Department for Education

Influences on students' social-behavioural development at age 16

Effective Pre-School, Primary & Secondary Education Project (EPPSE)

Research Report

September 2014

Pam Sammons[1], Kathy Sylva[1], Edward Melhuish[1, 2], Iram Siraj[3], Brenda Taggart[3], Rebecca Smees[3] & Katalin Toth[3]

[1]University of Oxford; [2]Birkbeck, University of London, [3]Institute of Education, University of London

The EPPSE Research Team

Principal Investigators

Professor Kathy Sylva
Department of Education, University of Oxford
00 44 (0)1865 274 008 / email kathy.sylva@education.ox.ac.uk

Professor Edward Melhuish
Institute for the Study of Children, Families and Social Issues
Birkbeck University of London & Department of Education, University of Oxford
00 44 (0)207 079 0834 / email e.melhuish@bbk.ac.uk
00 44 (0)1865 274 049 / email edward.melhuish@education.ox.ac.uk

Professor Pam Sammons
Department of Education, University of Oxford
00 44 (0)115 951 4434 / email pamela.sammons@education.ox.ac.uk

Professor Iram Siraj
Institute of Education, University of London
00 44 (0)207 612 6218 / email i.siraj@ioe.ac.uk

*Brenda Taggart
Institute of Education, University of London
00 44 (0)207 612 6219 / email b.taggart@ioe.ac.uk

Research Officers

Dr. Katalin Toth
Institute of Education, University of London

Rebecca Smees
Institute of Education, University of London

**Wesley Welcomme
Institute of Education, University of London

Acknowledgements

The EPPSE 3-16 project is a major longitudinal study funded by the Department for Education (DfE). The research would not have been possible without the support and co-operation of the Local Authorities, pre-school centres, primary schools, secondary schools, and the many children and parents participating in the research.

Contents

List of figures

List of tables

Executive Summary

This research is part of the longitudinal Effective Provision of Pre-school, Primary and Secondary Education (EPPSE) project. The focus of this report is 16 year old students' social-behaviour. The findings build on previous phases of EPPSE research that followed the same group of children from early childhood at age 3 years through primary school and into adolescence across five years of secondary school up to age 16. The report provides an in-depth analysis of the characteristics that shape secondary school students' social-behavioural outcomes at the end of Key Stage 4 (KS4). Students' social-behavioural outcomes were measured by individual teacher assessments in Year 11. The EPPSE research has also examined these students' academic attainment and dispositions. Academic attainment is measured by national GCSE examination results whereas students' dispositions are based on self-report questionnaires completed in Year 11. Accompanying reports describe the findings on students' academic attainment, dispositions and other influences at age 16+ (Sammons et al. 2014a; 2014b, Sylva et al., 2014, Taggart et al., 2014).

This summary outlines the key findings related to four dimensions of social behaviour: two positive social behaviours (self-regulation and pro-social behaviour) and two negative behaviours (hyperactivity and anti-social behaviour) that provide a social-behavioural profile for each student at age 16. Exploratory and confirmatory factor analysis was used to construct these four measures. Teachers' ratings of 2424 students were returned to the project from 659 secondary schools; of these students, 2401 had data available for all four behavioural measures drawn from 640 schools. The overall findings are in line with results from other research (Eisenberg et al 1995, Kerr and Michalski 2007, Schmitz, 2003) that has investigated social behaviour in school. They show that most students are generally rated favourably by their secondary school teachers, and only a small minority are identified as showing problem behaviours. The research also provides additional evidence on educational and other influences that have not been available in past research in England.

The findings within this report on students' social behaviour in Year 11 can be compared with earlier points in time when equivalent analyses were conducted for this sample in pre-school, primary school (KS1 & KS2) and lower secondary school (KS3). The present analyses indicate that, although Year 11 students were rated fairly positively in terms of their social-behavioural outcomes when compared to the equivalent primary school analysis, the proportion identified as showing negative behaviours has increased.

