of change over the three year period. Where the corresponding measure was available, this proved to be the best predictor of later dispositions, although it usually accounted for only a small proportion of total variance in the Year 9 measure, reflecting the lower correlations.

The generally weak relationships found between dispositions prior dispositions in Year 5 to those in Year 9 may be in part a reflection of the high fluctuation in students' dispositions that seems to be occurring over time. The results indicate that students' dispositions show greater variability and are less predictable than measures of their cognition and social behaviour.

The generally weak relationships found between students' prior dispositions (Year 5) and those in Year 9 indicate fluctuation in students' dispositions over the four years covering transition to secondary school and across KS3 (this may reflect measurement difficulties and real changes in a students' views and feelings as they enter adolescence and adapt to secondary school environments). Similar weak relationships between Year 2 and Year 5 dispositions were reported in an earlier paper (Sammons et al 2008).

Thus we find that correlations between students' dispositions in Year 5 and Year 9 are relatively low compared to those we found for attainment or social behaviour across years KS3 ('enjoyment of school' r=0.24, 'academic self-image' in Year 5 and 'maths academic self-concepts' in Year 9 r=0.25, 'academic self-image' in Year 5 and 'English academic self-concepts' r=0.19, 'anxiety and isolation' in Year 5 and 'anxiety' in Year 9= 0.22).

Summary and implications

There is increasing interest in studying a range of student outcomes in educational research because it is recognised that, while promoting good academic attainment is an essential function of schools, they also serve a range of other important purposes. Promoting student well being, social behaviour and positive attitudes or dispositions towards learning are also important. Schools are expected to promote positive values relating to citizenship, enjoyment of school and encourage favourable views of learning capabilities amongst students.

This research confirms findings elsewhere (Keys and Fernandez 1992) that student attitudes tend to become less positive over time and that in a number of areas gender differences exist. The tendency of girls to have lower academic self-concepts than boys, feel less popular and have higher self reported 'anxiety' scores is something that is relevant to the organisation of school pastoral systems.

The findings in this report and the two accompanying reports on academic and social-behavioural development reveal important links between features of their secondary school experience as reported by students and their academic and behavioural outcomes as well as their dispositions to school. This suggests that schools should be encouraged to value students' views and take steps to collect information about their perspectives on a regular basis. Such information can provide an important source of evidence for school improvement and development planning given the substantial differences between schools in key areas as reported by students (for 'emphasis on learning', 'teacher support', 'school environment', 'headteacher qualities', 'behavioural climate' and 'learning

resources'). There is also evidence of important variation between schools in students' dispositions for 'enjoyment of school'. Taken together, the findings suggest that secondary schools do differ significantly in various ways that are likely to influence the quality of learning and well-being as perceived by students. Such evidence could provide valuable feedback to schools, especially where they maybe struggling to improve or are rated as inadequate by inspectors.

The findings of this Year 9 analysis of student dispositions show similarities to findings in Year 5 that suggest student background has only a small impact on dispositions compared to its impact on other outcomes (Sammons et al 2011a, 2011b). This may in part be linked to greater changes in self perceptions over time, suggesting concurrent influences play a larger role. However, gender differences were found for some outcomes, as was the case for EPPSE students' academic and social-behavioural outcomes in Year 9.

Year 9 student dispositions were found to relate to academic attainment and 'self regulation', suggesting that less academic students also have less positive experiences of learning. Students with SEN were found to be particularly vulnerable to poorer self perceptions, and this could be relevant in the development of student's personal goals.

Self perceptions, including items related to 'enjoyment of school' become less positive over time, but students are still generally positive in Year 9 about themselves and their school experience, with the majority of students liking school, feeling popular and feeling that academic success is important. More specifically almost two thirds of students think getting a university degree is very important and have high aspirations. A gender divides is evident with boys more inclined to like and feel competent in maths, science, ICT and sports and girls in English, the Arts and modern languages, areas in which there are also national differences in subject choices found at GSCE and A level.

A good quality early years HLE has been shown to benefit students' academic outcomes even in secondary school, and also their social behaviour. The early years HLE also predicts more favourable dispositions in Year 9. Thus encouraging positive learning experiences in the home and appropriate parenting skills that facilitate this could also nurture positive views of learning and school more generally in the longer term.

Family and child case studies of resilient and vulnerable children provide further in depth discussion of influences base on interviews and quantitative evidence. These provide deeper understanding of the parenting and schooling patterns that influence well being and developmental pathways (Siraj-Blatchford et al., 2011).

The research provides important evidence on educational influences on students' dispositions. Attending a high quality secondary school (as assessed through Ofsted judgements) appears to have some positive benefit to 'enjoyment of school' and lower 'anxiety' levels, suggesting that good quality schools also benefit emotional well-being and highlight the importance of including students' views in the school evaluation process.

Some of the strongest predictors of student dispositions relate to their views and experiences of key features of secondary school and classroom processes. In particular, the 'emphasis on learning', 'teacher support', 'behaviour climate' of the school ('poor behaviour climate' factor) predict more favourable dispositions as well as better academic attainment and social-behavioural outcomes.

Introduction

This report presents the results of analyses related to students' dispositions in Year 9 (age 14). The original EPPSE pre-school child sample (2,800) was recruited to the study at age 3 years plus. An additional 300 children who had not attended a pre-school setting (the 'home group) were recruited when the pre-school sample started primary school. The full sample (approximately 3,000 children) was then monitored to the end of Key Stage 1 (age 7, Year 2). The sample was followed again to the end of Key Stage 2 (age 11, Year 6). This third extension, the EPPSE 3-14 study has followed up the sample to the end of Key Stage 3 (age 14, Year 9). The longitudinal research design investigates the influence of primary and secondary school influences on students' educational outcomes in Year 9 (academic, social-behavioural and affective), as well as investigating any continuing pre-school effects.

As well as children's academic and social-behavioural outcome data, the EPPSE 3-14 study collected and analysed a wide range of information on individual student, family and home learning environment (HLE) characteristics, as well as information on the pre-schools the children attended.

Additional 'value added' measures of primary and secondary school academic effectiveness (derived from independent statistical analyses of national data sets) and selected indicators of school quality (measured by Ofsted inspection judgements), have been used in the analyses. These indicators about primary and secondary schools complement the measures collected earlier on the pre-school setting attended. The research therefore explores pre-school, primary and secondary school influences on students' outcomes in Year 9 both separately and jointly.

Student questionnaires (*All about Me* and *All about Me at School*) designed to explore individual students' views about school and classroom life (through self-report) were collected at different time points (aged 7, 10 and 14). A range of statistical methods have been used to investigate results for 1766 students for whom at least one disposition outcome measure was collected in Year 9, representing 90 per cent of sample whom had valid baseline data on dispositions in age 10 (Year 5).

Aims

The aims of the analyses were:

- to explore students' views on individual questions related to dispositions, compared to similar questions in Year 2 and Year 5;
- to examine students' responses for underlying dimensions (factors) related to their dispositions and views of school at the end of Key Stage 3;
- to explore the impact of individual, parent and home learning (HLE) characteristics on students' dispositions at the end of Year 9;
- to model students' dispositions to school and change in dispositions over Key Stage 3;
- to investigate any continuing impact of pre-school, including any variations in students' dispositions for those who had experienced different levels of quality of pre-school provision (and those who had not attended a pre-school centre i.e. the 'home' sample);
- to explore the impact of measures of pre-school processes, particularly quality and effectiveness on later student dispositions;
- to investigate the influence of primary and secondary school academic effectiveness and quality on dispositions and changes in disposition (controlling for individual, family and HLE characteristics);
- to investigate how other measures of students' development including academic attainment and social behaviour relate to their dispositions;
- to investigate how students' perceptions of their secondary school experiences (views of school) relate to their dispositions.

Methods

The findings reported rely on descriptive analyses and complex techniques such as exploratory and confirmatory factor analysis and multilevel analysis. Principal components analysis was used to examine underlying dimensions in students' dispositions (perceptions of themselves and attitudes towards school) and their school experiences. This enabled questionnaire items to be grouped in order to identify separate measures of attitudes towards school. Confirmatory factor analysis was then conducted to create a more robust overall model of dispositions in Year 9. Multilevel models analysed the extent to which different individual background characteristics (including individual student, family, home learning) predict students' dispositions in Year 9 and test the impact of indicators of pre-school, primary and secondary school experience on these dispositions.

The paper focuses on six disposition measures derived from Year 9 student questionnaires that covered a range of topics. The questionnaires were administered at the end of Year 9. At the end of Year 2 and 5 similar questionnaires of students' views were administered, so comparable measures of prior student dispositions are available and reported in an earlier paper (Sammons et al 2008).

Multilevel models provide accurate estimates of the impact of different individual or school characteristics on student outcomes (Goldstein 1995). They are used to explore institutional influences by partitioning variance into individual and higher levels (e.g. pre-school centre or primary or secondary school) reflecting clustering in the sample.

Earlier analyses over the pre-school period enabled the calculation of value-added estimates (residuals) of individual pre-school centre effects for children in the sample who attended a pre-school centre (see EPPE 3-11 Technical Paper 8a and b for details; Sammons et al 2002a, 2002b). These value-added measures of centre effectiveness have been included in subsequent analyses of students' educational outcomes, at the end of Year 9, to establish whether the effectiveness of the pre-school attended in promoting children's social-behavioural and academic development continues to show any relationships with students' later dispositions towards secondary school.

To examine the impact of secondary school on students' later outcomes in Year 9, measures of secondary school academic effectiveness in terms of national contextualised value added measures (CVA) and Ofsted judgements from inspections were utilised.

Background information about individual child, parent and family characteristics, was obtained initially through parent interviews conducted soon after children were recruited to the study. The parent interviews were designed to obtain information about a child's health and care history, details of family structure and parents' own educational and occupational backgrounds as well as some indications of parent-child activities. In most cases the parent interviews were conducted within 10 weeks of recruiting a child to the study and an excellent response rate (97%) was achieved. It should be noted that most interviews were with student's mothers and usually took place at the child's pre-school centre, although for some working parents telephone interviews were found to be more convenient.

Subsequently parents were asked to provide information via questionnaires about child, parent and family characteristics when the children were in Key Stage 1 of primary school (age approximately 6 years). Details were sought regarding any change in background information (in employment, income, family structure, number of siblings etc) as well as information on aspects of the HLE in Key Stage 1. The response rate obtained was 80.6 per cent[1]. Further information was collected by means of a parent questionnaire in Key Stage 2.

[1] Between the initial assessment at entry to pre-school and the Reception assessment 139 children dropped out of the study. The response rate is based on the corrected sample of 3032 children.

Structure of the paper and analyses
This report is divided into eight sections.
Section 1: gives details about the characteristics of the EPPSE 3-14 sample.

Section 2: describes how students answered the individual questions on the Year 9 *All about Me* questionnaire.

Section 3: describes how the baseline (Year 5) and outcome (Year 9) students' measures of dispositions were created using exploratory and confirmatory analysis of the self-report questionnaire items.

Section 4: investigates whether particular groups of students show differences in their dispositions at the end of Year 9 that are predicted by their individual, family and HLE background characteristics.

Section 5: investigates the effects of pre-school, primary and secondary school characteristics on students' dispositions.

Section 6: investigates the impact of other concurrent outcomes and factors on dispositions in Year 9. Including the relationships between students' academic attainment, social-behavioural dimensions and views of school factors collected in Year 9.

Section 7: investigates whether particular groups of students show differences in the extent of change in their dispositions from Year 5 to Year 9 and whether educational experiences at pre-school, primary and secondary school predict such changes from Year 5 to Year 9.

Finally, Section 8 summarises the results drawing together the main findings and conclusions.

Section 1: Characteristics of the sample at the end of Year 9

Of the original sample (n=3172) data was available for just over half (n=1766, 55.6%) for the *All about Me* questionnaire and the *All about me in school* questionnaire (n=1752, 55.3%). In total, 1766 students (55.6%) had at least one disposition outcome in Year 9.[2]

The research design used for the original pre-school phase of the EPPSE study is described in detail in EPPE Technical Paper 1 (Sylva et al. 1999). In summary, six English Local Authorities (LAs) in five regions participated in the research with children recruited from six main types of provision: nursery classes, playgroups, private day nurseries, Local Authority (LA) day care nurseries, nursery schools and integrated (combined) centres.

In order to enable comparison of centre and type of provision effects the project sought to recruit 500 children, 20 in each of 20-25 centres, from the various types of provision. In some LAs certain forms of provision were less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of some centres in the project (i.e. rural playgroups) more of these centres were included than originally proposed, bringing the sample total to 141 centres. In all 2,857 children in the pre-school were tracked to entry in reception at primary school. An additional sample of 314 'home' children (who had not attended a pre-school centre) was added at entry to primary school, for comparison with those who had attended pre-school, bringing the total sample to 3,172.

Once in primary school EPPSE children were asked their views about school life at two time points: Year 2 (age 6) and Year 5 (age 10). These students were then asked again at the end of Year 9 in secondary school. This section provides descriptive statistics for the sample at the end of Year 9 for whom questionnaire information had been obtained at age 14. Tables 1.1 to 1.3 provide a brief summary of the characteristics of the EPPSE 3-14 students at the end of Year 9 for whom at least one disposition factor score was available (n=1766).

Table 1.1 provides a brief summary of the characteristics of the students compared to the full sample and sample at the start of primary school. In all 22 per cent of EPPSE students in the sample had an ethnic background that was not white UK and 8.9 per cent had a different mother tongue than English. With respect to family structure, 13.8 per cent of the students lived in large families (3 or more siblings at entry to pre-school). Just under one in ten (151 students, 8.6% of the total sample) had not attended any type of pre-school (the 'home' group).

[2] Of the original EPPSE sample recruited to the study (3172), 2798 were followed up to the end of KS3 in Year 9. The response rate to the Year 9 *All about Me at School* and *All About Me* surveys was 63% of this sample. This represents approximately 55% of the original sample.

Table 1.1: Selected background characteristics for the valid sample of Year 9 students included in the dispositions analysis compared to the overall sample

	EPPSE Dispositions sample Year 9 (n=1766)		EPPSE sample at start of primary school (n=2754)		Full EPPSE sample (n=3172)	
	n	%	n	%	n	%
Gender*:						
Male	850	48.1	1584	51.6	1636	51.6
Female	916	51.9	1485	48.4	536	48.4
Ethnicity*:						
White UK Heritage	1374	77.8	2242	73.1	2295	72.4
White European Heritage	58	3.3	112	3.7	122	3.8
Black Caribbean Heritage	47	2.7	111	3.6	116	3.7
Black African Heritage	26	1.5	63	2.1	66	2.1
Black Other	6	0.3	19	0.6	122	0.7
Indian	40	2.3	65	2.1	67	2.1
Pakistani	87	4.9	165	5.4	177	5.6
Bangladeshi	15	0.8	35	1.1	40	1.3
Chinese	0	0.0	5	0.2	5	0.2
Other	29	1.6	61	2.0	62	2.0
Mixed Heritage	89	5.0	187	6.1	192	6.1
White Non European	2	0.1	4	0.1	4	0.1
English as an additional language (EAL)*	158	8.9	326	10.6	354	11.2
3 or more siblings *	243	13.8	308	9.5	308	9.7
Home Learning Environment Index*:						
0-13	128	7.2	289	9.4	308	9.7
14-19	363	20.6	651	21.2	665	21.0
20-24	380	21.5	706	23.0	727	22.9
25-32	591	33.5	938	30.6	960	30.3
33-45	244	13.8	342	11.1	346	10.9
Unknown	60	3.4	143	4.7	166	5.2
Type of pre-school*:						
Nursery Class	379	21.5	585	19.1	588	18.5
Playgroup	336	19.0	578	18.8	609	19.2
Private Day Nursery	364	20.6	501	16.3	516	16.3
Local Authority	212	12.0	415	13.5	433	13.7
Nursery Schools	256	14.5	504	16.4	519	16.4
Integrated (Combined)	68	3.9	171	5.6	192	6.1
Home	151	8.6	315	10.3	315	9.9

* Collected at entry to pre-school

Although the Year 9 sample returning questionnaires were broadly in line with the full sample (n=3172), there were some differences. There were slightly more White UK (77.8%) in this sample than the original sample (72.4%), and proportionately more girls (51.9% compared to 48.1% in the original sample).

Family background characteristics related to higher social class were also slightly over represented, as shown in Table 1.2. Students with parents from professional Non-manual social class were more likely to have returned questionnaire data in Year 9.

Table 1.2: Selected social class characteristics for the valid sample of Year 9 students included in the dispositions analysis compared to the overall sample

	EPPSE Dispositions sample Year 9 (n=1766)		EPPSE sample at start of primary school (n=2754)		Full EPPSE sample (n=3172)	
	n	n	%	n	%	%
Social Class Mother *:						
Professional Non Manual	99	5.6	122	4.0	126	4.0
Other Profess. Non Man.	406	23.0	595	19.4	605	19.1
Skilled Non-Manual	622	35.2	1026	33.4	1053	33.2
Skilled Manual	110	6.2	206	6.7	213	6.7
Semi Skilled	295	16.7	591	19.3	607	19.1
Unskilled	64	3.6	140	4.6	142	4.5
Never Worked	116	6.6	247	8.0	261	8.2
Unknown	54	3.1	142	4.6	165	5.2
Social Class Father *:						
Professional Non Manual	181	10.2	237	7.7	242	7.6
Other Profess. Non Man.	382	21.6	556	18.1	569	17.9
Skilled Non-Manual	225	12.7	364	11.9	375	11.8
Skilled Manual	421	23.8	734	23.9	747	23.5
Semi Skilled	198	11.2	348	11.3	355	11.2
Unskilled	40	2.3	82	2.7	85	2.7
Never Worked	14	0.8	35	1.1	36	1.1
Unknown	305	17.3	713	23.2	763	24.1
Family Highest SES*:						
Professional Non Manual	211	11.9	275	9.0	281	8.9
Other Profess. Non Man.	502	28.4	759	24.7	776	24.5
Skilled Non-Manual	555	31.4	946	30.8	974	30.7
Skilled Manual	230	13.0	444	14.5	452	14.2
Semi Skilled	180	10.2	391	12.7	406	12.8
Unskilled	27	1.5	76	2.5	79	2.5
Never Worked	31	1.8	84	2.7	88	2.8
Unknown	30	1.7	94	3.1	116	3.7

**** Taken from first parent questionnaire***

Fewer students in receipt of FSM returned the all about me questionnaire (12.9% compared to 17.7% of the full sample), and there were less students with multiple disadvantage returning the questionnaire.

Table 1.3: Selected employment and disadvantage characteristics for the valid sample of Year 9 students included in the dispositions analysis compared to the overall sample

	EPPSE Dispositions sample Year 9 (n=1766)		EPPSE sample at start of primary school (n=2754)		Full EPPSE sample (n=3172)	
	n	n	%	n	%	%
Income indicator Year 9						
Free school meals	228	12.9	548	17.9	562	17.7
No Free school meals	1463	82.8	2267	73.9	2314	73.0
Unknown	75	4.2	254	8.3	292	9.3
Employment status of mother during pre-school period*:						
Not working	770	43.6	1521	49.6	1572	49.6
Working part-time	580	32.8	868	28.3	890	28.1
Working full-time	295	16.7	456	14.9	463	14.6
Self-employed/combination part-time & self employed	86	4.9	129	4.2	130	4.1
Unknown	35	2.0	95	3.1	111	3.3
Total Multiple disadvantage*:						
0	447	25.3	637	20.8	644	20.3
1	505	28.6	761	24.8	781	24.6
2	340	19.3	594	19.4	613	19.3
3	168	9.5	379	12.3	391	12.3
4	117	6.6	247	8.0	257	8.1
5+	80	4.5	202	6.6	213	6.7
Unknown	109	6.2	249	8.1	273	8.2
Salary of family during KS1:						
No salary	279	15.8	589	18.5	569	17.9
£2500-15000	289	16.4	484	15.8	485	15.3
£17500-27500	293	16.6	411	13.4	411	13.0
£30000-35000	198	11.2	271	8.8	271	8.5
£37500-66000	347	19.6	470	15.3	470	14.8
£67500-132000+	141	8.0	173	5.6	173	5.5
Unknown	219	12.4	691	22.5	793	25.0
Salary of family during KS2:						
No salary	227	12.9	384	12.5	384	12.1
£2500-15000	282	16.0	415	13.5	415	13.1
£17500-27500	195	11.0	264	8.6	264	8.3
£30000-35000	192	10.9	254	8.3	254	8.6
£37500-66000	373	21.1	470	15.3	470	14.8
£67500-132000+	224	12.7	272	8.9	272	8.6
Unknown	273	15.5	1010	32.9	1113	35.1

**** Taken from first parent questionnaire***

Section 2: Students dispositions at the end of Year 9

In this section we describe some of the questionnaire results in terms of students' responses to individual survey items and provide some examples of differences in students' dispositions for different background factors. Students' responses to individual items are looked at in this section with analyses of difference between student groups related to gender, socio-economic status and SEN status[3].

Importance of academic achievement and academic self-concepts

Students were fairly positive in terms of their views of their academic ability (see Table 2.2), in line with research elsewhere (Kintrea et al 2011), but approximately one quarter to a third of students indicated they were less confident about their ability in English and maths (see Table 2.1). Overall, students' responses to individual 'English and maths academic self-concepts' questions were only weakly related[4].

There were some significant differences between girls and boys, with boys significantly more likely to have a higher 'self-concepts in maths' and girls in English for three of the five questionnaire items (girls did not significantly differ to boys in how good they felt they were compared to others in English or how easy the work was in English). Students in receipt of FSM had significantly poorer 'academic self-concepts' than other students for all the items except 'I have always done well in maths classes', where no significant differences were found.

Large differences were found for all the English and maths individual items for students who were classed as having a Special Educational Need (SEN), with SEN students having significantly poorer self-concepts than other students (for example only 13% of SEN students strongly agree they learn things quickly in maths compared to 24% of other students).

Table 2.1: Students' overall responses to items measuring Maths and English self-concepts in Year 9

Academic self-concepts in English and maths	Strongly agree		Agree		Disagree		Strongly disagree	
English	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I learn things quickly in my English classes	340	**19.5**	1024	**58.8**	349	**20.0**	28	**1.6**
I have always done well in my English classes	309	**17.7**	934	**53.5**	468	**26.8**	34	**1.9**
Compared to others my age I am good at English	234	**13.4**	875	**50.2**	587	**33.7**	46	**2.6**
Work in my English classes are easy for me	183	**10.5**	904	**51.9**	603	**34.6**	52	**3.0**
I get good marks in English	296	**17.1**	1149	**66.2**	260	**15.0**	30	**1.7**
Maths	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I learn things quickly in my maths classes	372	**21.3**	913	**52.3**	367	**21.0**	95	**5.4**
I have always done well in my maths classes	361	**20.7**	858	**49.3**	438	**25.0**	85	**4.9**
Compared to others my age I am good at maths	324	**18.6**	806	**46.2**	520	**29.8**	93	**5.3**
Work in my Maths classes are easy for me	202	**11.7**	758	**43.8**	675	**39.0**	97	**5.6**
I get good marks in Maths	347	**20.0**	1081	**62.3**	250	**14.4**	58	**3.3**

Students were generally confident about their ability (93%), and over three quarters of students thought of themselves as clever (76% of students agree or strongly agree with this statement). Students appeared to be most confident about their ability in English, Science and ICT and least confident for Modern languages.

[3] Students who were on the SEN register in Year 9 or who had previously had a SEN in Year 5 or earlier

[4] Correlations between same items for English and maths were highest for 'compared to others my age I am good at *English/maths*' r=0.19**, 'Work in my *English/maths* classes are easy to me' r=0.15**, and 'I get good marks in *English/maths*' r=0.13**), and lowest for 'I learn things in my *English/maths* classes' r=0.05, and 'I have always done well in my *English/maths* classes' r=0.09**; ** significant at the 0.01 level.

Girls and boys did not differ significantly in how well they felt they could do things at school, but boys were slightly more likely to believe they were clever than girls (79% of boys agreed with this statement compared to 73% of girls). There was a significant gender effect for how students viewed their ability in the individual subjects, with boys more likely to think they were good at maths, science, ICT and sport and girls more likely to think they were good at English, Arts/creative subjects and Modern languages.

The largest differences were found for sport (35% of boys and 19% of girls felt they were excellent at this subject), maths (25% of boys and 17% of girls felt they were excellent at this subject) and the Arts (17% of boys and 25% of girls felt they were excellent at this subject).

Students in receipt of FSM had a lower general academic self-concepts (thinking they can do things well and clever), and were also less likely to think they were good at English, maths and Modern languages than other students. The largest effects were found for Modern languages (32% of students in receipt of FSM thought they were excellent or pretty good compared to 46% of other students).

Table 2.2: Students' responses to items measuring academic self-concepts in Year 9

	Strongly agree		Agree		Disagree		Strongly disagree	
	n	%	n	%	n	%	n	%
At school I can do most things well	307	**17.6**	1328	**75.9**	103	**5.9**	1	**0.6**
I think I'm clever	210	**12.2**	1104	**64.1**	359	**20.8**	50	**2.9**
During class I usually know what I am supposed to do	311	**18.3**	1245	**73.1**	134	**7.9**	14	**0.8**

How good are you at…	Excellent		Pretty good		Average		Not very good		Rubbish	
	n	%	n	%	n	%	n	%	n	%
English	235	**13.3**	874	**49.6**	539	**30.6**	94	**5.3**	20	**1.1**
Maths	367	**20.8**	735	**44.7**	460	**26.1**	145	**8.2**	55	**3.1**
Science	329	**18.7**	784	**44.5**	491	**27.9**	131	**7.4**	26	**1.5**
ICT	287	**16.4**	726	**41.5**	516	**29.5**	174	**9.9**	47	**2.7**
Arts/creative subjects	368	**21.0**	677	**38.6**	412	**23.5**	202	**11.5**	95	**5.4**
Sport	473	**26.9**	602	**34.2**	429	**24.4**	160	**9.1**	95	**5.4**
Modern languages	204	**11.7**	568	**32.5**	488	**27.9**	283	**16.2**	204	**11.7**

SEN students had a significantly poorer view of how clever they were and whether they could do things well (see Table 2.3 below). They were also significantly less likely to think they were good at all of the subjects except Sport. The largest differences were found for English, Modern Languages and Maths.

Table 2.3: Academic self-concepts in Year 9 split by SEN status

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
At school I can do most things well	***SEN***	48	**11.6**	317	**76.8**	42	**10.2**	6	**1.5**
	Never had a SEN	244	**19.3**	960	**76.1**	52	**4.1**	5	**0.4**
I think I'm clever	***SEN***	28	**6.9**	220	**54.1**	130	**31.9**	29	**7.1**
	Never had a SEN	170	**13.7**	843	**67.9**	208	**16.7**	21	**1.7**

How good are you at…		**Excellent**		**Pretty good**		**Average**		**Not very good**		**Rubbish**	
		n	%	n	%	n	%	n	%	n	%
English	***SEN***	27	**6.4**	137	**32.7**	196	**46.8**	47	**11.2**	12	**2.9**
	Never had a SEN	200	**15.8**	696	**54.9**	322	**25.4**	42	**3.3**	8	**0.6**
Maths	***SEN***	39	**9.3**	159	**37.9**	150	**35.8**	48	**11.5**	23	**5.5**
	Never had a SEN	309	**24.4**	547	**43.1**	290	**22.9**	91	**7.2**	31	**2.4**
Modern languages	***SEN***	23	**5.6**	85	**20.7**	118	**28.7**	96	**23.4**	89	**21.7**
	Never had a SEN	177	**13.6**	466	**37.0**	345	**27.4**	174	**13.8**	105	**8.3**

Subject popularity

It is clear that some subjects are more popular than others. Sport and the Art/creative subjects were much more popular than other subjects for the EPPSE sample (58% liking Sport a lot and 49% liking Arts a lot), whereas Modern languages were the least popular (only 20% liking them a lot). Roughly a third of students indicated they liked English, maths, science and ICT a lot.

Significant gender differences were found for all subjects with boys liking maths, science, ICT and sport more than girls and girls liking English, the Arts and Modern languages significantly more than boys. The largest differences were found for sport (72% of boys like this subject a lot compared to 45% of girls), and the Arts (38% of boys like this subject a lot compared to 59% of girls).

Students in receipt of FSM had more positive views of ICT than other students (90% liked ICT a lot or average compared to 83% of other students). They were also slightly less positive about Sport (52% liked Sport a lot compared to 59% of other students).

SEN students felt they were less able in most of the subjects, but the differences between them and other students in the popularity of subjects was smaller although still significant for most subjects (except Science and Sport). The largest differences were found for English (22% of SEN students liked English a lot compared to 31% of other students), and ICT, where SEN students were more likely than other students to like the subject (39% of SEN students liked ICT a lot compared to 32% of other students).

Table 2.4: *Popularity* of school subjects in Year 9

How much do you like..	A lot		Average		Not at all	
	n	%	n	%	n	%
English	499	**28.4**	1080	**61.4**	181	**10.3**
Maths	505	**28.7**	922	**52.4**	332	**18.9**
Science	610	**34.7**	916	**52.1**	233	**13.2**
ICT	605	**34.5**	855	**48.8**	293	**16.7**
Arts/creative subjects	855	**48.9**	603	**34.5**	290	**16.6**
Sport	1020	**58.1**	518	**29.5**	219	**12.5**
Modern languages	341	**19.6**	716	**43.6**	643	**36.9**

Students in Year 9 had strong views about the importance of gaining qualifications from GCSEs to a university degree. Almost all students felt it was important to get 5 good GCSEs (99%) and just less than nine out of ten students (88%) felt it was important to get a university degree. Girls were more likely than boys to think 'A' levels or a degree were important, although the difference was not large (76% of girls felt 'A' levels were very important compared to 72% of boys; 65% of girls felt a university degree was very important compared to 58% of boys).

Students in receipt of FSM were more likely to think a qualification for a particular job was important (71% thought it was very important compared to 61% of other students). SEN students were somewhat less likely to feel academic qualifications were important. For example SEN 77% of SEN students felt it was very important to get 5 good GCSEs compared to 88% of other students.

Table 2.5: Year 9 students' views on the importance of academic qualifications

How important is it to you to get…	Very important		Fairly important		Not very important		Not at all important	
	n	%	n	%	n	%	n	%
5 good GCSEs (A*-C) or equivalent	1496	**85.5**	227	**13.0**	21	**1.2**	6	**0.3**
Qualification for a particular job e.g. car mechanic, etc	1072	**61.5**	460	**26.4**	157	**9.0**	54	**3.1**
'A' levels	1291	**73.9**	368	**21.1**	73	**4.2**	14	**0.8**
A university degree	1071	**61.4**	450	**25.8**	187	**10.7**	37	**2.1**

Subject choices

In Year 9 students choose the main GCSE courses they will be taking in Years 10 and 11. The three main reasons for GCSE choice given by students were interest in the subject (78% felt it was very important), needed for the job they wanted to do (62% very important) and knowing they will do well in this subject (53% very important).

Boys were slightly more likely to choose a subject because of their parents view (63% of boys said this was important or very important, compared to 58% of girls) and because it was the same as friends (32% of boys said this was important or very important, compared to only 21% of girls).

Students in receipt of FSM were a little less likely to choose their GCSE subjects because they were interested in the subject (74% thought it was very important compared to 78% of other students), more likely to choose GCSEs because it was needed for a job (70% thought it was very important compared to 61% of other students), because of parents views (66% thought it was important or very important compared to 58% of other students), and because it was the same as friends (33% thought it was important or very important compared to 25% of other students).

SEN students were less likely than other students to make their GCSE choice because they were interested in the subject, and more likely to choose because they liked the teacher, based on their parent's views or because it was the same as their friends.

Table 2.6: Students' reasons for GCSE choice in Year 9

How important is the following in choosing GCSE subjects	Very important		Important		Not important	
	n	%	n	%	n	%
Interested in this subject	1359	**77.7**	373	**21.3**	18	**1.0**
Needed for the job I want to do	1085	**62.1**	580	**33.2**	82	**4.7**
I know I will do well in this subject	927	**53.1**	775	**44.4**	45	**2.6**
Like the teacher	289	**16.5**	758	**43.4**	700	**40.1**
My parent's views	22	**12.7**	821	**47.0**	702	**40.2**
Same as friends	82	**4.7**	372	**21.3**	1292	**74.0**

Other reasons mentioned in an open ended response were enjoying or liking the subject (n=160), and being good at the subject at the moment (n=70). Other reasons given by a smaller number of students were finding the subject useful, the quality of the teaching, amount of coursework, learning new skills or being challenged, improving their work in that subject, future choices including career, other's views and friendships, having a variety of subjects, making the 'right' choice and thinking they will try hard in the subject.

Enjoyment of school

Year 9 students are generally positive about their secondary school experience (see Table 2.7) with only approximately one in ten feeling that they do not like being at school (11% agreed/agreed strongly) or that their school is not a friendly place (10% agreed/agreed strongly). A slightly higher proportion did not 'like most of the lessons' (16% disagreed/disagreed strongly with the item).

However, there was a high proportion of students agreeing that they felt bored in lessons (41% agreed/agreed strongly). Two thirds of students (67% agreed/agreed strongly) liked to answer questions in class. Only a very small percentage of students (6% agreed/agreed strongly) believed that school was a waste of time.

Boys were slightly more likely to think school was a waste of time (7% agreed/agreed strongly compared to 4% of girls) and more boys indicated they liked to answer questions in class (71% of boys agreed/agreed strongly they liked answering questions in class compared to 64% of girls). Students in receipt of FSM were somewhat less positive about school than other students for all of the items except answering questions in class. Most differences were small, except for the item 'I feel out of place at school' where 25% agreed or strongly agreed compared to only 5% of other students.

Students with SEN enjoyed school less for all the items, but differences were small. The largest difference between them and other students was for liking school (81% agreed/agreed strongly compared to 91% of other students) and feeling out of place (18% agreed/agreed strongly compared to 8% of other students).

Table 2.7: *Enjoyment of school* in Year 9

Enjoyment of school	**Strongly agree**		**Agree**		**Disagree**		**Strongly disagree**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
On the whole I like being at school	352	**20.1**	1201	**68.4**	175	**10.0**	27	**1.5**
My school is a friendly place	276	**15.8**	1284	**73.7**	165	**9.5**	18	**1.0**
School is a waste of time for me	16	**0.9**	81	**4.6**	837	**47.7**	817	**46.7**
I feel out of place at school	25	**1.4**	161	**9.2**	875	**50.0**	688	**39.3**
I always like to answer questions in class	162	**9.3**	1010	**57.9**	496	**28.5**	75	**4.3**
I like most of the lessons	315	**18.1**	1149	**66.1**	252	**14.5**	22	**1.3**
I am bored in lessons	90	**5.2**	626	**36.2**	923	**53.4**	91	**5.3**

Popularity

Nine out of ten students in Year 9 feel that they make friends easily (90% agreed/agreed strongly) and most feel that others want to be their friend (88% agreed/agreed strongly that they think most other teenagers want to be my friend; 80% think other teenagers want to be my friend; 77% think they are popular with other students in their age group). There is a split almost in half between the students who agree with the item 'I have more friends than other teenagers' and those that don't.

Boys were more likely to think they were popular with other students in their age group than girls (65% of girls agreed/agreed strongly compared to 80% of boys). Students in receipt of FSM were slightly less likely to think they made friends easily (85% agreed/agreed strongly compared to 90% of other students), or to think other teenagers liked them (82% agreed/agreed strongly agreed compared to 87% of other students) and less likely to feel popular with other students in my age group (74% agreed/agreed strongly compared to 78% of other students) but most still had positive views.

SEN students were slightly more negative in their responses about their popularity for all items, especially the item 'most other teenagers like me' (82% agreed or strongly agreed compared to 90% of other students). However, most still had positive views.

Table 2.8: *Popularity* in Year 9

	Strongly agree		**Agree**		**Disagree**		**Strongly disagree**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I make friends easily	490	**28.0**	1077	**61.6**	161	**9.2**	19	**1.1**
Other teenagers want me to be their friend	174	**10.1**	1204	**69.8**	324	**18.8**	23	**1.3**
I have more friends than most other teenagers my age	131	**7.6**	693	**40.4**	849	**49.5**	43	**2.5**
Most other teenagers like me	156	**9.1**	1353	**78.5**	197	**11.4**	17	**1.0**
I am popular with other students in my age group	203	**11.8**	1130	**65.4**	359	**20.8**	35	**2.0**

Anxiety

*A*nxious behaviours addressed in the questionnaire items ranged in severity from feeling nervous in new situations to having many fears or being often 'downhearted, unhappy or tearful'. The greatest reported anxious behaviours were feeling nervous in new situations (52% agreed/agreed strongly), and worrying a lot (42% agreed/agreed strongly). Approximately one in five students reported feeling often 'unhappy, downhearted or tearful' (17% agreed/agreed strongly), 'having many fears, being easily scared' (21% agreed/agreed strongly). Just under one third of students reported getting 'a lot of headaches, stomach aches or sickness' (27%).

Table 2.9: *Anxiety* in Year 9

	Strongly agree		Agree		Disagree		Strongly disagree	
	n	%	n	%	n	%	n	%
I get a lot of headaches, stomach aches or sickness	98	**5.6**	379	**21.8**	946	**54.4**	316	**18.2**
I worry a lot	163	**9.4**	565	**32.5**	799	**45.9**	22	**12.2**
I am often unhappy, downhearted or tearful	57	**3.3**	242	**13.9**	987	**56.7**	454	**26.1**
I am nervous in new situations	123	**7.1**	776	**44.6**	668	**38.4**	173	**9.5**
I have many fears, I am easily scared	62	**3.6**	293	**16.9**	996	**57.4**	385	**22.2**

Gender differences were found for all items (see Table 2.10), and were particularly large for the items 'I worry a lot' (50% of girls agreed or strongly agreed with this statement compared with only 33% of boys).

Table 2.10 *Anxiety* in Year 9: split by gender

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
I get a lot of headaches, stomach aches or sickness	***Boys***	31	**3.7**	152	**18.1**	476	**56.7**	180	**21.5**
	Girls	67	**7.4**	227	**25.2**	470	**52.2**	136	**15.1**
I worry a lot	***Boys***	51	**6.1**	228	**27.2**	426	**41.4**	133	**15.9**
	Girls	112	**12.4**	337	**37.4**	373	**45.9**	79	**8.8**
I am often unhappy, downhearted or tearful	***Boys***	11	**1.3**	78	**9.3**	501	**59.9**	247	**29.5**
	Girls	46	**5.1**	164	**18.2**	486	**53.8**	207	**22.9**
I am nervous in new situations	***Boys***	47	**5.6**	331	**39.5**	361	**43.0**	100	**11.9**
	Girls	76	**8.4**	445	**49.4**	307	**34.1**	73	**8.1**
I have many fears, I am easily scared	***Boys***	15	**1.8**	97	**11.6**	497	**59.4**	227	**27.2**
	Girls	47	**5.2**	196	**21.8**	499	**55.4**	158	**17.6**

Students in receipt of FSM were more likely to report they suffer from minor ailments (36% agreed or strongly agreed compared to 26% of other students), and have many fears or be easily scared (29% agreed or strongly agreed compared to only 19% of other students).

Students with SEN were slightly more likely to have minor ailments, to be often unhappy downhearted or tearful (22% agreed or strongly agreed compared to 16% of other students) and to have many fears (26% agreed or strongly agreed compared to 18% of other students).

Citizenship values'

Table 2.11 displays all the items from this section of the questionnaire related to students' values. Students felt strongest about helping a friend in trouble (68% felt this was very important) and getting good marks (60% felt this was very important). Of least importance was being better than others in their class (only 14% felt this was very important) and believing in a 'god' or a spiritual figure (only 15% felt this was very important).

Girls were more likely to think most of the items were more important than the boys did, with the exception of 'getting good marks' and 'controlling your temper even when you feel angry' where no significant gender differences were found. Boys were slightly more likely than girls to think being better than others in the class was important (17% of boys felt this was very important compared to 11% of girls). Girls were particularly more likely to think helping a friend who is in trouble than boys (55% of boys felt this was very important compared to 79% of girls).

Students in receipt of FSM were generally in line with other students in terms of their responses to the items on values. However, they were more likely to believe strong people shouldn't pick on weak people (45% felt this was very important compared to 38% of other students), to feel being better than others in their class was important (19% felt this was very important compared to 13% of other students) and were more likely to think a belief in a 'God' or spiritual figure was important (26% felt this was very important compared to 13% of other students). Students in receipt of FSM were also slightly less likely to believe it was important to respect other people's points of view (94% felt this was important or very important compared to 98% of non-FSM students).

SEN students were less likely to think helping a friend in trouble, getting good marks, and sorting out disagreements without fighting than other students was important. They were more likely to think belief in a God or spiritual figure was important.

Table 2.11: Citizenship values in Year 9

How important are the following to you…	Very important		Important		Not important	
	n	%	n	%	n	%
Helping a friend who is in trouble	1180	**67.5**	552	**31.6**	15	**0.9**
Getting good marks	1043	**59.7**	652	**37.3**	52	**3.0**
Respecting other peoples points of view	703	**40.3**	986	**56.5**	56	**3.2**
Making sure strong people don't pick on weak people	681	**39.0**	935	**53.6**	128	**7.3**
Sorting out disagreements without fighting	649	**37.2**	958	**55.0**	136	**7.8**
Respecting rules and laws	630	**36.1**	1011	**57.9**	105	**6.0**
Controlling your temper even when you feel angry	589	**33.7**	1020	**58.4**	137	**7.8**
Belief in a 'god' or spiritual figure	258	**14.8**	367	**21.1**	1114	**64.1**
Being better than others in your class	237	**13.6**	592	**33.9**	917	**52.5**

Future plans

The majority of students wanted to go to college at age 16 (80%). A further 15 per cent wanted to leave school to get a job, including work based training. Very few (8%) were unsure at this time what they wanted to do. Boys were more likely believe they would go into job-based training and less likely to go onto 6th form or college than girls. Students in receipt of FSM were slightly more likely to think they would leave school and get a job at 16 (14% compared to 8% of other students), or work based training (12% compared to 6% of other students) and less likely to go to 6th form college (71% compared to 81% of other students). SEN students were more likely to think they would leave school and get a job at 16 than other students (13% compared to 7% of other students), and also more likely to think they would go into worked based training (12% compared to 5% of other students), and significantly less likely to think they would go onto 6th form or college (only 68% compared to 84% of other students).

Table 2.12: Future plans

When you are 16, what do you want to do?	% yes	
	n	%
Go to 6th form or college (here or somewhere else)	1387	**80.2**
Leave school and get a job (full time or part time)	147	**8.5**
Don't know yet	133	**7.7**
Leave school for job with work based training (apprenticeship etc.)	106	**6.1**
Voluntary work or travel	14	**0.8**
Be unemployed	7	**0.4**
Leave school and look after family or home	5	**0.3**

N.B. those who gave more than one answer were not included in these figures (n=102)

The majority of students thought it was likely or very likely that they would apply to go to university (77% thought it was likely or very likely), with girls significantly more likely than boys (38% of boys thought it was very likely compared to 48% of girls). Students in receipt of FSM were less likely to think they would apply to go to university (32% of students in receipt of FSM were very likely to apply compared to 44% not in receipt of FSM).

SEN students were less likely to think they would apply for university, although 32% still thought it was very likely (compared to 44% of other students). It should be noted that students in Year 9 completed their questionnaires before the recent change in Government funding for universities and sharp rise in student tuition fees that might well affect students' intentions.

Table 2.13: How likely Year 9 students think it is that they will apply for university

	Very likely		Fairly likely		Not very likely		Not at all likely		Don't know	
	n	%	n	%	n	%	n	%	n	%
How likely do you think it is that you will ever apply to go to university?	724	**41.2**	628	**35.8**	240	**13.7**	81	**4.6**	83	**4.7**

Changes in dispositions over time: looking at Year 2, Year 5 and Year 9 student responses

Students answered a number of questions at all three time points (Year 2, 5 and 9), allowing for comparisons over time to be made[5]. Although the question response categories were different, there was some indication that students were becoming rather less positive about school over time, although the largest shift appeared to be from Year 2 to Year 5.