There were a number of child and family characteristics and measures of the home learning environment (HLE) that showed effects on social-behavioural outcomes. These influences were detected at an early age, and remained statistically significant predictors of the EPPSE sample's academic attainment and progress up to the end of primary school (Sammons et al., 2008a; 2008b). Some characteristics, in particular gender (male) and those associated with socio-economic disadvantage also remain significant

predictors of poorer behavioural outcomes across all phases of education up to the end of KS4.

Earlier EPPSE research findings from pre-school through to KS3 have highlighted characteristics and influences that can promote resilience and also those that can increase the risk of poor social-behavioural and academic outcomes (see Hall et al, 2009; 2013; Sammons et al., 2008c, 2013). The EPPSE study has informed policy development in England across successive governments (Taggart et al., 2008; HM Treasury's 10 Year Strategy for Child Care, 2004; The Equalities Review, 2007, Siraj-Blatchford et al., 2008; Allen's Review, 2011; Field's Review, 2010) and this report adds to the knowledge base about what helps to foster better social-behavioural outcomes and development amongst the sample when they reached the end of compulsory schooling in Year 11, and what increases the risk of poor outcomes.

The latest analyses of the EPPSE sample up to age 16 provide new evidence (as well as extending previous findings) about the continuing influence of individual, family and HLE characteristics. This report indicates that teacher ratings of Year 11 students' behaviour in secondary school are strongly associated with students' own reports of their experiences of secondary school.

The latest findings point to the influence of background characteristics such as gender, family socio-economic status (SES) or income on social-behavioural outcomes. In addition, EPPSE has rich data on the early years Home Learning Environment (HLE) and the HLE experienced at older ages (KS1, KS2 and KS3), as well as information about the role of parental qualifications. This enables a more detailed approach to exploring the influence of the home on students' social-behavioural development. Our findings note that various influences from the home continue to shape student's social-behavioural development as well as their academic progress between KS2-KS4.

As with the previous analyses EPPSE uses multilevel statistical models to ascertain which factors are the best predictors of social-behavioural outcomes at age 16. The EPPSE study uses a mixed method design. Although this report is based on quantitative analyses of large data-sets elsewhere EPPSE has reported findings from qualitative case studies of individual children and families that are more educationally successful in overcoming disadvantage (see Siraj-Blatchford et al., 2011). These qualitative findings enabled us to provide a broader understanding of the way social disadvantage shape children's educational outcomes and experiences as they move through different phases of education and into adolescence. These case studies show that certain behavioural traits can be important in supporting better educational outcomes for vulnerable groups of disadvantaged students, and indicate that self-regulation and a positive early years HLE can help to protect students from the adverse impacts of social disadvantage across different phases of education.

This report also explores the role of neighbourhood, pre-school, primary schools and secondary schools in predicting Year 11 students' social-behavioural outcomes after controlling for the impact of individual student, family, HLE and neighbourhood characteristics. It details the continued influence of pre-school, primary school and secondary school as predictors of students' social-behavioural outcomes and tests a range of measures related to students' secondary school experiences.

The aims of the Year 11 Key Stage 4 analysis were to measure and investigate:

- the variation in students' social-behavioural outcomes at the end of KS4 and developmental progress across five years in secondary school from KS2 (Year 6) to KS4 (Year 11);
- the influence of student background characteristics, including the extent to which individual, family, home learning environment (HLE) and neighbourhood factors, predict social-behavioural outcomes at age 16;
- the influence of pre-schools, primary schools and secondary schools in shaping students' social-behavioural outcomes and developmental progress.

Summary of Main Findings

Social-behavioural measures in the Year 11 profile

Measures of social behaviour were derived from teacher ratings of individual students. The profile was based on the Goodman (1997) instrument with additional items to extend the range of social behaviours. Four underlying dimensions of social behaviour were identified: two positive social behaviours (self-regulation and pro-social behaviour) and two negative behaviours (hyperactivity and anti-social behaviour). These provide a social-behavioural profile for each student at age 16. Earlier analyses had identified these dimensions of behaviour for this sample at younger ages. In order to investigate social-behavioural development/change over the five years of secondary education, baseline measures of these four behaviours, based on teacher ratings collected at the end of primary school in Year 6, were also created and included in the analyses.