Table 2.14 Changes in enjoyment of school over time

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
On the whole I like being at school	***Year 9***	271	**20.0**	933	**68.8**	127	**9.4**	25	**1.8**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	%	n	%	n	%	n	%
I like going to school	***Year 5***	306	**23.5**	585	**43.0**	328	**25.2**	84	**6.2**
I like school	***Year 2***	690	**50.7**	492	**36.1**	124	**9.1**	55	**4.0**

There was a large drop in the proportion of students who said they liked 'answering questions in class' over time, with only 10 per cent of students in Year 9 answering with the most positive response compared to 30 per cent in Year 5 and 51 per cent in Year 2.

Table 2.15 Changes in engagement in class over time

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
I like answering questions in class	***Year 9***	130	**9.7**	770	**57.3**	381	**28.4**	62	**4.6**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	%	n	%	n	%	n	%
I like answering questions in class	***Year 5***	407	**29.9**	565	**42.1**	295	**22.0**	75	**5.6**
I like answering questions in class	***Year 2***	692	**50.8**	389	**28.6**	209	**15.4**	70	**5.1**

[5] Responses for students who had returned all three questionnaires were analysed (n=1362) so that the dataset at each time point was comparing the same students.

Table 2.16 Changes in views about school subjects over time

ENGLISH				**A lot**		**Average**		**Not at all**	
				n	**%**	**n**	**%**	**n**	**%**
I like English	***Year 9***			378	**27.9**	833	**61.4**	146	**10.8**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I like English	***Year 5***	411	**30.2**	528	**39.2**	309	**22.9**	100	**7.4**
I like Reading	***Year 2***	910	**66.9**	245	**18.0**	131	**9.6**	74	**5.4**
MATHS				**A lot**		**Average**		**Not at all**	
				n	**%**	**n**	**%**	**n**	**%**
I like Maths	***Year 9***			389	**28.7**	705	**52.0**	262	**19.3**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I like Maths	***Year 5***	539	**40.1**	396	**29.5**	253	**18.8**	156	**11.6**
I like Number work	***Year 2***	782	**57.6**	304	**22.4**	168	**12.4**	104	**7.7**
SCIENCE				**A lot**		**Average**		**Not at all**	
				n	**%**	**n**	**%**	**n**	**%**
I like Science	***Year 9***			472	**34.8**	703	**51.8**	181	**13.3**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I like Science	***Year 5***	380	**28.3**	411	**30.6**	376	**28.0**	174	**13.0**
I like Science	***Year 2***	731	**53.8**	353	**26.0**	173	**12.7**	103	**7.6**
ART				**A lot**		**Average**		**Not at all**	
				n	**%**	**n**	**%**	**n**	**%**
I like Art	***Year 9***			661	**49.0**	467	**34.6**	220	**16.3**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I like Art	***Year 5***	1050	**78.0**	202	**15.0**	71	**5.3**	23	**1.7**
I like Art	***Year 2***	1162	**85.5**	136	**10.0**	47	**3.5**	14	**1.0**
P.E				**A lot**		**Average**		**Not at all**	
				n	**%**	**n**	**n**	**%**	**n**
I like Sport	***Year 9***			795	**58.7**	396	**29.2**	163	**12.0**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
I like P.E.	***Year 5***	967	**72.0**	251	**18.7**	94	**7.0**	31	**2.3**
I like P.E.	***Year 2***	1013	**74.6**	235	**17.3**	80	**5.9**	29	**2.1**

Answers to the questions in Year 9 related to popularity, although different in wording (for the same group of students) suggests that students are feeling less positive about the amount of friends they have. Students' views of their own popularity also appeared to go down dramatically once students entered secondary school. In Year 2 and Year 5 similar proportions of students felt they had lots of friends Year 2=60%, Year 5=63%).

Table 2.17 Changes in popularity over time

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
Other teenagers want me to be their friend	***Year 9***	137	**10.3**	913	**68.8**	263	**19.8**	14	**1.1**
I have more friends than most other teenagers my age	***Year 9***	98	**7.4**	537	**40.7**	652	**49.4**	32	**2.4**
I am popular with other students in my age group	***Year 9***	152	**11.4**	886	**66.3**	271	**20.3**	27	**2.0**
Most other teenagers like me	***Year 9***	119	**9.0**	1045	**78.6**	153	**11.5**	12	**0.9**
I make friends easily	***Year 9***	370	**27.5**	840	**62.4**	126	**9.4**	11	**0.8**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	%	n	%	n	%	n	%
I have lots of friends	***Year 5***	846	**63.2**	338	**25.2**	121	**9.0**	34	**2.5**
I have lots of friends (Year 2)		812	**59.7**	386	**28.4**	145	**10.7**	18	**1.3**

Students are also less likely to indicate they think of themselves as clever as they get older. In Year 2 37 per cent of students answered with the most positive response compared to 17 per cent in Year 5 and just 11 per cent in Year 9.

Table 2.18 Changes in perceptions of 'cleverness' over time

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
I am clever	***Year 9***	150	**11.3**	862	**64.9**	274	**20.6**	42	**3.2**
		All of the time		**Most of the time**		**Some of the time**		**Never**	
		n	%	n	%	n	%	n	%
I am clever	***Year 5***	225	**17.4**	698	**54.1**	315	**24.4**	52	**4.0**
I am clever	***Year 2***	505	**37.1**	647	**47.5**	170	**12.5**	40	**2.9**

Reported levels of often feeling 'unhappiness' appear to increase over time, although still a small minority in Year 9 (17% agreed/strongly agreed they often feel 'unhappy, downhearted or tearful (Year 9)') compared to 10% in Year 5 (All or most of the time) and 8 per cent in Year 2 (feel unhappy at school 'a lot').

Table 2.19 Changes in self reported 'unhappiness' over time

		Strongly agree		Agree		Disagree		Strongly disagree	
		n	%	n	%	n	%	n	%
I am often unhappy, downhearted or tearful	***Year 9***	45	**3.4**	177	**13.2**	768	**57.2**	353	**26.3**
		All the time		**Most of the time**		**Some of the time**		**Never**	
		n	%	n	%	n	%	n	%
I feel unhappy at school	***Year 5***	46	**3.6**	83	**6.5**	612	**47.7**	543	**42.3**
				A lot		**Sometimes**		**Never**	
				n	%	n	%	n	%
I feel unhappy at school	***Year 2***			103	**7.6**	763	**56.5**	484	**35.9**

Students were asked how important they felt a number of different behaviours were in Year 5 and Year 9[6]. Comparing the most positive response (very important), students become less positive over time in their responses for all the questions.

[6] In total 1580 students had data for both time points.

Table 2.20 Changes in citizenship values over time

The importance of…			Very important		Important		Not important	
			n	%	n	%	n	%
Helping a friend who is in trouble ***Year 9***			1063	**67.9**	490	**31.3**	12	**0.8**
	Very important		**A bit important**		**Not very important**		**Not at all important**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Helping a friend who is in trouble ***Year 5***	1283	**85.2**	182	**12.1**	29	**1.9**	12	**0.8**
			Very important		**Important**		**Not important**	
			n	**%**	**n**	**%**	**n**	**%**
Making sure strong people don't pick on weak people ***Year 9***			603	**38.6**	842	**53.9**	117	**7.5**
	Very important		**A bit important**		**Not very important**		**Not at all important**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Making sure strong people don't pick on weak people ***Year 5***	1282	**85.2**	181	**12.0**	29	**1.9**	13	**0.9**
			Very important		**Important**		**Not important**	
			n	**%**	**n**	**%**	**n**	**%**
Sorting out arguments without fighting ***Year 9***			569	**36.5**	868	**55.6**	124	**7.9**
	Very important		**A bit important**		**Not very important**		**Not at all important**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Sorting out arguments without fighting ***Year 5***	1175	**78.1**	255	**16.9**	41	**2.7**	34	**2.3**
			Very important		**Important**		**Not important**	
			n	**%**	**n**	**%**	**n**	**%**
Respect for the views of others ***Year 9***			628	**40.2**	885	**56.6**	50	**3.2**
	Very important		**A bit important**		**Not very important**		**Not at all important**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Respect for the views of others ***Year 5***	1142	**76.1**	322	**21.5**	30	**2.0**	7	**0.5**

Section 3: Students' dispositions in Year 9 and data analysis

Information about students' dispositions and views of school was collected through self report questionnaires administered by class teachers in Year 2, Year 5 and Year 9. The items were derived from existing measures and adapted for use with this age group. Some questions have been taken or adapted from The School Climate Assessment Instrument (Grosin and McNamara 2001) and from the Louisiana ABC+ model (Teddlie and Stringfield 1993). Ten items were taken from existing Academic self-concepts scales (Marsh and Hau 2003).

Dispositions from Year 2 to Year 9

Statistical analyses were used to explore the variation in student responses to the survey items and to see whether robust measures of their dispositions and dispositions could be identified at the end of Year 2, Year 5 and Year 9. The results revealed a number of underlying dimensions (factors) which reflect patterns of associations amongst the questionnaire items. Four main factors were found in Year 2 and Year 5, Shown in Box 1 below (see Sammons et al 2008 for details).

Box 1: The specific items associated with each student's dispositions in Years 2 and 5 (age 7 and 10)

Disposition factors in Year 2			
Enjoyment of school	***Behaviour self-concepts***	***Academic self-concepts***	***Alienation***
I like school	I try to do my best at school	I am clever	I get tired at school
I like answering questions in class	I am kind to other children	My teacher thinks I am clever	I get fed up at school,
I like reading	I behave well in class	I do my work properly	I get angry at school
I like doing number work			
I like science			
School is interesting			
Cronbach=0.69	***Cronbach=0.62***	***Cronbach=0.57***	***Cronbach=0.52***
Disposition factors in Year 5			
Enjoyment of school	***Behaviour self-concepts***	***Academic self-concepts***	**Anxiety and Isolation**
Lessons are interesting	I try to do my best at school	I am clever	I feel lonely
I like school going to school	I behave in class,	I know how to cope with my school work	I get upset
I get fed up at school	I talk to my friends when I should be doing my work	I am good at school work	I feel worried
I get tired at school	I hit other children	My teacher thinks I'm clever	Other children bully me
I like English			
I like Maths			
I like Science			
Cronbach=0.76	***Cronbach=0.62***	***Cronbach=0.74***	***Cronbach=0.74***

In Year 9, 15 factors were extracted from the original principle components analysis (exploratory Varimax factor analysis) and accounted for 63 per cent of the variance. Confirmatory Factor Analysis (CFA) of the six factors that had robust internal reliabilities (0.70 or above) confirmed a good factor structure. Details of the principle components analysis and confirmatory factor analysis can be found in Appendix 1. The factors were weighted (see Appendix 1 for details) and responses that were missing for individual questions were imputed. Box 2 displays the Year 9 factors.

Box 2: The specific items associated with each students' dispositions in Years 9 (age 14)

Disposition factors in Year 9		
Enjoyment of school	***Maths Academic Self-concepts***	***English Academic Self-concepts***
My school is a friendly place On the whole I like being at school I like to answer questions in class School is a waste of time for me I like most of the lessons I am bored in lessons	I learn things quickly in my Maths classes I have always done well in my Maths classes Compared to others my age I am good at Maths Work in my Maths classes is easy for me I get good marks in Maths	I learn things quickly in my English classes I have always done well in my English classes Compared to others my age I am good at English Work in my English classes is easy for me I get good marks in English
Cronbach=0.74	***Cronbach=0.91***	***Cronbach=0.90***
Citizenship values	***Popularity***	***Anxiety***
Making sure strong people don't pick on weak people Respecting rules and laws Controlling your temper even when you feel angry Respecting other peoples points of view Sorting out disagreements without fighting	I make friends easily Other teenagers want me to be their friend I have more friends than most other teenagers my age Most other teenagers like me I am popular with other students in my students in my age group	In class I worry about what the others think of me I get a lot of headaches, stomach aches or sickness I worry a lot I am often unhappy, downhearted or tearful I am nervous in new situations I have many fears, I am easily scared
Cronbach=0.75	***Cronbach=0.83***	***Cronbach=0.78***

Correlations between factor items are shown in Appendix 3. Descriptive statistics for the factors are shown in Table 3.1. Students were generally more positive in their response to 'enjoyment of school' items. 'Maths academic self-concepts' showed the greatest variation between students.

Table 3.1 Descriptive statistics for the disposition scores at the end of Year 9

	Mean	Standard deviation	Range	Pupil n
Maths Academic self-concepts	**2.85**	0.66	1-4	1749
English Academic self-concepts	**2.88**	0.57	1-4	1748
Anxiety	**2.19**	0.55	1-4	1749
Citizenship values	**2.31**	0.42	1-3	1748
Popularity	**2.90**	0.45	1-4	1746
Enjoyment of school	**3.01**	0.43	1-4	1761

Table 3.2 shows the correlations between scores on the different student factors in Year 9. All but one were highly statistically significant but weak to moderate in size.

The strongest statistical association is between scores on 'enjoyment of school' and 'citizenship values' whilst the weakest correlation is between 'anxiety 'and 'citizenship values'.

Table 3.2: Correlations between the dispositions factors

	Maths ASC	*English ASC*	*Anxiety*	*Citizenship Values*	*Popularity*	*Enjoyment of school*
Maths ASC		.10**	-.23**	.08**	.16**	.28**
English ASC			-.07**	.20**	.19**	.29**
Anxiety				.04**	-.27**	-.29**
Citizenship values					.11**	.32**
Popularity						.25**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant
ASC Academic Self-concepts

The analyses also indicate that there are weak but statistically significant associations between students' dispositions at the end of Year 9 and their academic attainments and social-behavioural outcomes at this age. In Table 3.3 the correlations between factor scores and their other outcomes are reported. The highest correlations were found for 'maths academic self-concepts' and attainment in maths (test score r=0.47, Teacher assessment r=0.46). Student's scores on the two factors 'citizenship values' and 'popularity' show the weakest relationships with academic attainments.

Table 3.3 Correlation between dispositions and academic and social-behavioural outcomes

	Maths ASC	*English ASC*	*Anxiety*	*Citizenship Values*	*Popularity*	*Enjoyment of school*
Maths test scores	.47**	.15**	-.13**	-.06	.01	.18**
English test scores	.21**	.37**	-.05	.04	.03	.24**
Science test scores	.33**	.21**	.08	-.02	-.04	.19**
Maths Teacher Assessment	.46**	.13**	-.14**	-.02	.03	.21**
English Teacher Assessment	.20**	.33**	-.03	.04	.02	.19**
Science Teacher Assessment	.34**	.19**	-.11**	.01	.01	.19**
Self Regulation	.20**	.16**	-.06	.15**	.03	.25**
Pro-social	.11**	.11**	.02	.16**	.00	.22**
Hyperactivity	-.14**	-.13**	-.06	-.16**	.04	-.22**
Anti-social	-.07*	-.08*	.05	-.12**	.03	-.17**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant
ASC Academic Self-concepts

Note that scores on all measures are skewed towards the more desirable end of the scale. This shows that most students in Year 9 are responding positively. This is in line with other research and with findings for this sample at younger ages.

The following background measures have been used in the multilevel models as potential predictors of different aspects of dispositions;

- Individual student factors (e.g. gender, birth weight, mother tongue and ethnicity).
- Family factors (e.g. socio-economic status [SES], parents' qualification level, family earned income, marital status).
- Early years Home Learning Environment (HLE) index during the pre-school years.
- Pre-school experience and pre-school characteristics (e.g. type, quality, effectiveness).
- Primary school academic effectiveness (derived independently from contextualised value added analyses of pupil progress using National Assessment data sets for all primary schools over three years 2002-2004).
- Secondary school effectiveness (taken from National Contextualised Value Added data and Ofsted inspection judgements).
- Experiences of school in Year 9

Contextualised multilevel analyses are used to investigate whether the patterns of association between outcomes and these individual, family and HLE factors remain statistically significant when students reach the end of Year 9 of secondary school. These analyses are used to identify and quantify the unique (net) contribution of particular characteristics to variation in students' self perception (dispositions) outcomes, while other influences are controlled. The nature and strength of such background influences have been explored individually and in total, because they are relevant to issues of equity and social inclusion.

Multilevel model estimates for Year 9 disposition outcomes

Due to the skewed distribution of students' factor scores, the total scores for the six disposition outcomes were normalised. Table 3.4 shows the null models with no explanatory variables included for the six outcomes. The intra-school correlation measures the extent to which the scores of students in the same secondary school in Year 9 resemble each other as compared with those from students at different schools.

The intra-school correlation for English 'academic self-concepts' is the highest at approximately 6 per cent, followed by 'enjoyment of school' at approximately 4 per cent. The other four factors did not show significant school level variation.

Table 3.4: Null models of Year 9 dispositions showing secondary school and student level variance

	Maths Academic Self-concepts	*English Academic Self-concepts*	*Anxiety*	*Citizenship values*	*Popularity*	*Enjoyment of school*
School level variance (se)	0.000	0.055	0.019	0.027	0.008	0.037
Student level variance (se)	0.940	0.893	0.970	0.900	0.965	0.957
Intra-school correlation	0.000ns	0.058	0.0120ns	0.029ns	0.009ns	0.038
Number of students	1749	1748	1749	1748	1746	1761
Number of schools	525	525	523	525	523	525

The results from a contextualised analysis, where explanatory variables related to individual student, family and home environment characteristics are added to the multilevel model to control for the influence of background characteristics are reported in Table 3.5.

The intra-school correlation represents the extent to which variation in outcomes is associated with individual schools. However, as the number of EPPSE students in each secondary school is extremely small, the results must be interpreted with caution. They suggest there may be small but significant school influences on certain students' dispositions ('English academic self-concepts') but further research on larger samples would be needed to confirm this (the findings are in line with other school effectiveness studies however).

Table 3.5: Contextualised models of Year 9 dispositions showing secondary school and student level variance

	Maths Academic Self-concepts	*English Academic Self-concepts*	*Anxiety*	*Citizenship values*	*Popularity*	*Enjoyment of school*
School level variance (se)	0.004	0.039	0.009	0.016	0.003	0.013
Child level variance (se)	0.886	0.863	0.909	0.875	0.920	0.933
Intra-school correlation	0.004ns	0.044	0.010ns	0.018ns	0.004ns	0.014ns
% Reduction in school level variance	Increased	29.3%	52.4%	39.2%	60.2%	65.2%
% Reduction in child level variance	5.7%	3.0%	6.3%	2.8%	4.7%	2.5%
% Reduction total variance	5.7%	4.6%	7.2%	3.8%	5.1%	4.9%

The intra-school correlation for 'English academic self-concepts' is the only factor with significant school level variation after control for relevant background factors, suggesting that this aspect may be more susceptible to school influences when account is taken of the impact of student background characteristics. However, the intra-school correlations for these models must be treated with caution as many of the secondary schools just have one EPPSE student in the school.

The small amount of school level variation existed only for 'English academic self-concepts' in the contextualised model (4.4%). These contrasts with the much greater school level variance found for some of the factors related to Year 9 students' 'views of school' (see Table 3.6). Particularly high raw variation between schools (null models) was found for students' perceptions of 'headteacher qualities' (14.5%), 'poor behaviour climate' (27.5%) and 'school environment' (27.6%). Once background had been taken into account variation between schools was still substantial for students' perceptions of 'headteacher qualities' (13.7%), 'poor behaviour climate' (15.7%) and 'school environment' (23.8%).

An additional analysis of peer data from 66 schools that EPPSE students attend was also carried out where the average number of students per school was much higher (mean=24) and showed significant school level variation for all outcomes except 'anxiety' (variation=0.2%). The largest variation amongst school for dispositions was found for 'enjoyment of school' (11.2%) followed by 'maths academic self-concepts' (6.2%), 'English academic self-concepts' (5.3%), 'popularity' (4.7%) and 'citizenship values' (2.9%).

Table 3.6: Intra-school correlations for the null and contextualised models of factors measuring EPPSE students' views of secondary school

	Teacher support	*Teacher discipline*	*Emphasis on learning*	*Head-teacher qualities*	*Valuing students*	*Poor behaviour climate*	*School environ-ment*	*Learning resources*
Null model	0.048	0.046	0.060	0.145	0.048	0.275	0.276	0.107
Contextualised model	0.045	0.032ns	0.057	0.137	0.039	0.157	0.238	0.074

Analysis of peer data, where the number of students per school was much higher (making school-level variation more reliable) for views of school factors found significant school level variation for all views of school factors. In line with the EPPSE student data very high variation was found for 'school environment' (variation=22.0%) 'headteacher qualities' (variation=18.2%) and 'poor behaviour climate' (variation=17.0%)[7]. See Appendix 4 for further details of the analysis of peer data.

These results indicate that there are marked differences across the secondary schools attended by EPPSE students in their experiences of these features of their KS3 educational experiences.

Some evidence of school level variation in specific areas was also found when individual questions were investigated. These were mainly related to 'enjoyment of school' items and the importance of academic qualifications. Items which showed significant school level variance are shown in Table 3.7.

Table 3.7: School level variation for individual questions related to dispositions for EPPSE students

	Intra-school correlation (null model)
School is a waste of time for me	0.129
I like Modern languages	0.073
I am good at modern languages	0.068
This school is a friendly place	0.068
Importance in choosing GCSE subjects: My parent's views	0.063
I feel out of place at school	0.058
Importance of: A university degree	0.054
I like English	0.053
Importance of: Qualifications for a particular job	0.053
Importance in choosing GCSE subjects: Same as friends	0.045
Importance of: 'A' levels	0.036

[7] School variation for null models as full student and family background information was not available for EPPSE peers.

Section 4: Links between individual, family and Home Learning characteristics and students' dispositions in Year 9

This section presents the results of a contextualised multilevel analysis establishing the pattern of relationships between individual, family and home environment characteristics and students' dispositions at the end of year 9. The six Year 9 factors discussed in Section 3 are employed as outcomes in the contextualised multilevel models. Background details about each student's earlier child care experiences, health, family and home learning environment were obtained from parental interviews conducted when children entered the study as well as selected details from other time points.

Differences in dispositions for different groups of students

The contextualised models indicate that, for all 6 dispositions, a number of individual, family and home environment characteristics show statistically significant relationships with students' dispositions measured at the end of Year 9. The net influence of different predictors is illustrated in Table 4.5. In addition to the estimates for each predictor, the effect sizes (ES) for the relationships are also given.