EPPSE investigated the influence of a wide range of demographic and socio-economic measures derived from parental interviews and questionnaires as predictors of student behaviour at age 16. These include individual characteristics, such as gender, age, ethnicity, early childhood behavioural history, and family characteristics including family size (number of siblings), parents' marital status, earned income, family highest socio-economic status (SES), as well as the highest level of parents' qualifications. EPPSE also investigated characteristics specific to the educational system in England, such as Special Education Needs (SEN) status, and Free School Meals (FSM) eligibility. The following summarises the key findings, after allowing for the influence of other background factors.

Variations in social-behavioural outcomes in Year 11 for different student groups

Girls showed better social-behavioural profiles than boys at age 16 in all four outcomes (e.g., ES=0.43 - for self-regulation; ES=0.59 - for pro-social behaviour; ES=-0.47 - for hyperactivity; ES=-0.39 - for anti-social behaviour). Parents' highest qualification level was also a strong predictor (e.g., for mothers having a degree or equivalent versus no educational qualifications, ES=0.44 - for self-regulation; ES=0.35 - for pro-social behaviour; ES=-0.33 - for hyperactivity; ES=-0.32 - for anti-social behaviour).

Socio-economic status (SES) and family poverty also proved to be predictors of social-behavioural outcomes in Year 11. For example, compared to the highest SES group (professional non-manual), students with unskilled parents had poorer social-behavioural ratings (ES=-0.61 - for self-regulation; ES=-0.51 - for pro-social behaviour; ES=0.56 - for hyperactivity; ES=0.54 - for anti-social behaviour). Students eligible for FSM also displayed poorer outcomes in Year 11 (ES=-0.33 - for self-regulation; ES=-0.30 - for pro-social behaviour; ES=0.39 - for hyperactivity; ES=0.44 - for anti-social behaviour, compared to those children not eligible for FSM).

There are weaker effects linked to parents' marital status, although there is a tendency for poorer self-regulation and pro-social behaviour and increased hyperactivity and anti-social behaviour for those from single parent families (ES=-0.25 - for self-regulation; ES=-0.28 - for pro-social behaviour; ES=0.24 - for hyperactivity; ES=0.21 - for anti-social behaviour, for students with single parents versus those with married parents).

Coming from a large family (3 or more siblings in the early years, compared to being an only child) was predictive of lower scores for self-regulation (ES=-0.22) and higher scores for hyperactivity (ES=0.18).

The early years home learning environment (HLE) and later HLE measures such as enrichment (in KS3) continue to predict students' social-behavioural outcomes up to age 16, taking into account of other influences. Those students who had experienced a more positive HLE in the early years were rated more favourably by teachers in terms of various social-behavioural outcomes in Year 11 (ES=0.29 - for the very high versus lowest HLE groups - for self-regulation; ES=0.21 - for pro-social behaviour; ES=-0.23 - for hyperactivity). Higher levels of 'academic enrichment' activities (educational related activities such as reading for pleasure, educational outings) reported by students and their parents in KS3 also predicted better social-behavioural outcomes (ES=0.28 - for the high versus low enrichment groups - for self-regulation; ES=0.17 - for pro-social behaviour; ES=-0.25 - for hyperactivity; ES=-0.18 - for anti-social behaviour).

Students with a record of Special Educational Needs (SEN) in secondary school showed significantly poorer behavioural outcomes as would be anticipated given the known link with behaviour and SEN, the two probably reflecting a reciprocal relationship. The strength of relationships are in line with the SEN research literature and findings for this group at younger ages (Anders et al., 2010; Taggart et al., 2006; Sammons et al., 2003; Sammons et al., 2004a; Sammons et al., 2008b). Similarly, those who had been identified by their parents as having behaviour problems (two or more) in the early years were more likely to continue to display poorer social-behavioural outcomes in Year 11 (ES=-0.44 - for self-regulation; ES=-0.33 – for pro-social behaviour; ES=0.38 - for hyperactivity) than those with no problems reported.

The student's age within the year group remained a significant predictor though effects were fairly weak. Even in Year 11 summer born (youngest) compared to autumn born students (oldest) showed poorer outcomes: (ES=-0.17 - for self-regulation; ES=-0.12 - for pro-social behaviour; ES=0.17 - for hyperactivity). These effects, though statistically significant, were smaller than those found in pre- or primary school.

Neighbourhood influences

Various measures of neighbourhood disadvantage were also tested to see if they predicted students' social-behavioural outcomes at age 16, while controlling for the effects of individual, family, HLE and school composition measures. There was evidence that the level of overall disadvantage in the child's neighbourhood measured (when the children were in pre-school) by the Income Deprivation Affecting Children Index (IDACI) scores predicted poorer social-behavioural outcomes for the EPPSE sample in KS4, taking into account the influences of other significant predictors described above. Low levels of neighbourhood deprivation compared to high deprivation predicted higher scores for self-regulation (ES=0.22) and pro-social behaviour (ES=0.25) and lower scores for hyperactivity (ES=-0.19).

Living in a neighbourhood with a higher proportion of White British residents was also weakly associated with lower pro-social behaviour (ES=-0.20), higher hyperactivity (ES=0.15) and greater anti-social behaviour (ES=0.18).

These results indicate that ‘place’ poverty as well as that related to the individual and their family can also shape social-behavioural outcomes for adolescents. In primary school the neighbourhood effects were not statistically significant, but they became significant by KS3 and their influence is also evident in KS4.

Educational experiences from pre-school to secondary school

EPPSE investigated the influences of educational environments across different phases of education in shaping students’ social-behavioural outcomes at age 16.

Pre-school influences

In order to assess whether the impact of early educational settings on social behaviour continued through to the end of KS4 various measures related to pre-school were tested: exposure (i.e., attended pre-school or not), quality and pre-school effectiveness.

The results indicate that just attending any pre-school centre did not predict social-behavioural outcomes in Year 11, which is in contrast to findings for Year 11 GCSE academic outcomes for the EPPSE sample where positive effects remain (see Sammons et al 2014a). In addition, the influence of pre-school effectiveness measures was no longer visible at age 16, in line with findings when the students were 14. There was some evidence that these measures and pre-school effectiveness were important when the EPPSE sample were in primary school, but these effects disappear by Year 11. In contrast, the quality of the pre-school setting as measured by the Early Childhood Environment (ECERS) observational scales continued to be a statistically significant predictor for self-regulation, pro-social behaviour and hyperactivity at the end of Key Stage 4, although the effects were weak.

Overall, students who had attended higher quality pre-schools still showed significantly better social-behavioural outcomes (for self-regulation, pro-social behaviour and hyperactivity) at age 16 than those who had experienced only low quality pre-school controlling for other influences. These relatively small effects were consistent in predicting better outcomes, for ‘self-regulation (ES=-0.14, high versus low), pro-social behaviour (ES=0.16, high versus low quality) and hyperactivity (ES=-0.20).

Primary school influence

There were no statistically significant trends in the effects of the academic effectiveness of the primary school an EPPSE student had attended in terms of predicting better later social-behavioural outcomes at the end of KS3, and this was largely mirrored in KS4. Again, this is in contrast to findings for academic attainment where longer term positive benefits from attending a more academically effective primary school that remain statistically significant in predicting academic results in Year 9 and for overall GCSE outcomes in Year 11 are identified (see details in other reports Sammons et al., 2011a; Sammons et al., 2014a).

Secondary school influences

Two administrative indicators of school effectiveness and quality were available: i) the DfE's Contextual Value Added (CVA[1]) measures, calculated to measure secondary school effectiveness in promoting students' academic progress from KS2 to KS4 and ii) the Office for Standards in Education (Ofsted) inspection grades for schools.