An effect size is a statistical measure representing the strength of the effect of each predictor variable on the outcome after taking account of other predictor variables in the model. An ES of 0.2 can be seen as representing a small to moderate influence while a relatively strong influence would be an ES of 0.6 or above. See Appendix 7 for the way ES are calculated.

This section explores associations between the dispositions measures in Year 9 and selected background characteristics. Differences in raw scores are examined *alongside* differences in 'net' impact (effect sizes), showing the unique contribution of a given predictor to a student's outcome once all other predictors are taken into account.

The net effects of particular individual, family and HLE characteristics reported in this section were derived by contextualised multilevel analyses and take into account the influence of any clustering of the sample at the secondary school level. Due to the inter-relationship between the different predictors some raw differences between sub-groups of students disappear and some become accentuated once the influences of other factors are partialled out. Presenting raw and net differences side by side helps to show how demographic factors taken together affect the relative strength of estimates of the unique influence of particular factors.

The following measures were used in the analyses:

- Individual student factors (e.g. gender, birth weight, ethnicity, mother tongue)
- Family factors (e.g. eligibility for free school meals [FSM], socio-economic status [SES], parents' qualification levels, family earned income),
- Home Learning Environment (HLE) in the early years (e.g. how often parents read to the child, taught the child the alphabet, played with letters and numbers, taught songs and nursery rhymes, painted and drew) before starting primary school,
- Home learning activities during Key Stage 1 and Key Stage 2 (KS1, KS2) such as the frequency of reading to the child, taking the child out on educational visits, computing activities, play, etc.

Child Measures

Gender

At the end of Year 9 a significant gender effect was identified for all disposition outcomes except 'English academic self-concepts' and 'enjoyment of school' with girls' views being more negative than boys on average (note a higher score indicates more favourable responses) except for 'citizenship values'.

Table 4.1 Gender differences in students' dispositions at the end of Year 9*

		Male	Female	Total
Maths Academic Self-concepts	**Mean**	2.97	2.74	100.0
	S.d.	0.63	0.68	15.0
	Net ES	**0**	**-0.38**	
English Academic Self-concepts	**Mean**	2.83	2.92	100.0
	S.d.	0.58	0.56	15.0
	Net ES	**0**	**ns**	
***Anxiety* self-concepts**	**Mean**	2.07	2.30	100.0
	S.d.	0.51	0.57	15.0
	Net ES	**0**	**+0.48**	
Citizenship values	**Mean**	2.25	2.37	100.0
	S.d.	0.42	0.41	15.0
	Net ES	**0**	**+0.31**	
Popularity	**Mean**	2.92	2.88	100.0
	S.d.	0.47	0.43	15.0
	Net ES	**0**	**-0.12**	
Enjoyment of school	**Mean**	2.99	3.02	100.0
	S.d.	0.43	0.43	15.0
	Net ES	**0**	**ns**	

***** 'Female' as the comparison category

Birth weight

A child's weight at birth has been found to be a statistically significant predictor of academic, social-behavioural and affective outcomes at younger ages. It was found to be a significant predictor of 'popularity' at the end of Year 9. Students with very low birth weight reported lower levels of *'popularity'* relative to students of normal birth weight[8] (Very low birth weight ES=-0.51).

Ethnic Groups

Investigating differences in students' dispositions by ethnic groups reveal some statistically significant but only small differences in average scores for some groups.

Students from the Pakistani heritage group reported more positive dispositions than the White UK group on all disposition measures except *for* 'popularity' and 'anxiety'. Pakistani groups also had higher 'English academic self-concepts', higher 'enjoyment of school', and higher 'citizenship values' scores.

8 Babies born weighing 2500 grams or less are defined as below normal birth weight: foetal infant classification is below 1000 grams, very low birth weight is classified as 1001-1500 grams and low birth weight is classified as 1501-2500 grams (Scott & Carran, 1989).

The Indian group also had higher 'maths academic self-concepts' scores, higher 'enjoyment of school' scores, higher 'popularity' scores and lower 'anxiety. Students of Black Caribbean ethnic origin had relatively more favourable dispositions of their 'English academic self-concepts', 'enjoyment of school' and better views of their own 'popularity'.

Students of Black African ethnic origin had relatively more favourable dispositions of their 'maths and English academic self-concepts', and better views of their own 'popularity'. Students of White European heritage had higher reported 'citizenship values'. It should be noted the differences need to be interpreted with caution due to the small numbers of some ethnic minorities in the research.

Table 4.2 Ethnic groups and differences in differences in students' dispositions at the end of Year 9*

Ethnic groups		White UK	White Euro-pean	Black Cari-bbean	Black African	Other Ethnic	Indian	Pakist-ani	Bangla -deshi	Mixed Race
Maths Academic Self-concepts	**Mean**	2.83	2.89	2.74	3.25	2.91	3.02	2.94	2.88	2.91
	S.d.	0.67	0.60	0.72	0.57	0.67	0.66	0.59	0.46	0.60
	Net Effects	**0**	**ns**	**ns**	**+0.74**	**ns**	**+0.42**	**+0.38**	**ns**	**ns**
English Academic Self-concepts	**Mean**	2.86	2.78	3.07	3.21	2.85	2.85	3.00	2.91	2.90
	S.d.	0.64	0.55	0.55	0.55	0.70	0.51	0.55	0.56	0.68
	Net Effects	**0**	**ns**	**+0.38**	**+0.56**	**ns**	**ns**	**+0.43**	**ns**	**ns**
***Anxiety* self-concepts**	**Mean**	2.20	2.21	2.17	2.09	2.07	1.98	2.13	2.12	2.27
	S.d.	0.55	0.46	0.63	0.54	0.44	0.59	0.58	0.47	0.46
	Net Effects	**0**	**ns**	**ns**	**ns**	**ns**	**-0.47**	**-0.24**	**ns**	**ns**
Citizenship values	**Mean**	2.29	2.46	2.27	2.44	2.31	2.40	2.46	2.44	2.33
	S.d.	0.42	0.39	0.50	0.39	0.39	0.43	0.47	0.48	0.39
	Net Effects	**0**	**+0.39**	**ns**	**ns**	**ns**	**ns**	**+0.33**	**ns**	**ns**
Popularity	**Mean**	2.89	2.89	3.03	3.12	2.95	3.01	2.98	2.88	2.89
	S.d.	0.44	0.34	0.55	0.44	0.54	0.44	0.54	0.26	0.48
	Net Effects	**0**	**ns**	**+0.44**	**+0.60**	**ns**	**+0.33**	**+0.34**	**ns**	**ns**
Enjoyment of school	**Mean**	3.00	3.01	3.00	3.10	3.06	3.07	3.10	3.04	2.97
	S.d.	0.43	0.53	0.33	0.40	0.37	0.42	0.43	0.34	0.45
	Net Effects	**0**	**ns**	**ns**	**ns**	**ns**	**+0.35**	**+0.55**	**ns**	**ns**

***** White UK as the comparison category[9]

9 Any category of a predictor variable can be used as a reference group. The overall calculations (e.g. model's variance, BIC, etc.) are not affected by the choice of reference group; the absolute differences (in terms of effect size) between the different categories of the predictor variable also remain the same. The statistical models show the relative differences between categories in relation to the outcome measure. We select the category as a reference group that would show the pattern of association between the predictor variable and the outcome measure in the clearest possible way, the only restriction that the reference category is of a reasonable size. When the relationship is linear we would typically choose the lowest or the highest performing group as a reference category (e.g. highest qualification or none). If the relationship is non-linear we would select the largest category (e.g. ethnicity: white UK as the reference group). Occasionally we would select the category that is of most interest (e.g. pre-school quality: low quality) regardless of the type of association.

Health, behavioural and developmental problems and Special Education Needs
Specific information about health, behavioural, and developmental problems in the first three years of life was obtained from the parents at the start of the study, and it is these have been used in the contextualised models as well as the overall measure of SEN. When tested within the final contextualised model, the SEN group, identified as being on the SEN register (School Action or Action Plus) had significantly lower scores for many of the outcomes compared with students not on the SEN register. Statemented students reported significantly higher 'anxiety', taking into account other predictors.

Students may be identified as having SEN for a variety of reasons. Those students whose parents had reported they had early behavioural problems at the beginning of the study in pre-school reported higher levels of 'anxiety' (2+ problems ES =0.38) lower 'enjoyment of school' (1 problem ES=-0.23) and lower 'maths academic self-concepts (2+ problems ES =-0.48).

Table 4.3 Students identified as SEN and differences in students' dispositions at the end of Year 9*

Ethnic groups		Unknown	School Action	School Action plus	Statement	Not on SEN register
Maths Academic Self-concepts	**Mean**	2.81	2.78	2.62	2.77	2.89
	S.d.	0.70	0.49	0.70	0.70	0.64
	Net Effects	**ns**	**-0.24**	**-0.45**	**ns**	**0**
English Academic Self-concepts	**Mean**	2.89	2.67	2.64	2.68	2.91
	S.d.	0.60	0.58	0.75	0.59	0.54
	Net Effects	**ns**	**-0.41**	**-0.46**	**-0.39**	**0**
***Anxiety* self-concepts**	**Mean**	2.22	2.17	2.47	2.49	2.14
	S.d.	0.54	0.55	0.61	0.59	0.54
	Net Effects	**+**	**ns**	**+0.76**	**+0.77**	**0**
Citizenship values	**Mean**	2.31	2.26	2.29	2.29	2.31
	S.d.	0.43	0.44	0.52	0.42	0.42
	Net Effects	**ns**	**ns**	**ns**	**ns**	**0**
Popularity	**Mean**	2.92	2.92	2.78	2.57	2.90
	S.d.	0.45	0.48	0.52	0.63	0.44
	Net Effects	**ns**	**ns**	**-0.34**	**-0.69**	**0**
Enjoyment of school	**Mean**	2.98	2.90	2.78	2.92	3.05
	S.d.	0.42	0.51	0.58	0.44	0.42
	Net Effects	**ns**	**-0.29**	**-0.54**	**ns**	**0**

***** 'No SEN as the comparison category

Birth position and family size
Students who were third born within their family were found to have significantly lower 'English academic self-concepts' scores than first born students (third born=-0.24) taking into account other influences. Students with 2 or more siblings (in the early years) 'enjoyed school' less than singletons (ES=-0.20).

Age within the year group
Older students within the year group had a higher 'maths academic self-concepts' (ES=0.16). This may be related to the developmental advantage such students have experienced throughout their school careers (they have higher attainment and their social behaviour is rated more favourably by teachers).

Family measures

Socio-economic status (SES) and eligibility for free school meals (FSM)
Family SES is measured by the highest of mother or father's employment status (at entry to the study or later) and it predicted students 'dispositions at the end of Year 9. Those whose parents were in high SES (professional non-manual) employment have significantly higher 'maths academic self-concepts' than students from families with the highest SES being 'Other professional non-manual' (ES=-0.21), 'Skilled non-manual' (ES=-0.33) and 'Skilled manual' (ES=-0.25). Other groups were also lower but differences failed to reach statistical significance. Students with fathers who were working full time and studying had a higher 'maths academic self-concepts' than those who fathers were not working (ES=0.75).

A student's eligibility for free school meals (FSM) provides an indicator of low family income. Students who receive free-school meals had lower average scores for 'maths academic self-concepts' (ES=-0.25).

Parents' qualification level
Differences between groups are generally small for most dispositions. However students of mother's with no qualifications reported higher 'popularity' than students with mothers with a degree (ES=-0.34) or higher degree (ES=-0.39). In addition, students whose mother's had Vocational (ES=-0.32) or academic qualifications at age 16 (ES=-0.21), had lower average 'citizenship values' than students with mothers with no qualifications.

Father's highest qualification level shows an association with raw differences in students' dispositions for the 'English academic self-concepts'. 'English academic self-concepts' was higher for students whose fathers had 'vocational', '18 Academic', and 'higher degree' qualifications than students with fathers who hold no qualifications (Vocational ES=0.23, 18 Academic=0.22, Higher degree= 0.35).

Marital status
Students whose parent was widowed had higher 'anxiety' scores than students from a married household (ES=0.58). Students whose parents were living with a partner (but not married) reported higher 'popularity' levels than students from a married family background (ES=0.21).

Home Learning Environment (HLE)

Early years Home Learning Environment (HLE)
A number of measures provide an indication of aspects of the early years HLE. These are based on the frequency of specific activities involving the child, as reported by parents when children were recruited to the study during the pre-school period (i.e. teaching the child the alphabet, playing with letters and numbers, library visits, reading to the child, teaching the child songs or nursery rhymes).

These measures were combined to create an overall early years HLE index with scores between 0 (very low early years HLE) to 45 (very high early years HLE) see Melhuish et al., 2001; 2008. The early years HLE has been found to be an important predictor of EPPSE students' academic and social-behavioural outcomes at younger ages. In addition it still predicts EPPSE students' English and maths attainments and social behaviour to the end KS3 (see Sammons et al, 2011a&b).

Table 4.4 Early years HLE and differences in students' dispositions at the end of Year 9*

Ethnic groups		Unknown	0-13	14-19	20-24	25-32	33-45
Maths Academic Self-concepts	**Mean**	2.73	2.84	2.86	2.84	2.86	2.85
	S.d.	0.64	0.64	0.69	0.65	0.66	0.68
	Net Effects	**ns**	**0**	**ns**	**ns**	**ns**	**ns**
English Academic Self-concepts	**Mean**	2.83	2.80	2.85	2.86	2.89	3.00
	S.d.	0.51	0.64	0.56	0.56	0.58	0.57
	Net Effects	**ns**	**0**	**ns**	**ns**	**ns**	**ns**
***Anxiety* self-concepts**	**Mean**	2.19	2.16	2.18	2.20	2.18	2.20
	S.d.	0.62	0.55	0.55	0.53	0.55	0.57
	Net Effects	**ns**	**0**	**ns**	**ns**	**ns**	**ns**
Citizenship values	**Mean**	2.38	2.27	2.30	2.33	2.31	2.31
	S.d.	0.48	0.40	0.43	0.42	0.43	0.39
	Net Effects	**+**	**0**	**ns**	**+0.26**	**ns**	**ns**
Popularity	**Mean**	2.93	2.86	2.90	2.91	2.91	2.88
	S.d.	0.37	0.56	0.45	0.47	0.43	0.44
	Net Effects	**ns**	**0**	**ns**	**ns**	**ns**	**ns**
Enjoyment of school	**Mean**	2.98	2.91	2.93	3.01	3.03	3.07
	S.d.	0.43	0.45	0.43	0.43	0.45	0.39
	Net Effects	**ns**	**0**	**ns**	**+0.26**	**+0.26**	**+0.34**

***** 0-13 HLE is the comparison category

After controlling for the impact of other background factors the Early years HLE index is found to predict 'enjoyment of school' with higher levels of HLE in the early years related to higher reported levels of 'enjoyment of school'.

Key Stage 1 and Key Stage 2 (KS1, KS2) Home Learning Environment (HLE)

Parents were again surveyed about their interactions with their EPPE child at home via a parent questionnaire during KS1. They reported on activities such as the frequency of reading to the child, taking the child out on educational visits, computing activities, sport activities, dance, etc.

The individual measures have been aggregated to form four factors representing different activities during Key Stage 1 (KS1): 'Home computing', 'One-to-one interaction', 'Enrichment outings' and 'Expressive Play'. These factors were tested with respect to their influence on students' dispositions at the end of Year 9 (age 13)[10]. In KS2 individual measures were aggregated to form four factors: 'Parent-child educational computing', 'Parent-child interactive learning processes, 'Individual child activities' and 'Computer games'.

10 KS1 HLE factors were not aggregated into a single HLE Index as was done with the Early years HLE since the types of extra curricular activities children are engaged in at this age do not form a simple additive scale. This is for two reasons: first, each of the HLE factors shows a unique pattern of association with different outcome measures, certain activities show a linear relationship (e.g. 'Enrichment outings) while others show an inverted U shape function (e.g. 'Home computing, suggesting an optimum level of engagement that is neither high nor low). Second, they are differentially and strongly influenced by gender, for example boys are significantly more likely to be reported by their parents to play with computers whereas girls are significantly more likely to be reported as engaging in expressive play. Combining these distinct types of activities into a single scale would cancel out contrasting or disparate influences. Consequently, the resulting scale might show no statistically significant associations with outcomes.

Only one of the KS1 HLE factors showed a significant association with one of the dispositions outcomes. This was the measure of ‘popularity’, with higher levels of one-to-one interaction being related to higher reported ‘popularity’ at the end of Year 9, compared to the low group (medium ES=+0.21, high ES=+0.23).

Higher levels of ‘Individual child activities’ at KS2 also predicted higher ‘English academic self-concepts’ scores compared to low levels (medium ES=+0.21, high ES=+0.52). Higher levels of HLE (in terms of the global index predicted higher ‘popularity’ (medium ES=+0.19, high ES=+0.28).

Effect sizes for the contextualised multilevel models of the six dispositions which measured the impact of student, family and home learning can be seen in Table 4.5. The full models can be found in Appendix 5.

Table 4.5 Summary of significant measures for the contextualised analysis of Year 9 dispositions

Maths Academic Self-concepts		
Variable	***Effect size***	***Description***
Gender	**-0.38**	Girls had lower *Maths Academic Self-concepts* than boys
Ethnicity	**0.74**	Black African,
	0.38	Pakistani &
	0.42	Indian students higher self-concepts than White UK
Age in cohort	**0.16**	Older students in the cohort have better *Maths Academic Self-concepts*
Completed survey late	**-0.60**	Students returning the survey late had lower *Maths Academic Self-concepts*
Behavioural problems in early years	**-0.48**	2 behavioural or more problems lower *Maths Academic Self-concepts* than no problems
SEN status in Year 9	**-0.24**	Students on School Action &
	-0.45	School Action plus have lower *Maths Academic Self-concepts* than not on register
FSM in Year 9	**-0.25**	FSM students report *Maths Academic Self-concepts* than those not eligible
Highest family SES in KS2	**-0.21**	Other professional non-manual,
	-0.33	Skilled non-manual and
	-0.25	Skilled manual lower self-concepts than professional non-manual
Father's employment in KS2	**0.75**	Fathers working full time and studying have higher *Maths Academic Self-concepts* scores than fathers that are unemployed
English Academic Self-concepts		
Variable	**Effect size**	**Description**
Ethnicity	**0.38**	Black Caribbean,
	0.56	Black African &
	0.43	Pakistani students higher self-concepts than White UK
Birth position	**-0.24**	Third children lower English Academic self-concepts than firstborn
SEN status in Year 9	**-0.41**	School Action,
	-0.46	School Action plus &
	-0.39	Students with a Statement have lower self-concepts than not on register
Father's qualification	**0.23**	Students with fathers with vocational qualifications,
	0.22	Academic qualifications aged 18 &
	0.35	Higher degree have higher self-concepts (compared to those with none)
HLE: KS2 Individual child activities	**0.52**	High &
	0.21	medium have higher self-concepts (compared to low)
Anxiety		
Variable	**Effect size**	**Description**
gender	**0.48**	Girls higher *Anxiety* scores than boys
ethnicity	**-0.47**	Indian &
	-0.24	Pakistani ethnic group students lower *Anxiety* scores than White UK
Behavioural problems in the early years	**0.38**	Students with 2 or more behavioural problems have higher *Anxiety* than no problems
SEN status in Year 9	**0.76**	School Action plus &
	0.77	Students with a Statement have higher *Anxiety* than not on register
Marital status	**0.58**	Students whose parent is a Widow/widower have higher Anxiety sores than married

Table 4.5 Summary of significant measures (continued)

Citizenship values		
Variable	**Effect size**	**Description**
Gender	**0.31**	Girls higher values than boys
Ethnicity	**0.39**	White European &
	0.33	Pakistani have higher values than white UK
Developmental problems in the early years	**0.19**	1 developmental problems have higher values than no problems
Mother's qualifications	**-0.32**	Vocational &
	-0.21	16 academic have lower values than no qualifications
HLE Early years	**0.26**	Medium HLE *(20-24)* higher than lowest HLE
Popularity		
Variable	***Effect size***	***Description***
Gender	**-0.12**	Girls lower *Popularity* than boys
Ethnicity	**0.44**	Black Caribbean,
	0.60	Black African,
	0.33	Indian &
	0.34	Pakistani have higher *Popularity* scores than white UK
Birth weight	**-0.51**	Very low (fetal infant) birth weight lower *Popularity* than normal birth weight
SEN status in Year 9	**-0.34**	School Action plus &
	-0.69	Students with a Statement have lower *Popularity* than not on register
Mother's qualifications	**-0.34**	Degree &
	-0.39	Higher degree lower *Popularity* than those with no qualifications
Salary in KS1	**0.18**	Highest salary groups (£37,500-£66,000) &
	0.34	(£67,500+) higher *Popularity* than those with no salary
Marital status	**0.21**	Students whose parents are living together have higher Popularity scores than those whose parents are married
Parent-child interaction in KS1	**0.21**	Medium &
	0.23	High have higher *Popularity* scores than lowest HLE
Global HLE KS2	**0.19**	Medium &
	0.28	High have higher *Popularity* scores than lowest HLE
Enjoyment of school		
Variable	**Effect size**	**Description**
Ethnicity	**0.35**	Indian &
	0.55	Pakistani students enjoy school more than White UK
Behavioural problems in early years	**-0.23**	1 problem have lower *Enjoyment of school* than none
SEN status in Year 9	**-0.29**	School Action &
	-0.54	School action plus have lower *Enjoyment of school* than not on register
No of siblings	**-0.20**	Those with 2+ siblings have lower *Enjoyment of school* than singletons
Salary KS1	**0.17**	Top two salary groups: £37.5-£66k
	0.52	£67.5k+ enjoy school more than no salary
HLE Early years		Top 3 HLE groups:
	0.26	20-24
	0.26	25-32,
	0.34	33-45 enjoy school more than lowest HLE

Section 5: Students' dispositions at the end of Year 9: The impact of pre-, primary and secondary school

The aim of this section is to assess whether any features of the pre-school or school a pupil attended continue to predict students' dispositions at the end of Year 9. In addition, we tested whether students who had not attended a pre-school (the home group) had significantly different dispositions at the end of Year 9 in comparison to those who had attended a pre-school centre.

For each of the six outcomes, the possible influence of a number of measures related to pre-school experience was also tested. The continuing impact of primary school attended is also assessed in terms of indicators of their academic effectiveness. The impact of various features of secondary schooling is also investigated in terms of Ofsted inspection judgements of quality and DfE CVA indicators of secondary school academic effectiveness.

Testing the impact of different aspects of pre-school within the contextualised model
The contextualised models described in Section 4, took account of differences related to individual student, family and home environment factors. By testing for the impact of the pre-school after the influence these intake factors had been taken into account, we could establish whether any of the pre-school measures continued to predict students' affective outcomes measured by the disposition factors up to age 14.

Students who had not attended a pre-school centre did not differ in terms of their self reported dispositions at the end of KS3 in comparison with those who had not attended pre-school (when taken as a whole).

The quality of pre-school was originally measured through observations of the pre-school setting using the ECERS-R ECERS-E, and ARNETT instruments. The ECERS-R looked at many of the process and structural aspects of the pre-school setting such as 'space and furnishings' and 'activities'[11]. ECERS-E was an extension of these areas to cover literacy, maths, science and environment and diversity. The ARNETT instrument observed the interaction between children and staff in more detail[12]. ECERS-E and ECERS-R were not found to relate to students' later dispositions at the end of Year 9. This is in contrast to results found for both attainment and social behaviour at age 14 where the quality of the pre-school attended predicted better longer term outcomes for some groups of student. The quality of the pre-school based on the ARNETT instrument looking at aspects of 'Positive relationships', 'Permissiveness', 'Punitiveness' and 'Detachment' was also tested

The quality of care using the ARNETT scales was also split into High, Medium and Low quality and compared to the home students. Students attending pre-schools with high Punitiveness scores were more likely to have significantly lower 'English academic self-concepts' in Year 9 (ES=-0.27).

When the quality of care was assessed for the pre-school sample only higher positive relationship scores, lower punitiveness scores and lower detachment scores were found to significantly relate to higher 'English academic self-concepts' (tested using the continuous scales Positive R. ES=0.13, Punitiveness ES=-0.12, Detachment ES=-0.15). Lower detachment scores were also found to predict higher 'enjoyment of school' (ES=-0.11) and lower scores for the pre-school quality measure of Positive relationship predicted higher scores for the Year 9 'anxiety' (ES=-0.12). The quality of the pre-school was also measured through ECERS-E and ECERS-R. Neither of these measures predicted dispositions in Year 9.

[11] ECERS-R collected information on the following areas: Space and furnishings, Language reasoning, Personal care routines, Activities, Interaction, Programme structure, Parents and staff.
[12] The ARNETT observation looked at the following areas: Detachment, Positive relationships, Permissiveness, and Punitiveness.

The Impact of pre-school centre effectiveness

In order to establish whether the effectiveness of the pre-school setting attended shows any continuing impact on students' dispositions further multilevel analyses were conducted on the Year 9 outcomes. Measures of the effectiveness of the pre-school centre attended were developed for the originally EPPE research[13]. These were also tested to establish whether they predicted later self perception outcomes measured by the disposition factors at age 14. Overall, the multilevel analyses showed few links between pre-school effectiveness indicators and students' later dispositions, when preschools were split into three groups: High, Medium and Low, compared to home children. There were however a few significant findings.

Students who had attended a pre-school found to be highly effective for promoting progress in 'Early Number Concepts' were found to have more positive 'citizenship values' and lower 'anxiety' levels in Year 9 ('citizenship values' ES=0.23, ;'anxiety' ES=-0.27). Students who had attended a highly effective pre-school for promoting 'Independence and Concentration' had higher 'citizenship values' (ES=0.38) in Year 9 and students who attended a pre-school that was low in effectiveness for Anti-social behaviour (i.e. had higher Anti-social attributes) had higher 'anxiety' levels in Year 9 (ES=0.23).

The impact of primary school effectiveness

Analyses were conducted to explore whether the student's previous primary school experiences predicted their dispositions in Year 9. We only had one set of measures of primary school quality these were indicators of primary school academic effectiveness in English, maths and science. These were tested as predictors of students' later dispositions (taking into account significant background, HLE and child characteristics). The contextual value added (CVA) academic effectiveness measures for primary schools were calculated using national data sets for all primary schools in England linking KS1 and KS2 results, and the separate indicators for English, maths and science were combined into an overall effectiveness measure in the absence of relevant affective measures. These measures provide an indicator of the overall academic success of the primary school that we can assess in terms of the potential impact on students' later educational outcomes including their self reported dispositions in Year 9.

The analyses show that the combined academic effectiveness of the primary school attended did not significant predict students' dispositions for any dimensions except 'citizenship values'. For 'citizenship values' students from highly academically effective primary schools for science had significantly higher 'citizenship values' scores than children from a very high effective primary school (ES=0.38).

For academic outcomes in Year 9 we found that the academic effectiveness of the primary school previously attended continued to predict better outcomes in secondary school, but we did not identify any significant differences for social behaviour. Similarly, the academic effectiveness of the primary school attended had little impact on student dispositions.

[13] The value added analysis of academic and social-behavioural outcomes of EPPSE children who attended a pre-school (controlling for their prior attainment at entry to the study and background influences) produced estimates of pre-school centre effectiveness (value added residuals which measure relative gains over the pre-school period compared to those predicted by the multilevel model). For details of these analyses, see EPPE Technical Paper 8a and 8b.

The impact of secondary school effectiveness

Analyses were also conducted to assess the impact of the secondary school EPPSE students attended in Year 9. DfE indicators of the academic effectiveness of the secondary school were available (CVA measures of progress for KS2-KS4 were used to provide a combined three year measure).

Ofsted judgements of school quality were also available for a range of 21 different aspects of school quality shown in Box 3. These were tested individually as predictors of students' dispositions, taking into account the influence of other significant individual, family, HLE factors.

Box 3: Dimensions of Ofsted quality judgements

OFSTED judgements	
Effectiveness	How effective, efficient and inclusive is the provision of education, integrated care and any extended services in meeting the needs of learners? How well does the school work in partnership with others to promote learners' well-being? The effectiveness of the school's self-evaluation. The capacity to make any necessary improvements Effective steps have been taken to promote improvement since the last inspection
Achievement and standards	How well do learners achieve? The standards reached by learners How well learners make progress, taking account of any significant variations between groups of learners How well learners with learning difficulties and disabilities make progress
Outcomes for students	The extent of learners' spiritual, moral, social and cultural development The behaviour of learners The attendance of learners How well learners enjoy their education The extent to which learners adopt safe practices The extent to which learners adopt healthy lifestyles The extent to which learners make a positive contribution to the community How well learners develop workplace and other skills that will contribute to their future economic well-being How good is the overall personal development and well-being of the learners?
Quality of provision	How effective are teaching and learning in meeting the full range of learners' needs? How well do the curriculum and other activities meet the range of needs and interests of learners? How well are learners cared for, guided and supported?

The secondary school overall academic effectiveness measure (derived from DfE CVA scores) was not found to be a significant predictor any of the disposition outcomes. These results indicate that students' dispositions in KS3 did not seem to be affected by their secondary schools' academic effectiveness (or by contrast their ineffectiveness).

'Enjoyment of school' was found to be predicted by a number of Ofsted quality judgements. Attending a secondary school that was judged to be outstanding in how 'effective, efficient and inclusive their provision of education, integrated care and extended services was in meeting the needs of learners' predicted greater 'enjoyment of school'. The largest difference was between the outstanding and the inadequate group for this indicator (ES=0.31).

The following indicators also predicted better outcomes in terms of self-reported 'enjoyment of school' for EPPSE students in Year 9. In each case the differences were statistically significant between the outstanding and the inadequate categories of school;

- How well learners develop workplace and other skills that will contribute to their future economic well-being (Outstanding ES=0.52).
- How well learners with learning difficulties and disabilities make progress (Outstanding ES=0.46)
- How well learners make progress, taking account of any significant variations between groups of learners (Outstanding ES=0.37)
- The standards reached by learners (Outstanding ES=0.36)
- How well learners achieve (Outstanding ES=0.33)

In addition, the analyses revealed that, taking account of other factors related to intake, schools judged as outstanding in the extent to which 'learners adopt healthy lifestyles' and the extent to which 'learners develop workplace and other skills that will contribute to their future economic well-being' had students that reported lower levels of 'anxiety' than students attending secondary schools judged as inadequate (Healthy lifestyles ES=-0.72; Economic well-being ES=-0.52).

Students from schools judged as outstanding in how well the 'learners with learning difficulties and disabilities make progress' showed higher 'maths academic self-concepts' than students from school judged as inadequate (ES=0.42).

However there were some Ofsted judgements that showed negative relationships with certain dispositions. Where schools were deemed to have made effective steps to promote improvement since the last inspection, students reported higher levels of 'anxiety' than in schools that had not made effective steps (ES=0.26). In addition, positive judgements in the following are negatively related to 'citizenship values'[14]:

- How well does the school work in partnership with others to promote learners' well-being (outstanding, good, satisfactory worse than inadequate)
- The extent of learners' spiritual, moral, social and cultural development (outstanding, good, satisfactory worse than inadequate)
- The behaviour of learners (good & satisfactory worse than inadequate)
- The attendance of learners (outstanding, good, satisfactory worse than inadequate)
- How good is the overall personal development and well-being of the learners (outstanding, good, satisfactory worse than inadequate)
- How well are learners cared for, guided and supported (outstanding, good, satisfactory worse than inadequate)

[14] Consistent findings where outstanding, good and satisfactory categories were significantly different to the inadequate category are shown here.

Section 6: The relationship between concurrent outcomes on dispositions in Year 9

Separate analyses of Year 9 academic and social-behavioural outcomes have been carried out elsewhere and are reported separately (Sammons et al 2011b). However these outcomes could be also seen as predictors of dispositions and have been tested after taking into account any significant student, family and HLE factors to assess whether academic attainment and social-behavioural status predicts students' dispositions.

Academic assessments consisted of the EPPSE students' Teacher Assessment scores for English, maths and science. An extended version of the Strengths and Difficulties Questionnaire (Goodman, 1997) was used to measure different features of students' social-behavioural development in Year 9. This social-behavioural profile was completed by the student's form teacher (or in some cases by another member of staff who knew the EPPSE student well). Principal component analysis and confirmatory factor analysis were used to identify the main underlying dimensions of social behaviour in Year 9. From this four dimensions were created: Self regulation, Pro-social, Hyperactivity and Anti-social (see Sammons et al 2011b for further details).

Table 6.1 Correlation between academic and social-behavioural outcomes and dispositions in Year 9

	Year 9 academic outcomes					
	Maths Academic self-concepts	***English Academic self-concepts***	***Anxiety***	***Values***	***Popularity***	***Enjoyment of school***
English	0.21**	0.35**	-0.06	0.04	0.03	0.24**
Maths	0.48**	0.13**	-0.13**	0.06	0.02	0.19**
Science	0.33**	0.08**	-0.09*	-0.02	-0.02	0.19**
	Year 9 Social-behavioural outcomes					
Self regulation	0.20**	0.16**	-0.05	0.16**	0.03	0.25**
Pro-social	0.11**	0.11**	0.02	0.17**	0.00	0.22**
Hyperactivity	-0.14**	-0.13**	0.05	-0.17**	0.05	-0.22**
Anti-social	-0.07	-0.08	0.04	-0.12**	0.03	-0.17**

** Significant at the p<0.01 level

Academic attainment and social behavioural outcomes in Year 9 and dispositions

Academic attainment in Year 9 was found to predict four out of the six disposition outcomes ('maths and *English academic self-concepts'*, 'anxiety' and 'enjoyment of school'). Maths attainment in Year 9 was the strongest predictor of 'maths academic self-concepts' (ES=1.15), as might be anticipated.

English attainment was the strongest predictor of 'English academic self-concepts' (ES=0.75). Interestingly, maths appeared to show the strongest relationship to 'anxiety' and 'enjoyment of school' out of all the academic attainments, although substantially smaller in effect, especially for 'anxiety'. Students with higher maths scores displaying lower 'anxiety and higher reported 'enjoyment of school' (ES 'anxiety'=017; ES 'enjoyment of school'=0.34). It is likely that these relationships are reciprocal rather than unidirectional.

Social-behavioural outcomes (as rated by teachers) in Year 9 showed stronger relationships with students self–reported dispositions than academic attainments. Self regulation was the strongest predictor of 'English and maths academic self-concepts', 'citizenship values' and ;'enjoyment of school'. Students with higher self regulation scores had better academic self-concepts (maths ES=0.41; English ES=0.25), stronger 'citizenship values' (ES=0.32) and greater reported 'enjoyment of school' (ES=0.42). However, social-behavioural outcomes did not predict 'anxiety' and 'popularity'.

Table 6.2 Strongest academic & social-behavioural predictors of dispositions in Year 9 (Effect sizes)

Year 9 academic outcomes						
	Maths ***Academic self-concepts***	**English** ***Academic self-concepts***	***Anxiety***	**Values**	***Popularity***	***Enjoyment of school***
English		+0.75	ns	ns	ns	
Maths	+1.14		-0.17	ns	ns	+0.34
Science				ns	ns	
Year 9 Social-behavioural outcomes						
	Maths ***Academic self-concepts***	**English** ***Academic self-concepts***	***Anxiety***	**Values**	***Popularity***	***Enjoyment of school***
Self regulation	+0.44	+0.25	ns	+0.32	ns	+0.41
Pro-social			ns	+ 0.32	ns	
Hyperactivity			ns	- 0.32	ns	
Anti-social		ns	ns		ns	

ns not significant +/- Significant positive/negative predictor of the outcome when tested individually
n.b. Only strongest predictors shown

Full details of effect sizes can be found in Appendix 6.

Views of school and dispositions in Year 9

Analyses were also conducted to explore whether a student's own view of the secondary school they attended was associated with their own dispositions (taking into account significant background, HLE and individual characteristics). Eight factors related to views of school had been derived from a separate student survey. The factors are shown in Box 4.

Box 4: The specific items associated with each students' views of school in Year 9 (age 13)

Views of school factors in Year 9			
Teacher support	***School environment***	***Valuing students***	***Headteacher qualities***
Most teachers mark & return my homework promptly	My school has attractive buildings	The school values students' views	I often see the headteacher around the school
Most teachers make helpful comments on my work	Classrooms are nicely decorated & clean	Teachers listen to what students say about the school	The headteacher makes sure students behave well
Teachers praise me when I work hard	Toilets are well cared for & clean	The teachers in this school show respect for all students	The headteacher is interested in how much we learn
Teachers tell me how to make my work better	My school is well organised	Teachers are unpleasant if I make mistakes	
Teachers make me feel confident about my work	People think my school is a good school	Teachers are friendly towards me	
Teachers are available to talk to me privately			
Teachers will help me if I ask for help			
I get rewarded for good behaviour			
Cronbach=0.86	***Cronbach=0.75***	***Cronbach=0.78***	***Cronbach=0.72***

Poor Behaviour climate	*Emphasis on learning*	*Teacher discipline*	*Learning resources*
Most students want to leave this school as soon as they can	Most students want to do well in exams	Teachers make sure that it is quiet during lessons	There are enough computers
Students who work hard are given a hard time by others	Teachers expect me to do my best	Teachers make clear how I should behave	Science labs are good
Most students take no notice of school rules	The lessons are usually 'challenging' but 'do-able'	Teachers take action When rules are broken	We have a good library
There are often fights (in or around school)	Most teachers want me to understand something, not just memorise it	Teachers are not bothered if students turn up late	We get enough time using computers in subject lessons
Some kids bring knives or weapons into school	Most teachers believe that mistakes are OK so long as we learn		
Cronbach=0.72	***Cronbach=0.68***	***Cronbach=0.62***	***Cronbach=0.70***

Students were most positive about 'emphasis on learning' and 'headteacher qualities' and least positive for 'school environment' and 'valuing students'.

Table 6.3 Descriptive statistics for the views of school factors at the end of Year 9

	Mean	Standard deviation	Range	Pupil n
Teacher support	**2.97**	0.43	1-4	1721
Teacher discipline	**3.01**	0.39	1-4	1717
Emphasis on learning	**3.17**	0.38	1.2-4	1748
Headteacher qualities	**3.10**	0.59	1-4	1747
Valuing students	**2.89**	0.50	1-4	1751
Poor behaviour climate	**2.30**	0.52	1-4	1750
School environment	**2.79**	0.50	1-4	1750
Learning resources	**3.03**	0.45	1-4	1750

Table 6.4 Correlation between the views of school factors

	Teacher discipline	*Emphasis on learning*	*Head-teacher qualities*	*Valuing students*	*Poor behaviour climate*	*School environ-ment*	*Learning resources*
Teacher support	0.53**	0.58**	0.40**	0.69**	-0.34**	0.51**	0.46**
Teacher discipline		0.44**	0.35**	0.49**	-0.28**	0.41**	0.34**
Emphasis on learning			0.38**	0.51**	-0.28**	0.38**	0.41**
Headteacher qualities				0.41**	-0.19**	0.36**	0.31**
Valuing students					-0.43**	0.57**	0.48**
Poor behaviour climate						-0.50**	-0.37**
School environment							0.54**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01

The correlations between views of school and dispositions are shown in Table 6.4. The strongest relationships between the views of school and dispositions are found for 'enjoyment of school', particularly for the factors 'teacher support', 'emphasis on learning' and 'valuing students'.

Table 6.5 Correlations between views of school and dispositions in Year 9

	Maths Academic Self-concepts	*English Academic Self-concepts*	*Anxiety*	*'citizenship values'*	*Popularity*	*Enjoyment of school*
Teacher support	0.20**	0.21**	-0.13**	0.29**	0.17**	0.53**
Teacher discipline	0.08**	0.10**	-0.10**	0.27**	0.07**	0.37**
Emphasis on learning	0.19**	0.22**	-0.11**	0.30**	0.18**	0.50**
Headteacher qualities	0.08**	0.14**	-0.07**	0.23**	0.11**	0.33**
Valuing students	0.17**	0.14**	-0.17**	0.30**	0.08**	0.52**
Poor Behaviour climate	-0.15**	-0.07**	0.29**	-0.10**	-0.09**	-0.43**
School environment	0.13**	0.12**	-0.18**	0.17**	0.11**	0.45**
Learning resources	0.12**	0.19**	-0.15**	0.19**	0.05	0.39**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

The analyses reveal that a student's own views of the secondary school they attend is significant and strong predictors of their dispositions in Year 9 (based on self-reports). When tested separately, views of school predicted 'enjoyment of school' more than the other outcomes, with all experience of school factors predicting strongly 'enjoyment of school' (effect size was 0.5 or above). 'Teacher support' (ES=1.27), 'valuing students' (ES=1.22) 'emphasis on learning' (ES=1.11) and 'school environment' (ES=1.01) were the strongest predictors when tested separately.

'Citizenship values' were also moderately strongly predicted by views of school, particularly 'valuing students' (ES=0.64), teacher support' (ES=0.62), 'emphasis on learning' (ES=0.61) 'teacher discipline' (ES=0.54). Views of school in year 9 were found to be poor predictors of 'popularity' and 'anxiety'. The one exception was 'behaviour climate' ('poor behaviour climate' factor) that was found to strongly predicted 'anxiety' (ES=0.58).

Table 6.6 Views of school as predictors of dispositions in Yr 9 (effect sizes)

	Maths Academic Self-concepts	*English Academic Self-concepts*	*Anxiety*	*Citizenship values*	*Popularity*	*Enjoyment of school*
Teacher support	0.44	0.43	-0.26	0.62	0.34	1.27
Teacher discipline	0.66	0.21	-0.19	0.54	0.15	0.80
Emphasis on learning	1.25	0.40	-0.22	0.61	0.36	1.11
Headteacher qualities	0.22	0.29	-0.15	0.47	0.24	0.72
Valuing students	0.69	0.25	-0.36	0.64	0.20	1.22
Poor Behaviour climate	-0.36	ns	0.58	-0.25	-0.20	-0.90
School environment	0.46	0.23	-0.34	0.39	0.24	1.01
Learning resources	0.72	0.36	-0.30	0.40	ns	0.81

+/- Positive/negative Effect size ns Not significant

It is recognised that the self-reported disposition factors were collected at the same time as the questionnaire surveys used to obtain measures of students' experiences of secondary school. Nonetheless they demonstrate the importance of students' dispositions as influences that may shape their outcomes. Elsewhere we have investigated the way the various experience of school factors also predict both academic and social-behavioural outcomes in Year 9. The findings suggest that much greater attention should be paid to the students' voice in efforts to raise standards and promote school improvement (Smees & Thomas 1999, Thomas et al 2000).

Section 7: Students' dispositions across Key Stage 3: Results from value added multilevel analyses

Change in students' self-reported dispositions from Year 5 in primary to Year 9 spanning a move from primary school and across the first three years of secondary school were investigated. The factors from the Year 5 pupil survey provide the baseline measures for these analyses of change. Previous analyses studied the change in EPPSE students' dispositions from Year 2 to Year 5. The models examined are *complex value added models* that control for measures of students' prior dispositions and, in addition, any statistically significant individual, family and home environment characteristics.

Table 7.1 reports the correlations between the prior disposition factors at the end of Year 5 and the factors collected at the end of Year 9. The correlations between the factors at the different time points are low, although they are generally statistically significant. It is important to note that the lower correlations are likely to reflect a number of influences, including real changes in attitudes at different ages, measurement error in terms of the assessments, and differences in the instruments (in terms of wording of items and number of points on the rating scales used).

The strongest relationship was between 'academic self-concepts' in Year 5 and 'maths academic self-concepts' in Year 9 (r=0.25), closely followed by 'enjoyment of school' (r=0.24) and 'anxiety' (r=0.22).

Table 7.1 Correlations between factor scores in year 5 and year 9

	Maths Academic self-concepts	*English* Academic self-concepts	*Anxiety*	Values	*Popularity*	*Enjoyment of school*
Enjoyment of school	0.10**	0.11**	-0.10**	0.19**	0.07**	0.24**
***Anxiety* & Isolation**	-0.07**	-0.03	0.22**	0.02	-0.16**	-0.11**
Academic self-concepts	0.25**	0.19**	-0.09**	0.12**	0.10**	0.20**
Behaviour self-concepts	0.07**	0.16**	-0.02	0.20**	0.04	0.22**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Simple value added models

The multilevel analyses of students' attitude 'changes' from Year 5 in primary to Year 9 in secondary school use the six factor scores at the end of Year 9 as outcome measures. Table 7.2 shows the results of the simple value added model of change in dispositions for the factors when fitting only prior students' dispositions.

Table 7.2 Simple value added models showing school and child level variance

	Maths Academic self-concepts	*English* Academic self-concepts	*Anxiety*	Values	*Popularity*	*Enjoyment of school*
Child variance	0.886	0.868	0.934	0.868	0.947	0.890
School variance	0.006	0.046	0.0139	0.014	0.004	0.040
Intra-school variation	0.007ns	0.051	0.015ns	0.014ns	0.005ns	0.043
Reduction in child variance	5.5%	2.9%	4.2%	5.1%	2.7%	6.8%
Reduction in school var.	56.5%	16.6%	32.0%	38.2%	42.6%	24.6%
Reduction in total variance	6.3%	3.7%	5.2%	5.1%	2.9%	7.8%
No of students	1559	1558	1558	1568	1555	1567

The best fit in the simple value added models are achieved by inclusion of the prior students' disposition measures shown in Table 7.3. Only statistically significant effect sizes are reported.

Table 7.3 Gains from Year 5 to Year 9 in dispositions (Simple value added models)

	Maths Academic self-concepts	*English* Academic self-concepts	*Anxiety*	Values	*Popularity*	*Enjoyment of school*
Enjoyment of school			+0.11	+0.25		+0.33
***Anxiety* & Isolation**			+0.42		-0.29	
Academic self-concepts	+ 0.49	+0.29			+0.15	+0.19
Behaviour self-concepts		+0.21		+0.30		+0.23

Complex value added model

Further multilevel analyses were conducted to investigate the continuing impact of background, while taking account of the links with prior students' dispositions reported above. The results show that a number of statistically significant relationships with students' background remain. Descriptive statistics for the complex value added models are shown in Table 7.4.

Table 7.4 Complex value added models showing school and child level variance

	Maths Academic self-concepts	*English* Academic self-concepts	*Anxiety*	Values	*Popularity*	*Enjoyment of school*
Child variance	0.083	0.848	0.881	0.873	0.973	0.864
School variance	0.006	0.037	0.008	0.012	0.008	0.021
Intra-school variation	0.008ns	0.041ns	0.009ns	0.014ns	0.000ns	0.024ns
Reduction in child variance	11.2%	4.6%	9.7%	3.5%	5.8%	9.4%
Reduction in school vari.	58.6%	45.6%	62.6%	47.0%	100.0%	59.6%
Reduction in total variance	12.0%	7.4%	10.8%	8.8%	6.6%	12.1%
No of students	1559	1558	1558	1568	1555	1567

As reported previously for the contextualised models (see Section 4) and the simple value added models, the size of the intra-school correlation is interpreted with caution due to the large number of schools with very few EPPSE 3-14 students.

The impact of pre- and primary school

We also tested the impact of the pre- and primary school within the complex Value Added models described above which took account of the impact of individual, family and home environment factors and also their students' dispositions at the end of Year 5. By testing for the impact of the pre-school after these factors had been taken into account, or modelled, differences in intake to different pre-school settings could be separated from the pre-school effects.

Measuring pre-school effects in these models measures, in essence, the change in disposition from Year 5 to Year 9. Any positive effect found would suggest that more positive or negative change in disposition was being made by students in relation to features of their past pre-school experience.

Few significant positive results were found. Students who had attended a pre-school classed as low in effectiveness for promoting 'pre-reading' skills had lower 'English academic self-concepts' in Year 9 than home students. Lastly, students who had previously attended a pre-school classed as highly effective in promoting progress in 'early number concepts' had significantly lower 'anxiety' scores than home students at the end of Year 9.

Section 8: Summary and conclusions

This paper complements the analyses of academic and social-behavioural outcomes also carried out on Year 9 outcomes and reported elsewhere (Sammons et al 2011a, 2011b). These results indicate that a number of distinct dispositions to school can be identified based on student's self reports in primary school in both Year 2 and Year 5 and also in Secondary school in Year 9. Dispositions are clearly much more variable over time than either EPPSE students' academic or social-behavioural outcomes, although earlier dispositions do still predict later dispositions to a limited extent.

This research confirms findings elsewhere (Keys and Fernandez 1992) that student attitudes tend to become less positive over time and that in a number of areas gender differences exist. The tendency of girls to have lower 'academic self-concepts' than boys, feel less 'popular' and have higher self reported 'anxiety' scores is something that is relevant to the organisation of school pastoral systems. It should be born in mind that, although student attitudes get less positive over time, the majority of students in Year 9 are still feeling positive about themselves and enjoy school.

The findings in this report and the two accompanying reports on academic and social-behavioural development reveal important links between features of their secondary school experience as reported by students and their academic and behavioural outcomes as well as their dispositions to school. This suggests that schools should be encouraged to value students' views and take steps to collect information about their perspectives on a regular basis. Such information can provide an important source of evidence for school improvement and development planning given the substantial differences between schools in key areas as reported by students (for 'emphasis on learning', 'teacher support', 'school environment', 'headteacher qualities', 'behavioural climate' and 'learning resources'). There is also evidence of important variation between schools in students' dispositions for 'enjoyment of school'. Taken together, the findings suggest that secondary schools do differ significantly in various ways that are likely to influence the quality of learning and well-being as perceived by students. Such evidence could provide valuable feedback to schools, especially where they maybe struggling to improve or are rated as inadequate by inspectors.

The findings of this Year 9 analysis of student dispositions show similarities to findings in Year 5 that suggest pupil background has only a small impact on dispositions compared to its impact on other outcomes (Sammons et al 2011a, 2011b). This may in part be linked to greater changes in self perceptions over time, suggesting concurrent influences play a larger role. However, gender differences were found for some outcomes, as was the case for EPPSE students' academic and social-behavioural outcomes in Year 9.

Year 9 student dispositions were found to relate to academic attainment and *self regulation* (this relationship was not found in Year 5 for 'enjoyment of school'), suggesting that less academic students also have less positive experiences of learning, which may impact on longer term aspirations or educational choices (Goodman and Gregg 2010). Students with SEN were found to be particularly vulnerable to poorer self perceptions, and this could be relevant in the development of student's personal goals.

Self perceptions, including items related to 'enjoyment of school' become less positive over time, but students are still generally positive in Year 9 about themselves and their school experience, with the majority of students liking school, feeling popular and feeling that academic success is important. More specifically almost two thirds of students think getting a university degree is very important and have high aspirations. A gender divides is evident with boys more inclined to like and feel competent in maths, science, ICT and sports and girls in English, the Arts and modern languages, areas in which there are also national differences in subject choices found at GSCE and A level.

A good quality early years HLE has been shown to benefit students' academic outcomes even in secondary school, and also their social behaviour. The early years HLE also predicts more favourable dispositions in Year 9. Thus encouraging positive learning experiences in the home and

appropriate parenting skills that facilitate this could also nurture positive views of learning and school more generally in the longer term.

Family and child case studies of resilient and vulnerable children provide further in depth discussion of influences base on interviews quantitative evidence. These provide deeper understanding of the parenting and schooling patterns that influence well being and developmental pathways (Siraj-Blatchford et al., 2011).

The research provides important evidence on educational influences on students' dispositions. Attending a high quality secondary school (as assessed through Ofsted judgements) appears to have some positive benefit to 'enjoyment of school' and lower 'anxiety' levels, suggesting that good quality schools also benefit emotional well-being and highlight the importance of including students' views in the school evaluation process. Some of the strongest predictors of student dispositions relate to their views and experiences of key features of secondary school and classroom processes. In particular, the 'emphasis on learning', 'teacher support', and 'behaviour climate' ('poor behaviour climate' factor) of the school predict more favourable dispositions as well as better academic attainment and social-behavioural outcomes.

Appendix 1: Exploratory and Confirmatory Factor Analyses of dispositions outcomes in Year 9

Measures

The 'All About Me' questionnaire had 55 three and four point Likert scale items that related to how students felt about themselves and how much they enjoyed school. In addition 3 items from the 'All About Me at School' questionnaire were also used in the analysis as they related to themselves.

Exploratory Factor analysis using Varimax and Oblique rotation was used. A cut-off of 0.40 for standardised regression coefficients were used to identify an initial factor structure. Items loading on two or more factors were dropped from the factor structure. The original analyses yielded 15 factors with an Eigenvalue of more than 1.00 and accounted for 63% of the total variance for the Varimax rotation and 64% for the Oblique rotation.

Table A1.i Details of the robust factors identified through Exploratory factor analysis

Varimax model	No of items	Internal consistency (Cronbachs)
Maths Academic self-concepts	8	0.91
English Academic self-concepts	7	0.90
Enjoyment of school	6	0.74
Popularity	5	0.83
Anxiety	6	0.78
Values	5	0.75
63% Variance explained		

Oblique model (pattern matrix)	No of items	Internal consistency (Cronbachs)	Oblique model (structure matrix)	No of items	Internal consistency (Cronbachs)
Maths ASC.	7	0.91	**Maths ASC.**	8	0.91
English ASC.	7	0.90	**English ASC.**	7	0.90
Anxiety	6	0.78	***Anxiety***	6	0.78
Values	5	0.75	**Values**	5	0.75
Popularity	5	0.83	***Popularity***	5	0.83
Enjoyment of school	6	0.74	***Enjoyment of school***	6	0.74
64% Variance explained					

n.b Factors with internal consistencies of 0.60 only shown

ASC Academic self-concepts

The internal consistencies (Cronbachs) for the 6 factor model varied from 0.74 to 0.91. This can be compared to 0.63-0.88 for their school well-being scales of Opdenakker & Van Damme (Opdenakker & Van Damme 2000), Savolainen's well being scale's Cronbachs of 0.79, and Konu et al's four school well-being scales ranging between 0.62 and 0.84 (Konu et al 2002).

The second step was to carry out a confirmatory factor analysis (CFA) using the AMOS 18 computer program. From the Exploratory Factor Analysis there are a number of options to test. Any factors with internal consistencies of 0.60 or above were included in the model. Each model was run with and without missing values. Each item was constrained to a single factor, although the factors were allowed to correlate. An initial 6 factor model that included items from the Varimax EFA was run, then the best model from both the Oblique and Varimax analyses using Internal consistencies and construct validity as criteria for inclusion of items. The 6 factor best fit model included all items from the oblique EFA with the exception 'I am clever' that was considered a poor item as it had a low factor loading on the Varimax rotation and cross loaded on multiple items on the oblique rotation. It was also decided to omit two items from the academic self-concepts factors that were not from the original Marsh self-concepts factors, to allow for a closer comparison with other studies. Model 1 shows the final model using listwise deletion of any items that were missing or where students had entered two

responses for the item. Models 2-4 are the model run with different methods of dealing with missing values[18] . Due to the non-normal nature of the data an additional set of models was also run using the Unweighted least-squares estimation procedure.

Table A1.ii: Model fit for the Confirmatory factor analysis of views of self items

Description	Chi-square	df	Chi/ df	AIC	RMR	TLI	RMSEA	GFI	AGFI	CFI	PCFI	Pupil n
Model 1*	**1656.12**	**449**	**3.688**	**1878.12**	**0.19**	**0.93**	**0.042**	**0.93**	**0.92**	**0.94**	**0.85**	**1503**
Model 2**	**1761.92**	**449**	**3.924**	**1983.92**	**----**	**0.93**	**0.041**	**----**	**----**	**----**	**0.80**	**1713**
Model 3*	**1713.40**	**449**	**3.816**	**1871.40**	**0.19**	**0.93**	**0.042**	**0.93**	**0.92**	**0.94**	**0.85**	**1566**
Model 4**	**1773.84**	**449**	**3.951**	**1995.843**	**----**	**0.93**	**0.041**	**----**	**----**	**----**	**0.80**	**1728**

* Listwise deletion ** Including missing data

The final model is shown in Table A1.iii, from which factor scores were created for each pupil.

Table A1.iii: The Final factor structure for dispositions in Year 9

Factor	***Regression weights***
Maths Academic Self-concepts	***Cronbachs =0.91***
I learn things quickly in my Maths classes	**0.827**
I have always done well in my Maths classes	**0.855**
Compared to others my age I am good at Maths	**0.840**
Work in my Maths classes is easy for me	**0.738**
I get good marks in Maths	**0.839**
English Academic Self-concepts	***Cronbachs =0.90***
I learn things quickly in my English classes	**0.813**
I have always done well in my English classes	**0.820**
Compared to others my age I am good at English	**0.779**
Work in my English classes is easy for me	**0.701**
I get good marks in English	**0.839**
Anxiety	***Cronbachs=0.78***
In class I worry about what the others think of me	**0.508**
I get a lot of headaches, stomach aches or sickness	**0.446**
I worry a lot	**0.722**
I am often unhappy, downhearted or tearful	**0.678**
I am nervous in new situations	**0.644**
I have many fears, I am easily scared	**0.679**
Values	***Cronbachs=0.75***
Making sure strong people don't pick on weak people	**0.495**
Respecting rules and laws	**0.607**
Controlling your temper even when you feel angry	**0.564**
Respecting other peoples points of view	**0.685**
Sorting out disagreements without fighting	**0.693**
Popularity	***Cronbachs =0.83***
I make friends easily	**0.648**
Other teenagers want me to be their friend	**0.711**
I have more friends than most other teenagers my age	**0.609**
Most other teenagers like me	**0.755**
I am popular with other students in my students in my age group	**0.749**

[18] Model 2 treated double entries and missing items as missing values: Model 3 included double entries as the mean of their responses, e.g. agree and disagree would be coded as 2.5 ; Model 4 was Model 3 with additional missing items included as missing values

Enjoyment of school	***Cronbachs=0.74***
My school is a friendly place	**0.568**
On the whole I like being at school	**0.738**
I like to answer questions in class	**0.511**
School is a waste of time for me	**0.522**
I like most of the lessons	**0.652**
I am bored in lessons	**0.520**

Appendix 2: Factor structure using Varimax and Oblique Exploratory Factor Analysis

Table A2:i Exploratory Factor Analysis of views of school using Varimax rotation

Showing loadings of 0.30 or above using Varimax rotation	F1 MATHS	F2 ENG	F3 POP	F4 AN	F5 EN	F6 V	F7 BEH	F8 SAF	F9 SCI	F10 ART	F11 SPO	F12 LAN	F13 ICT	F14	F15
Maths Academic Self-concepts															
I am clever	.45								.33						
Maths- how good are you at	.79														
How much do you like: maths	.67														
I learn things quickly in my maths classes	.84														
I have always done well in my maths classes	.85														
Compared to others my age I am good at maths	.84														
Work in my Maths classes is easy for me	.78														
I get good marks in Maths	.84														
English Academic Self-concepts															
English- how good are you at		.75			.33										
How much do you like: English		.63													
I learn things quickly in my English classes		.82													
I have always done well in my English classes		.82													
Compared to others my age I am good at English		.80													
Work in my English classes is easy for me		.77													
I get good marks in English		.83													
Popularity															
I make friends easily			.68												
Other teenagers want me to be their friend			.76												
I have more friends than most other teenagers my age			.70												
Most other teenagers like me			.79												
I am popular with other students in my students in my age group			.78												
Anxiety															
In class I worry about what the others think of me				.50											
I get a lot of headaches, stomach aches or sickness				.55											
I worry a lot				.77											

I am often unhappy, downhearted or tearful				.69											
I am nervous in new situations				.72											
I have many fears, I am easily scared				.73											
Enjoyment of school															
My school is a friendly place					.55			.41							
On the whole I like being at school					.57		.36								
I like to answer questions in class					.55										
School is a waste of time for me					.69										
I like most of the lessons					.55										
I am bored in lessons					.50										
Values															
Making sure strong people don't pick on weak people						.61									
Respecting rules and laws						.61	.33								
Controlling your temper even when you feel angry						.67									
Respecting other peoples points of view						.72									
Sorting out disagreements without fighting						.71									
Behaviour															
I work hard in class							.60								
I mess about in class							-.68								
I never bully other students							.50								
Safety															
I feel safe in the playground								.73							
I feel safe on the way to/from school								.73							
I feel out of place at school				-.31	.31			(.37)							.33
Science															
I am good at Science									.81						
I like Science									.76						
Arts															
I am good at Arts										.89					
I like Arts										.90					
Sport															
I am good at Sport											.87				
I like Sport											.89				

Languages															
I am good at Languages												.82			
I like Languages												.85			
ICT															
I am good at ICT													.84		
I like ICT													.87		
Values 2															
Importance of getting good marks														.55	
Importance of being better than others														.76	
Importance of believing in ‘God’ or spiritual figure														.59	
Factor 15															
helping a friend in trouble															.64

Table A2:ii Exploratory Factor Analysis of views of school using Oblique rotation

Showing loadings of 0.30 or above using Oblique rotation (pattern matrix)	F1 MATHS	F2 ENG	F3 AN	F4 VAL	F5 POP	F6	F7 ART	F8 ENJ	F9 SPO	F10 LAN	F11 ICT	F12 SCI	F13 V2	F14 BEH	F15 SAF
Maths Academic Self-concepts															
I am clever															
Maths- how good are you at	.74														.43
How much do you like: maths	.67														
I learn things quickly in my maths classes	.86														
I have always done well in my maths classes	.86														
Compared to others my age I am good at maths	.83														
Work in my Maths classes is easy for me	.83														
I get good marks in Maths	.84														
English Academic Self-concepts															
English- how good are you at		.70													
How much do you like: English		.64						-.31							
I learn things quickly in my English classes		.84													
I have always done well in my English classes		.82													
Compared to others my age I am good at English		.79													
Work in my English classes is easy for me		.80													
I get good marks in English		.83													
Anxiety															
In class I worry about what the others think of me			.47												
I get a lot of headaches, stomach aches or sickness			.56												
I worry a lot			.80												
I am often unhappy, downhearted or tearful			.68												
I am nervous in new situations			.74												
I have many fears, I am easily scared			.73												
Values															
Making sure strong people don't pick on weak people				.59		-.40									
Respecting rules and laws				.57											
Controlling your temper even when you feel angry				.68											
Respecting other peoples points of view				.71											
Sorting out disagreements without fighting				.69											

Popularity															
I make friends easily					.67										
Other teenagers want me to be their friend					.78										
I have more friends than most other teenagers my age					.72										
Most other teenagers like me					.84										
I am popular with other students in my students in my age group					.79										
Factor 6															
Helping a friend who is in trouble				.31		-.67									
Arts															
I am good at Arts							.91								
I like Arts							.93								
Enjoyment of school															
My school is a friendly place								.63							
On the whole I like being at school								.47							
I like to answer questions in class								.53							
School is a waste of time for me								.44							
I like most of the lessons								.48							
I am bored in lessons								.49							
Sport															
I am good at Sport									.90						
I like Sport									.93						
Modern languages															
I am good at Languages										.87					
I like Languages										.91					
ICT															
I am good at ICT											.86				
I like ICT											.90				
Science															
I am good at Science												.84			
I like Science												.81			
Values 2															
Importance of getting good marks													.56		

Importance of being better than others													-.78		
Importance of believing in 'God' or spiritual figure													.58		
Behaviour															
I work hard in class														.55	
I mess about in class														.64	
I never bully other students														.53	.36
Safety															
I feel safe in the playground															.76
I feel safe on the way to/from school															.75

Showing loadings of 0.30 or above using Oblique rotation (structure matrix)	F1 MATHS	F2 ENG	F3 AN	F4 VAL	F5 POP	F6	F7 ART	F8 ENJ	F9 SPO	F10 LAN	F11 ICT	F12 SCI	F13 V2	F14 BEH	F15 SAF
Maths Academic Self-concepts															
I am clever	.51	.37								.32		.51			
Maths- how good are you at	.81											.37			.43
How much do you like: maths	.70														
I learn things quickly in my maths classes	.85														
I have always done well in my maths classes	.87														
Compared to others my age I am good at maths	.86											.34			
Work in my Maths classes is easy for me	.78														
I get good marks in Maths	.86											.31			
English Academic Self-concepts															
English- how good are you at		.70								.35					
How much do you like: English		.64						.35							
I learn things quickly in my English classes		.84													
I have always done well in my English classes		.82													
Compared to others my age I am good at English		.79													
Work in my English classes is easy for me		.80													
I get good marks in English		.83													
Anxiety															
In class I worry about what the others think of me			.55												
I get a lot of headaches, stomach aches or sickness			.56												
I worry a lot			.78												
I am often unhappy, downhearted or tearful			.73												
I am nervous in new situations			.72												
I have many fears, I am easily scared			.74												
Values															
Making sure strong people don't pick on weak people				.60		.43									
Respecting rules and laws				.64										.37	
Controlling your temper even when you feel angry				.68											

Respecting other peoples points of view				.73											
Sorting out disagreements without fighting				.72											
Popularity															
I make friends easily					.72										
Other teenagers want me to be their friend					.78										
I have more friends than most other teenagers my age					.71										
Most other teenagers like me					.80										
I am popular with other students in my students in my age group					.81										
Factor 6															
Helping a friend who is in trouble				.35		-.68									
Arts															
I am good at Arts							.91								
I like Arts							.90								
Enjoyment of school															
My school is a friendly place								.56							.55
On the whole I like being at school								.71							.34
I like to answer questions in class						.31		.51						.33	
School is a waste of time for me								.59						.31	
I like most of the lessons								.61				.30			
I am bored in lessons								.60		.30				.39	
Sport															
I am good at Sport					.32				.91						
I like Sport									.91						
Modern languages															
I am good at Languages		.31								.89					
I like Languages										.90					
ICT															
I am good at ICT											.88				
I like ICT											.89				
Science															
At school I can do most things well	.42	.35										.50			
I am good at Science	.34											.88			

I like Science												.80			
Values 2															
Importance of getting good marks				.33				.30					.62		
Importance of being better than others													.78		
Importance of believing in 'God' or spiritual figure													.61		
Behaviour															
I work hard in class	.32							.36						.64	
I mess about in class								.32						.72	
I never bully other students														.56	.41
Safety															
I feel safe in the playground															.79
I feel safe on the way to/from school															.77

Appendix 3: Correlations between the Factor items

Table A3.i: Correlation between Academic self-concepts and other ability items for Maths

Maths	I am clever	I can do most things well	Good at*	Like	Learn quickly	Always done well	Good compared to others	Work easy	Good marks
I am clever		.45**	.47**	.29**	.38**	.41**	.47**	.32**	.48**
I can do most things well			.31**	.24**	.29**	.28**	.35**	.26**	.34**
Good at				.56**	.63**	.65**	.70**	.51**	.67**
Like					.57**	.52**	.50**	.48**	.50**
Learn quickly						.71**	.67**	.66**	.68**
Always done well							.73**	.61**	.72**
Good compared to others								.62**	.72**
Work easy									.63**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Table A3.ii: Correlation between Academic self-concepts and other ability items for English

English	Good at*	Like	Learn quickly	Always done well	Good compared to others	Work easy	Good marks
Good at		.50**	.58**	.60**	.62**	.46**	.61**
Like			.53**	.49**	.46**	.40**	.48**
Learn quickly				.68**	.63**	.66**	.68**
Always done well					.65**	.57**	.70**
Good compared to others						.55**	.67**
Work easy							.62**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Table A3.iii: Correlation between *Enjoyment of school* items

Enjoyment of school	On the whole I like being at school	My school is a friendly place	School is a waste of time for me	I always like to answer questions in class	I like most of the lessons	I am bored in lessons
On the whole I like being at school		.51**	-.45**	.36**	.47**	.36**
My school is a friendly place			-.27**	-.27**	.33**	-.27**
School is a waste of time for me				-.29**	-.35**	.33**
I always like to answer questions in class					.34**	-.24**
I like most of the lessons						-.44**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Table A3.iv: Correlation between *Popularity* items

Popularity	I make friends easily	Other teenagers want me to be their friend	I have more friends than most other teenagers my age	Most other teenagers like me	I am popular with other students in my students in my age group
I make friends easily		.51**	.42**	.46**	.49**
Other teenagers want me to be their friend			.44**	.56**	.50**
I have more friends than most other teenagers my age				.46**	.49**
Most other teenagers like me					.60**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Table A3.v: Correlation between *Anxiety* items

Anxiety	**In class I worry about what the others think of me**	**I get a lot of headaches, stomach aches or sickness**	**I worry a lot**	**I am often unhappy, downhearted or tearful**	**I am nervous in new situations**	**I have many fears, I am easily scared**
In class I worry about what the others think of me		.18**	.38**	.37**	.31**	.31**
I get a lot of headaches, stomach aches or sickness			.34**	.38**	.24**	.30**
I worry a lot				.52**	.50**	.48**
I am often unhappy, downhearted or tearful					.38**	.44**
I am nervous in new situations						.50**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Table A3.vi: Correlations between *Citizenship values*

Values	**Making sure strong people don't pick on weak people**	**Respecting rules and laws**	**Controlling your temper even when you feel angry**	**Respecting other peoples points of view**	**Sorting out disagreements without fighting**
Making sure strong people don't pick on weak people		.32**	.24**	.32**	.37**
Respecting rules and laws			.40**	.42**	.40**
Controlling your temper even when you feel angry				.42**	.39**
Respecting other peoples points of view					.49**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Appendix 4: Multilevel analyses of peer data for dispositions and views of school

The 'All About Me' and 'All About Me at School' questionnaires were sent to the peers of EPPSE students from the 125 focal schools. In total, 66 schools returned the 'all about me' questionnaires and 67 returned the 'all about me at school' questionnaires. Peers of the EPPSE students were somewhat more negative about themselves and their school experiences.

Table A4.1 Descriptive statistics for the disposition scores at the end of Year 9 for peer data

	Mean	Standard deviation	Range	Pupil n
Maths Academic self-concepts	**2.74**	0.69	1-4	1580
English Academic self-concepts	**2.76**	0.63	1-4	1574
Anxiety	**2.28**	0.61	1-4	1608
Values	**2.23**	0.45	1-3	1594
Popularity	**2.79**	0.52	1-4	1604
Enjoyment of school	**2.81**	0.46	1-4	1763

Table A4.2: Correlations between disposition scores at the end of Year 9 for peer data

	English Academic self-concepts	*Anxiety*	Values	*Popularity*	*Enjoyment of school*
Maths Academic self-concepts	.15**	-.11**	.17**	.19**	.26**
English Academic self-concepts		.02	.22**	.26**	.27**
Anxiety			.14**	-.20**	-.10**
Values				.07**	.38**
Popularity					.19**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

In contrast to the null models using the EPPSE student, the peer data that had a much larger number of students per school, showed significant school level variation for all outcomes except Anxiety. The largest variation was found for Enjoyment of school (0.1123), followed by Maths Academic self-concepts (0.0620) and English Academic self-concepts (0.0532).

Table A4.3: Null multilevel models for dispositions at the end of Year 9 for peer data

	Maths Academic Self-concepts	*English Academic Self-concepts*	*Anxiety*	*Citizenship values*	*Popularity*	*Enjoyment of school*
Student level variance (se)	0.8904	0.8912	0.9875	0.9110	0.9259	0.8883
School level variance estimate (se)	0.0589	0.0501	0.0018	0.0269	0.0454	0.1124
Intra-school correlation	0.0620	0.0532	0.0018ns	0.0286	0.0468	0.1123
Number of students	1551	1558	1592	1578	1588	1747
Number of schools	66	66	66	66	66	66

Table A4.3 Descriptive statistics for the Views of school scores at the end of Year 9 for peer data

	Mean	Standard deviation	Range	Pupil n
Teacher support	**2.80**	0.48	1-4	1696
Teacher discipline	**2.91**	0.44	1-4	1624
Emphasis on learning	**3.10**	0.43	1-4	1732
Head-teacher qualities	**2.94**	0.64	1-4	1738
Valuing students	**2.69**	0.55	1-4	1697
Poor behaviour climate	**2.54**	0.48	1-4	1619
School environment	**2.58**	0.50	1-4	1745
Learning resources	**2.80**	0.49	1-4	1747

Table A4.5: Correlations between the Views of school scores at the end of Year 9 for peer data

	Teacher discipline	*Emphasis on learning*	*Head-teacher qualities*	*Valuing students*	*Poor behaviour climate*	*School environ-ment*	*Learning resources*
Teacher support	0.56**	0.57**	0.45**	0.67**	-0.15**	0.48**	0.41**
Teacher discipline		0.48**	0.41**	0.49**	-0.13**	0.38**	0.33**
Emphasis on learning			0.44**	0.49**	-0.09**	0.38**	0.38**
Head-teacher qualities				0.46**	-0.09**	0.39**	0.35**
Valuing students					-0.26**	0.55**	0.44**
Poor behaviour climate						-0.34**	-0.19**
School environment							0.56**

* Statistically significant at p<0.05 ** Statistically significant at p<0.01 all other correlations not significant

Table A4.6: Null multilevel models for Views of school at the end of Year 9 for peer data

	Teacher support	*Teacher discipline*	*Emphasis on learning*	*Head-teacher qualities*	*Valuing students*	*Poor behaviour climate*	*School environ-ment*	*Learning resources*
Student level variance (se)	0.9029	0.9111	0.9242	0.7560	0.8633	0.8281	0.7783	0.8734
School level variance (se)	0.0858	0.0626	0.0575	0.1720	0.1250	0.1780	0.2236	0.1152
Intra-school correlation	0.0868	0.0626	0.0585	0.1854	0.1265	0.1769	0.2232	0.1165
No of students	1696	1624	1732	1738	1697	1619	1745	1747
No of schools	67	67	67	67	67	67	67	67

Appendix 5: Results of contextualised multilevel analyses

Table A.5.1: *Maths Academic Self-concepts* Contextualised Model (impact of individual, family and home environment)

	Year 9 *Maths Academic Self-concepts*			
Number of students	1749			
Number of schools	525			
Fixed Effects	**Coef**	**SE**	**ES**	**Sig**
Age	0.02	0.01	+0.16	*
Girls (compared to boys)	-0.36	0.05	-0.38	*
Ethnic groups (compared to White UK Heritage) White European	0.13	0.13	+0.14	
Black Caribbean	-0.03	0.14	-0.03	
Black African	0.69	0.19	+0.74	*
Other Ethnic Minority	0.31	0.18	+0.33	
Indian	0.40	0.15	+0.42	*
Pakistani	0.35	0.11	+0.38	*
Bangladeshi	0.29	0.25	+0.30	
Mixed Heritage	0.16	0.10	+0.17	
Early Behavioural Problems (compared to none) 1 Behavioural Problem	-0.02	0.08	+0.03	
2 + Behavioural problems	-0.45	0.16	-0.48	*
Missing	-0.19	0.18	-0.20	
FSM in Year 9 (compared to none) Eligible for FSM	-0.23	0.08	-0.25	*
Missing	-0.24	0.12	+0.25	*
Special educational Needs in Year 9 (compared to none) School Action	-0.22	0.11	-0.24	*
School Action Plus	-0.42	0.15	-0.45	*
Statemented	-0.17	0.17	-0.18	
Missing	-0.05	0.05	-0.06	
Family Socio Economic Status in KS2 (compared to the Highest) Other professional non manual	-0.20	0.08	-0.21	*
Skilled non manual	-0.30	0.09	-0.33	*
Skilled manual	-0.23	0.10	-0.25	*
Semi skilled	-0.21	0.12	-0.23	
Unskilled	-0.26	0.22	-0.28	
Unemployed: not working	-0.13	0.13	-0.13	
Missing	-0.27	0.12	-0.29	*
Father's employment status in KS2 (compared to unemployed) Full time employment	0.19	0.12	+0.21	
Part time employment	0.03	0.19	+0.04	
Full time self employed	0.23	0.13	+0.24	
Part time self employed	-0.04	0.21	-0.04	
Full time employed and studying	0.70	0.33	+0.75	*
Part time employed and studying	0.15	0.48	+0.16	
Studying full time	0.38	0.68	+0.41	
Studying part time	0.51	0.56	+0.55	
Missing	0.17	0.11	+0.18	
Returned the survey late (compared to returned survey on time) Yes	-0.56	0.18	-0.60	*
Missing	-0.05	0.17	+0.05	
Random Effects				
School variance	0.000	0.000		
Residual variance	0.873	0.030		
Intra-school correlation		ns		

Table A.5.2: *English Academic Self-concepts* Contextualised Model (impact of individual, family and home environment)

	Year 9 *English Academic Self-concepts*			
Number of students	1748			
Number of schools	525			
Fixed Effects	**Coef**	**SE**	**ES**	**Sig**
Ethnic groups (compared to White UK Heritage)				
White European	-0.13	0.13	-0.14	
Black Caribbean	+0.36	0.15	+0.38	*
Black African	+0.52	0.19	+0.56	*
Other Ethnic Minority	+0.01	0.18	+0.02	
Indian	+0.01	0.16	+0.01	
Pakistani	+0.40	0.12	+0.43	*
Bangladeshi	+0.14	0.25	+0.16	
Mixed Heritage	-0.00	0.11	-0.00	
Birth order (compared to first)				
Second	-0.09	0.05	-0.09	
Third	-0.23	0.07	-0.24	*
Fourth	+0.03	0.11	+0.03	
Fifth	-0.01	0.21	-0.01	
Sixth	-0.08	0.33	-0.09	
Seventh	-0.46	0.48	-0.50	
Missing	-0.27	0.36	-0.29	
Father's qualifications (compared to none)				
Vocational	+0.21	0.09	+0.23	*
Academic age 16	+0.07	0.08	+0.07	
Academic age 18	+0.21	0.10	+0.22	*
Degree	+0.14	0.09	+0.15	
Higher Degree	+0.33	0.11	+0.35	*
Other professional / Miscellaneous	-0.21	0.23	-0.22	
Absent Father	+0.07	0.08	+0.07	
Missing	-0.11	0.39	-0.11	
Special educational Needs in Year 9 (compared to none)				
School Action	-0.38	0.11	-0.41	*
School Action Plus	-0.43	0.15	-0.46	*
Statemented	-0.37	0.17	-0.39	*
Missing	-0.04	0.05	-0.04	
KS2 HLE Individual child activities (compared to low)				
High KS2 HLE	+0.48	0.10	+0.52	*
Medium KS2 HLE	+0.20	0.08	+0.21	*
Missing	+0.18	0.09	+0.19	*
Random Effects				
School variance	0.039	0.019		
Residual variance	0.863	0.033		
Intra-school correlation		0.044		

Table A.5.3: *Anxiety* Contextualised Model (impact of individual, family and home environment)

	Year 9 *Anxiety*			
Number of students	1749			
Number of schools	523			
Fixed Effects	**Coef**	**SE**	**ES**	**Sig**
Girls (compared to boys)	+0.46	0.05	+0.48	*
Ethnic groups (compared to White UK Heritage) White European	+0.08	0.13	+0.08	
Black Caribbean	-0.13	0.15	-0.13	
Black African	-0.17	0.19	-0.18	
Other Ethnic Minority	-0.27	0.18	-0.29	
Indian	-0.45	0.16	-0.47	*
Pakistani	-0.23	0.11	-0.24	*
Bangladeshi	-0.35	0.25	-0.36	
Mixed Heritage	+0.11	0.11	+0.12	
Early Behavioural Problems (compared to none) 1 Behavioural Problem	+0.08	0.08	+0.08	
2 + Behavioural problems	+0.36	0.16	+0.38	*
Missing	+0.28	0.19	+0.29	
Marital status in KS2 (compared to married) Single	-0.01	0.08	-0.01	
Separated/divorced	+0.21	0.11	+0.22	
Living with partner	+0.04	0.08	+0.04	
Widow/widower	+0.55	0.27	+0.58	*
Other	1.19	0.96	1.24	
Missing	+0.03	0.07	+0.04	
Special educational Needs in Year 9 (compared to none) School Action	+0.12	0.11	+0.12	
School Action Plus	+0.72	0.15	+0.76	*
Statemented	+0.73	0.18	+0.77	*
Missing	+0.15	0.05	+0.15	*
Random Effects				
School variance	0.008	0.012		
Residual variance	0.909	0.033		
Intra-school correlation		ns		

Table A.5.4: *'citizenship values'* Contextualised Model (impact of individual, family and home environment)

	Year 9 *Citizenship values*			
Number of students	1748			
Number of schools	525			
Fixed Effects	**Coef**	**SE**	**ES**	**Sig**
Girls (compared to boys)	+0.29	0.05	+0.31	*
Ethnic groups (compared to White UK Heritage)				
White European	+0.36	0.13	+0.39	*
Black Caribbean	-0.03	0.14	-0.04	
Black African	+0.33	0.19	+0.35	
Other Ethnic Minority	-0.02	0.18	-0.02	
Indian	+0.19	0.16	+0.21	
Pakistani	+0.31	0.12	+0.33	*
Bangladeshi	+0.32	0.25	+0.34	
Mixed Heritage	+0.04	0.10	+0.04	
Early Developmental Problems (compared to none)				
1 Behavioural Problem	+0.18	0.08	+0.19	*
2 + Behavioural problems	+0.15	0.21	+0.16	
Missing	-0.49	0.32	-0.53	
Mother's qualifications (compared to none)				
Vocational	-0.30	0.09	-0.32	*
Academic age 16	-0.19	0.07	-0.21	*
Academic age 18	-0.05	0.10	-0.05	
Degree or Higher Degree	-0.09	0.09	-0.10	
Other professional / Miscellaneous	-0.14	0.11	-0.15	
Absent Father	-0.15	0.18	-0.16	
Missing	-0.09	0.22	-0.09	
Early years Home Learning Environment (compared to 0-13)				
14-19	+0.13	0.10	+0.14	
20-24	+0.24	0.10	+0.26	*
25-32	+0.19	0.10	+0.20	
33+	+0.17	0.11	+0.18	
Missing	+0.48	0.19	+0.52	*
Random Effects				
School variance	0.016	0.013		
Residual variance	0.875	0.032		
Intra-school correlation		ns		

Table A.5.5: *Popularity* Contextualised Model (impact of individual, family and home environment)

	Year 9 *Popularity*			
Number of students	1746			
Number of schools	523			
Fixed Effects	**Coef**	**SE**	**ES**	**Sig**
Girls (compared to boys)	-0.12	0.05	-0.12	*
Ethnic groups (compared to White UK Heritage) White European	-0.01	0.14	-0.01	
Black Caribbean	+0.43	0.15	+0.44	*
Black African	+0.58	0.20	+0.60	*
Other Ethnic Minority	+0.13	0.18	+0.14	
Indian	+0.32	0.16	+0.33	*
Pakistani	+0.33	0.12	+0.34	*
Bangladeshi	+0.17	0.26	+0.18	
Mixed Heritage	+0.03	0.11	+0.03	
Mother's qualifications (compared to none) Vocational	-0.15	0.09	-0.16	
Academic age 16	-0.07	0.08	-0.07	
Academic age 18	-0.20	0.10	-0.20	
Degree	-0.32	0.10	-0.34	*
Higher Degree	-0.38	0.13	-0.39	*
Other professional / Miscellaneous	+0.22	0.19	+0.23	
Missing	-0.37	0.18	-0.38	*
Birth weight (compared to normal) Very low	-0.49	0.21	-0.51	*
Low	-0.19	0.10	-0.20	
Missing	+0.19	0.17	+0.20	
Family salary in KS1 (compared to none) £2,500-£15,000	-0.03	0.08	-0.03	
£17,500-£27,500	-0.04	0.09	-0.04	
£30,000-£35,000	+0.17	0.10	+0.18	
£37,500-£66,500	+0.17	0.09	+0.18	*
£67,500+	+0.33	0.12	+0.34	*
Missing	-0.05	0.10	-0.05	
Marital status in KS2 (compared to married) Single	+0.07	0.08	+0.07	
Separated/divorced	-0.02	0.12	-0.03	
Living with partner	+0.20	0.08	+0.21	*
Widow/widower	-0.15	0.27	-0.16	
Other	-2.40	0.97	-2.49	*
Missing	-0.07	0.10	-0.08	
Special educational Needs in Year 9 (compared to none) School Action	+0.06	0.11	+0.06	
School Action Plus	-0.32	0.15	-0.34	*
Statemented	-0.67	0.18	-0.69	*
Missing	+0.04	0.05	+0.04	
HLE KS1: Parent/child interaction (compared to low) High	+0.22	0.10	+0.23	*
Medium	+0.20	0.08	+0.21	*
Missing	+0.28	0.10	+0.29	*
HLE KS2: Global index (compared to low) High	+0.27	0.10	+0.28	*
Medium	+0.18	0.08	+0.19	*
Missing	+0.27	0.10	+0.28	*
Random Effects				
School variance	0.002	0.011		
Residual variance	0.928	0.034		
Intra-school correlation		ns		

Table A.5.6: *Enjoyment of school* Contextualised Model (impact of individual, family and home environment)

	Year 9 *Enjoyment of school*			
Number of students	1761			
Number of schools	525			
Fixed Effects	**Coef**	**SE**	**ES**	**Sig**
Ethnic groups (compared to White UK Heritage) White European	+0.06	0.13	+0.06	
Black Caribbean	+0.18	0.15	+0.19	
Black African	+0.32	0.19	+0.33	
Other Ethnic Minority	+0.30	0.19	+0.31	
Indian	+0.34	0.16	+0.35	*
Pakistani	+0.53	0.12	+0.55	*
Bangladeshi	+0.35	0.26	+0.36	
Mixed Heritage	-0.04	0.11	-0.04	
Early Behavioural Problems (compared to none) 1 Behavioural Problem	-0.22	0.08	-0.23	*
2 + Behavioural problems	-0.29	0.17	-0.30	
Missing	-0.76	0.41	-0.79	
Number of siblings in early years (compared to none) 1	-0.04	0.06	-0.04	
2+	-0.19	0.08	-0.20	*
Missing	+0.17	0.35	+0.17	
Family salary in KS1 (compared to none) £2,500-£15,000	+0.01	0.08	+0.02	
£17,500-£27,500	+0.06	0.08	+0.06	
£30,000-£35,000	+0.09	0.09	+0.09	
£37,500-£66,500	+0.17	0.08	+0.17	*
£67,500+	+0.50	0.10	+0.52	*
Missing	-0.00	0.09	-0.00	
Special educational Needs in Year 9 (compared to none) School Action	-0.28	0.11	-0.29	*
School Action Plus	-0.52	0.15	-0.54	*
Statemented	-0.13	0.18	-0.13	
Missing	-0.14	0.05	-0.14	
Early years Home Learning Environment (compared to 0-13) 14-19	+0.11	0.10	+0.12	
20-24	+0.25	0.10	+0.26	*
25-32	+0.25	0.10	+0.26	*
33+	+0.33	0.11	+0.34	*
Missing	+0.31	0.19	+0.32	
Random Effects				
School variance	0.013	0.014		
Residual variance	0.933	0.034		
Intra-school correlation		ns		

Appendix 6: Testing Year 9 attainment and social-behavioural outcomes as predictors of dispositions within the contextualised multilevel analyses

Three academic and four social-behavioural outcomes were tested as predictors in the contextualised multilevel analyses of disposition outcomes in Year 9. Each predictor variables was tested separately. The effect sizes are shown below.

Table A6.1 Effect sizes for academic and social behavioural outcomes

Year 9 academic outcomes						
	Maths Academic self-concepts	***English Academic self-concepts***	***Anxiety***	**Values**	***Popularity***	***Enjoyment of school***
English	+ 0.46	+ 0.75	ns	ns	ns	+ 0.25
Maths	+ 1.14	+ 0.18	- 0.17	ns	ns	+ 0.34
Science	+ 0.75	+ 0.32	- 0.15	ns	ns	+ 0.27
Year 9 Social-behavioural outcomes						
	Maths Academic self-concepts	***English Academic self-concepts***	***Anxiety***	**Values**	***Popularity***	***Enjoyment of school***
Self regulation	+ 0.44	+ 0.25	ns	+ 0.32	ns	+ 0.41
Pro-social	+ 0.25	+ 0.14	ns	+ 0.32	ns	+ 0.36
Hyperactivity	- 0.32	- 0.15	ns	- 0.32	ns	- 0.34
Anti-social	ns	ns	ns	- 0.22	ns	- 0.25

ns not significant +/- Significant positive/negative predictor of the outcome when tested individually

Appendix 7: Methodology and Effect Sizes

Effect sizes

To illustrate the impact of different factors on outcomes effect sizes (ES) were calculated. Effect sizes are most commonly used in experimental studies and essentially measure the strength of mean differences. Glass et al., (1981) define ES as:

ES = (mean of experimental group)-(mean of control group)/pooled standard deviation

Or $$\Delta = \frac{X_{Exp} - X_{Cont}}{SD_{pooled}}$$

Effect sizes were calculated for different child outcomes, using both the child level variance and coefficients for predictors included in the multilevel statistical models adopting the formulae outlined by Tymms et al., (1997).

For categorical predictors (e.g. gender or ethnicity) the effect size was calculated as:

ES = categorical predictor variable coefficient ⁄√child level variance

Or

$$\Delta = \frac{\beta_1}{\sigma_e}$$

For continuous predictor variables (e.g. child age in months), the effect size describes the change on the outcome measure produced by a change of +/-one standard deviation on the continuous predictor variable, standardised by the within school SD, adjusted for covariates in the model – the level 1 SD:

$$\Delta = \frac{2\,\beta_1 * SD_{x1}}{\sigma_e}$$ where $_{x1}$=continuous predictor variable

Effect sizes can be useful for comparisons between different studies but interpretations must be made with caution and with reference to the outcomes concerned and controls used in models (Elliot & Sammons, 2004). For further discussion of effect sizes see Coe (2002). Effect sizes for some categorical measures in the EPPE research are large but apply to small numbers of children/students (e.g. the very low birth weight group or specific ethnic groups).

Glossary of terms

Academic self-concept EPPSE derived two measures of Academic self-concept from Year 9 student questionnaire data:

1) 'Academic self-concept for English'
2) 'Academic self-concept for maths'

Both of the above measures are based on items taken from existing well established 'academic self-concept' scales (Marsh, 1990a; 1990b; Marsh & Hau, 2003; Marsh & Craven, 2006).

Age standardised scores Assessment scores that have been adjusted to take account of the pupil's age at testing. This enables a comparison to be made between the cognitive outcome of an individual pupil, and the relative achievement of a representative sample of pupils in the same age group throughout the country or, in this case, the relative achievement of the EPPE sample.

Anxiety A factor derived from Year 9 student questionnaire items that reflect the degree to which the students feel unhappy, worried, nervous, fearful in new situations, or suffer from minor ailments.

'at risk' The term 'at risk' is a complex one which will differ depending on the particular criteria used. For instance, the definition of possible cognitive 'at risk' status used in the ETYSEN study (see Taggart et al., 2006), based on children's cognitive attainment at entry to pre-school, was a score of one standard deviation (sd) below the mean (in standardised assessments) in relation to national norms (at risk). In the more recent EPPSE case studies, there are various definitions of risk and resilience (see Siraj-Blatchford et al., 2011a).

Anti-social behaviour A social-behavioural construct identified from teachers' ratings about EPPSE students, collected through a pupil profile based on Goodman's (1997) Strength and Difficulties questionnaire. Five items formed the factor 'anti-social' behaviour e.g. Steals from home, school or elsewhere.

British Ability Scales (BAS) This is a battery of assessments specially developed by NFER-Nelson to assess very young pupils' abilities. The assessments used at entry to the EPPE study and at entry to reception were:
Block building - Visual-perceptual matching, especially in spatial orientation (only entry to study)
Naming Vocabulary – Expressive language and knowledge of names
Pattern construction – Non-verbal reasoning and spatial visualisation (only entry to reception)
Picture Similarities – Non-verbal reasoning
Early number concepts – Knowledge of, and problem solving using pre-numerical and numerical concepts (only entry to reception)
Copying – Visual–perceptual matching and fine-motor co-ordination. Used specifically for pupils without English
Verbal comprehension – Receptive language, understanding of oral instructions involving basic language concepts.

Birth weight In the EPPSE research, babies born weighing 2500 grams (5lbs 8oz) or less are defined as below normal birth weight; foetal infant classification is below 1000 grams, very low birth weight is classified as 1001-1005 grams and low birth weight is classified as 1501-2500 grams (Scott and Carran, 1989). When EPPSE uses this measure in analyses, the categories foetal infant (<1000g) and very low birth weight (1001-1005g) are often collapsed into one category due to small numbers in the former group.

Centre/School level variance The proportion of variance in a particular child/student outcome measure (i.e. Year 9 English Teacher Assessment level at the end of Key Stage 3 in secondary school) attributable to differences between individual centres/schools rather than differences between individual children/students.

Citizenship values A factor derived from Year 9 student questionnaire items that relate to how important students feel certain behaviours are such as strong people not picking on weak people, respecting rules and laws, controlling your temper, respecting other's views, and sorting out disagreements without fighting.

Comparative Fit Index (CFI) The CFI is an index of a statistical model fit that takes into account sample size. Values close to 0.95 indicate good fit (Hu & Bentler, 1999).

Compositional effects The influence of a student's peer group on that particular student's individual outcomes.. For example, the influence of attending a school where a high percentage of students are in receipt of Free School Meals (FSM) or come from disadvantaged backgrounds. This influence is irrespective of the characteristics (FSM status) of the individual student in question. For further details see Harker (2001).

Confidence intervals (at 95 or 99%) A range of values which can be expected to include the 'true' value in 95 or 99 out of 100 samples (i.e. if the calculation was repeated using 100 random samples).

Contextualised models Cross-sectional multilevel models exploring individuals' outcomes, while controlling for individual, family and home learning environment characteristics (but not prior attainment).

Controlling for Several variables may influence an outcome and these variables may themselves be associated. Multilevel statistical analyses can calculate the influence of one variable upon an outcome having allowed for the effects of other variables. When this is done the net effect of a variable upon an outcome controlling for other variables can be established.

Correlation A correlation is a measure of statistical association that ranges from + 1 to -1.

Cronbach's alpha (α) A measurement of the internal reliability (or consistency) of the items on a test or questionnaire that ranges between 0 and 1 showing the extent to which the items are measuring the same thing (Reber, 1995). A value greater than 0.7 ($\alpha<0.7$) suggests that the items consistently reflect the construct that is being measured.

CVA (Contextualised Value Added) Measures of secondary school academic effectiveness derived from KS2-KS4 contextual value added (CVA) indicators produced by the Department for Education (DfE). At the pupil level, the CVA score was calculated as the difference between predicted attainment (i.e., the average attainment achieved by similar pupils) and real attainment in KS4. The predicted attainment was obtained by using multilevel modelling controlling for pupils' prior attainment and adjusting for their background characteristics (i.e., gender, age, ethnicity, SEN, FSM, mobility etc.). For each school, all individual pupil scores were averaged and adjusted for the proportion of pupils attending the school in a specific year. This final averaged score represents the school level CVA and it is presented as a number based around 1000 (for more technical details see http://www.education.gov.uk/performancetables/schools_08/documents.shtml).

Dispositions An overarching term used to refer to factors such as *'enjoyment of school'*, *'academic self-concepts (English and maths)'*, *'popularity'*, *'citizenship values'"* and *'anxiety'*. The EPPSE study derived these factors from questionnaires completed by students in Year 9 called 'All about Me' and 'All about Me in school'.

ECERS-R and ECERS-E The American Early Childhood Environment Rating Scale (ECERS-R) (Harms et al., 1998) is based on child centred pedagogy and also assesses resources for indoor and outdoor play. The English rating scale (ECERS-E) (Sylva et al., 2003) was intended as a supplement to the ECERS-R and was developed specially for the EPPE study to reflect the Desirable Learning Outcomes (which have since been replaced by the Early Learning Goals, the Curriculum Guidance for the Foundation Stage, and the Early Years Foundation Stage). For more information see Sylva et al., (2010).

Educational effectiveness Research design which seeks to explore the effectiveness of educational institutions in promoting a range of child/student outcomes (often academic measures) while controlling for the influence of intake differences in child/student characteristics.

Effect sizes (ES) Effect sizes (ES) provide a measure of the strength of the relationships between different predictors and the outcomes under study. For further information see Elliot & Sammons (2004).

Emphasis on learning A factor derived from Year 9 student questionnaire items that relate to teacher expectations, emphasis on understanding something not just memorising it, teachers believing that it is okay for students to mistakes as long as they learn from them, students wanting to do well in exams, and lessons being challenging.

Enjoyment of school A factor derived from Year 9 student questionnaire items that reflect the degree to which students reported they like lessons and being at school, like answering questions in class, but also how much the student experiences boredom in lessons or feels school is a waste of time.

Factor Analysis (FA) An umbrella term covering a number of statistical procedures that are used to identify a smaller number of factors or dimensions from a larger set of independent variables or items (Reber, 1995). At KS3 EPPSE used:

- Exploratory FA – a type of analyses where no prior (theoretical) knowledge is imposed on the way the items cluster/load.
- Principal Components Analysis (PCA) – a procedure that converts a set of observations of possibly correlated items into a set of values of uncorrelated items called principal components.
- Confirmatory FA – type of factor analyses used where the measure of a factor/construct are tested against a prior (theoretical) knowledge.

Family characteristics Examples of family characteristics are mother's highest qualification level, father's highest qualification level and family socio-economic status (SES).

Free school meals (FSM) An indicator of family poverty.

General Cognitive Ability (GCA) A measure of pupils' overall cognitive ability, incorporating non-verbal and verbal BAS sub-scales.

Growth Curve Modelling "In brief, the objective of growth curve modeling1 is to describe a set of time-ordered, within-person observations using only a few parameters. For example, the intra-individual change over time, or within-person learning, that occurs with practice might be described parsimoniously by two parameters, one indicating an individual's initial level of ability (e.g., intercept), and another indicating linear rate of increase or decline in performance across multiple occasions of measurement (e.g., linear slope)....Growth curve modeling methods also allow us to describe and test hypotheses about individual differences in intra-individual change. By allowing the parameters used to describe intra-individual change to vary between individuals we can also model and examine how (and potentially why) individuals differ in their initial levels of performance (intercept), rates of improvement or decline over time (linear slope), asymptotic levels of performance, etc. Examining how the inter-individual differences in particular aspects of intra-individual change captured by each parameter relate to other inter-individual differences (e.g., covariates such as trait personality) brings us one step closer to understanding how and why individuals follow different paths of development" (Ram & Grimm, 2007; p. 303).

Headteacher qualities A factor derived from Year 9 student questionnaire items that reflect the headteacher making sure that students behave well, their presence around the school and interest in how much students learn.

Hierarchical nature of the data Data that clusters into pre-defined sub-groups or levels within a system (i.e. students, schools, local authorities).

Home learning environment (HLE) characteristics Measures derived from reports from parents (at interview or using parent questionnaires) about what children do at home (with/independent of their parents). There are several HLE measures: early years HLE, KS1 HLE, KS2 HLE (please see Appendix 4 for further details).

Hyperactivity A social-behavioural construct identified from teachers' ratings about EPPSE students, collected through a pupil profile based on Goodman's (1997) Strength and Difficulties questionnaire. Several items formed the factor 'hyperactivity' e.g. Restless, overactive, cannot stay still for long.

Income Deprivation Affecting Children Index (IDACI) The IDACI represents the percentage of children in each SOA that live in families that are income deprived. For further details see Noble et al., (2008).

Index of Multiple Deprivation (IMD) The IMD is a measure of a range of characteristics evident in a neighbourhood. For further details see Noble et al. (2004; 2008).

Internal Reliability/Consistency The degree to which the various parts of a test (items) or other instrument (e.g. questionnaire) measure the same variables/construct (Reber, 1995). An example measure would be ***Cronbach's alpha*** (see earlier).

Intra-centre/school correlation The intra-centre/school correlation measures the extent to which the outcomes from children/students in the same centre/school resemble each other as compared with those from children/students at different centres/schools. The intra-centre/school correlation provides an indication of the extent to which unexplained variance in children's/students' progress (i.e. that not accounted for by prior attainment) may be attributed to differences between centres/schools. This gives an indication of possible variation in pre-school centre/school effectiveness.

Key Stage (KS) The English education system splits students into age phases known as Key Stages as follows: KS1 (age 5-7), KS2 (8-11), KS3 (12-14), KS4 (14-16).

Mean average A measure of central tendency that is calculated by summing a set of values (or scores) and then dividing by the number of values or scores (Reber, 1995).

Multilevel modelling A methodology that allows data to be examined simultaneously at different levels within a system (i.e. children/students, pre-school centres/schools, local authorities), essentially a generalisation of multiple regression.

Multiple Disadvantage Index This measure was developed as part of the Early Years Transition & Special Educational Needs (EYTSEN) Project, which focuses on the identification of children 'at risk' of SEN (see Sammons et al., 2004b). An index was created based on 10 indicators in total: three child variables, six parent variables, and one related to the Early years Home Learning Environment (HLE).

Child variables

- First language: English as an additional language (EAL)
- Large family: 3 or more siblings
- Pre-maturity / low birth weight

Parent/HLE variables

- Mother's highest qualification level: no qualifications
- Social class of father's occupation: Semi-skilled, unskilled, never worked, absent father
- Father not employed
- Young Mother (Age 13-17 at birth of EPPE child)
- Lone parent
- Mother not working / unemployed
- Low Early years Home Learning Environment (HLE)

For further details see Sammons et al., (2002c).

Multiple imputation A statistical procedure that replaces missing value with a set of predicted values (Little & Rubin, 1987). This procedure generates several imputed data sets, which are then analysed and the results combined according to Rubin's Rule (Little & Rubin, 1987).

Multiple regression A method of predicting outcome scores on the basis of the statistical relationship between observed outcome scores and one or more predictor variables.

National Assessment Levels The table below shows the levels that could be achieved by a student at different ages in their National Assessments tests / can be awarded to a student for their Teacher Assessment (TA).

Outcome	Key Stage 1 (KS1), Age 7	Key Stage 2 (KS2), Age 11	Key Stage 2 (KS3), Age 14
Reading/ English Levels	Working towards level 1 Level 1 **Level 2 – Expected Level** Level 3 Level 4	Level 1 Level 2 Level 3 **Level 4 – Expected Level** Level 5 Level 6	Level 1 Level 2 Level 3 Level 4 **Level 5 – Expected Level** Level 6 Level 7 Level 8
Maths Levels	Working towards level 1 Level 1 **Level 2 – Expected Level** Level 3 Level 4	Level 1 Level 2 Level 3 **Level 4 – Expected Level** Level 5 Level 6	Level 1 Level 2 Level 3 Level 4 **Level 5 – Expected Level** Level 6 Level 7 Level 8
Science Levels	Working towards level 1 Level 1 **Level 2 – Expected Level** Level 3 Level 4	Level 1 Level 2 Level 3 **Level 4 – Expected Level** Level 5 Level 6	Level 1 Level 2 Level 3 Level 4 **Level 5 – Expected Level** Level 6 Level 7 Level 8

Net effect The unique contribution of a particular variable upon an outcome while other variables are controlled.

Ofsted The Office for Standards in Education, Children's Services and Skills (Ofsted) inspect and regulate services that care for children and young people, and those providing education and skills for learners of all ages. See Matthews & Sammons (2004), and the Ofsted website (http://www.ofsted.gov.uk/content) for further details.

Pedagogical strategies Strategies used by an educator to support learning. These include the face to face interactions with students, the organisation of resources and the assessment practices.

(Poor) behaviour climate A factor derived from Year 9 student questionnaire items that relate to the general behaviour climate in the EPPSE student's school; students being given a hard time by others if they work hard, level of compliance with school rules, fighting and weapons being brought into school, and whether most students want to leave the school as soon as they can.

Popularity A factor derived from Year 9 student questionnaire items that relate to how popular students feel they are with other teenagers and how many friends they have.

Pre-reading attainment Composite formed by adding together the scores for phonological awareness (rhyme and alliteration) and letter recognition.

Pre-school effectiveness Measures of the effectiveness of pre-schools were derived from Value Added (VA) models of the sample's actual progress during pre-school, controlling for prior attainment and children's background characteristics (Sammons et al., 2004a).

Primary school effectiveness Primary school academic effectiveness scores were obtained from National Assessment data for several cohorts across all primary schools in England. Value-added scores were calculated across the years 2002-4, for each primary school in England and then extracted for schools attended by the EPPE sample (Melhuish et al., 2006a; 2006b).

Prior attainment Measures which describe a participant's achievement at the beginning of the phase or period under investigation (i.e. taken on entry to the study or school, or for Year 9 analyses, outcomes from Year 6).

Pro-social Behaviour A social-behavioural construct identified from teachers' ratings about EPPSE students, collected through a pupil profile based on Goodman's (1997) Strength and Difficulties questionnaire. Several items formed the factor 'pro-social' behaviour e.g. Considerate of other people's feelings.

Pupil Profile An instrument containing Goodman's (1997) Strength and Difficulties questionnaire plus some additional items used to collect information about EPPSE student's social behaviour. It is completed by a teacher who knows the EPPSE student well.

Quality of pre-school Measures of pre-school centre quality were collected through observational assessments (ECERS-R, ECERS-E) completed by trained researchers. For further information see ***ECERS*** and Sylva et al. (2010).

Quality of secondary schools Secondary school quality was derived from measures taken from Ofsted inspection judgments. See ***Ofsted*** for further details.

Quality of teaching Measures from Year 5 classroom observations using the IEO (Stipek) and COS-5 (Pianta) instruments. For further information see Sammons et al. (2006a; 2006b).

Root Mean Square Error of Approximation (RMSEA) The RMSEA is an index measure of model; values less than 0.06 are an indication of a good fit.

Sampling profile/procedures The EPPSE sample was constructed of:
Five regions (six Local authorities) randomly selected around the country, but being representative of urban, rural, inner city areas. Pre-schools from each of the 6 main types of target provision (nursery classes, nursery schools, local authority day nurseries, private day nurseries, play groups and integrated centres) randomly selected across the region.

School environment A factor derived from Year 9 student questionnaire items that relate to how EPPSE students view their school in terms of the physical space (the attractiveness of buildings, the decorative state of the classrooms, the condition of the toilets), as well as its reputation as a good school and how well organised it is.

School/learning resources A factor derived from Year 9 student questionnaire items that relate to practical resources for learning at the EPPSE student's school; amount of computers and getting enough time on them in lessons, and the quality of science labs and the school library.

School level variation School level variance here refers to the percentage of variation in students' outcomes that can be attributed to differences between schools.

Secondary school effectiveness Secondary school academic effectiveness scores were obtained from the Department for Education (DfE). The measure of academic effectiveness is represented by the average KS2 to KS4 contextual value added (CVA) school level scores over 4 years (2006-2009) when EPPSE students were in secondary school. See '***CVA'*** as this is the same measure.

Self-regulation A social-behavioural construct identified from teachers' ratings about EPPSE students, collected through a pupil profile based on Goodman's (1997) Strength and Difficulties questionnaire. Several items formed the factor 'self-regulation' e.g. Likes to work things out for self; seeks help rarely.

Significance level Criteria for judging whether differences in scores between groups of children/students or centres/schools might have arisen by chance. The most common criteria is the 95% level ($p<0.05$), which can be expected to include the 'true' value in 95 out of 100 samples (i.e. the probability being one in twenty that a difference might have arisen by chance).

Social-behavioural development A student's ability to 'socialise' with other adults and pupils and their general behaviour to others. EPPSE uses this overarching name to refer to a range of social-behavioural outcome measures. At age 14, two of these outcomes refer to positive outcomes ('self-regulation' and 'pro-social' behaviour) and two refer to negative outcomes ('hyperactivity' and 'anti-social' behaviour).

Socio-economic status (SES) Occupational information was collected by means of a parental interview/questionnaire at different time points. The Office of Population Census and Surveys OPCS (1995) Classification of Occupations was used to classify mothers and fathers current employment into one of 8 groups: professional I, other professional non manual II, skilled non manual III, skilled manual III, semi-skilled manual IV, unskilled manual V, never worked and no response. Family SES was obtained by assigning the SES classification based on the parent with the highest occupational status.

Standard deviation (sd) A measure of the spread around the mean in a distribution of numerical scores. In a normal distribution, 68% of cases fall within one standard deviation of the mean and 95% of cases fall within two standard deviations.

Structural equation modelling (SEM) is an umbrella term for statistical modelling techniques which allow for testing causal processes and structural relationships (Byrne, 2010).

Student background characteristics Student background characteristics include age, birth weight, gender, and ethnicity.

Target centre A total of 141 pre-school centres were recruited to the EPPSE research covering 6 types of provision - ***Sampling profile/procedures***. The sample of students was drawn from these target centres.

Teacher Assessment (TA) These assessments made by teachers provide measures of students' educational outcomes for English, maths and science in Year 9 (age 14) in the form of National curriculum levels.

Teacher discipline A factor derived from Year 9 student questionnaire items that relate to the level of teacher control during lessons, in terms of behaviour, noise, rule breaking and teachers being bothered if students turn up late.

Teacher support A factor derived from Year 9 student questionnaire items that relate to support given by teachers in terms of helping students, giving them feedback, making them feel confident about their work, rewarding them for good behaviour, being available to talk privately, and marking and returning homework.

Term of birth Using EPPSE student's dates of birth, the EPPSE sample were categorised into three 'term of birth' categories: Autumn born (September to December); Spring born (January to April); Summer born (May to August).

Total BAS score By combining 4 of the BAS sub-scales (2 verbal and 2 non-verbal) a General Cognitive Ability score or Total BAS score at entry to the study can be computed. This is a measure of overall cognitive ability.

Value added models Longitudinal multilevel models exploring individuals' progress over time, controlling for prior attainment as well as significant individual, family and home learning environment characteristics.

Value added residuals (pre-school effectiveness) Differences between predicted and actual results for pre-school centres (where predicted results are calculated using value added models). See ***Pre-school effectiveness*** for further information.

Value added residuals (primary school academic effectiveness) Differences between predicted and actual results for primary schools measuring pupil progress across KS1 – KS2. For further information see ***Primary school effectiveness*** and Melhuish et al., (2006a; 2006b).

Valuing students A factor derived from Year 9 student questionnaire items that relate to whether the school values students' views, teachers listen to students views, are respectful and friendly to students, teachers are unpleasant to students if they make mistakes.

Views of school An overarching term used to refer to factors such as 'teacher support', 'school environment', 'valuing students', 'headteacher qualities', 'poor behaviour climate', 'emphasis on learning', 'teacher discipline', and 'school/learning resources'. The EPPSE study derived these factors from the questionnaire completed by students in Year 9 called 'All about Me in school'.

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