EPPSE tested whether students who attended more effective or higher quality secondary schools (as defined by these indicators) showed better social-behavioural outcomes.

The four year average CVA score for secondary schools did not predict significant differences in students' social-behavioural outcomes in KS3 or in KS4, when account was taken of the influence of individual student, family, HLE, school composition and neighbourhood characteristics, although there was some suggestion of weak positive effects for pro-social behaviour that verged on being significant.

Similarly, the overall Ofsted inspection judgments of the secondary school did not predict better social-behavioural outcomes for EPPSE students. Again these results are in contrast to findings for the academic attainments of the EPPSE students in Year 11 measured by GCSE results, where these official indicators predict better academic outcomes.

The social composition of secondary school intakes was measured by the percentage of students eligible for Free School Meals (% FSM) and the percentage of students with special educational needs (SEN). Both of these aggregate measures of school intake were found to be significant predictors of social-behavioural outcomes in KS4. Attending a secondary school with a higher proportion of SEN students had a weak but negative impact on EPPSE students' own social-behavioural outcomes for self-regulation, pro-social behaviour and anti-social behaviour. Attending a secondary school with a more disadvantaged student intake (% FSM) also had a weak but positive effect on EPPSE students' own social-behavioural outcomes for self-regulation, once other characteristics had been accounted for. The later finding is in contrast to those for GCSE outcomes, where a disadvantaged school context predicts poorer attainment. It may be that high disadvantage schools place a greater emphasis on promoting positive social behaviour (as suggested by the literature on school effectiveness) to support learning.

[1] The EPPSE CVA indicator is based on DfE CVA results for 4 successive years, covering the 4 EPPSE cohorts, 2006-2009 for all secondary schools attended by EPPSE students. The EPPSE results have an overall CVA averaged mean of 1004, which is close to the national CVA mean of 1000. The students in the sample (based on their secondary school's average CVA score) were divided into high, medium and low CVA effectiveness groups based on the average CVA score to 1 SD above or below the mean; nationally, approximately 10% of secondary schools are 1 SD above the mean and approximately 10% of secondary schools are 1 SD below the mean.

Students' experiences and views of secondary school

Teaching and school processes in KS3 and KS4

Another perspective on secondary school characteristics was provided by data on students' views about their secondary school education in KS3 and KS4. These were obtained from self-report questionnaires in Year 9 and again in Year 11. Various factors were derived that related to features of their school experiences (Sammons et al., 2011b; Sammons et al., 2014b). Those that showed the strongest associations with social-behavioural outcomes were related to how well staff and students 'get along' and how valued students felt (positive relationships in Year 11; Valuing pupils in Year 9), the behavioural climate and the emphasis given to learning within the classroom (Year 9).

Where students reported that their schools laid a greater 'emphasis on learning' in KS3, this predicted better self-regulation, pro-social behaviour and reduced negative behaviour (hyperactivity and anti-social behaviour) in KS4.

A 'negative behavioural climate' in the secondary school in KS3, also predicted poorer later social-behavioural outcomes at age 16. A more negative climate predicted poorer self-regulation and pro-social behaviour and increased levels of hyperactivity and anti-social behaviour.

Similarly, the factor 'valuing pupils' was found to predict better outcomes for all four social-behavioural measures, as was the similar factor based on data collected in Year 11 that identified positive relationships. These factors capture aspects of the emotional climate of the school, such as relationships with teachers in terms of friendliness and the extent to which students feel valued and involved.

The levels of 'teacher support', 'teacher professional focus' and use of 'formative feedback' reported were also positive predictors of better social-behavioural outcomes, but to a lesser extent. Similarly the factors 'head teacher qualities' and 'teacher discipline' showed weak, but significant positive effects in predicting most social-behavioural outcomes in Year 11.

The 'physical environment of the school' (attractive buildings, classroom decorations, and standards of cleanliness) and the 'school learning resources' showed only very weak or non-significant associations with social-behavioural measures. This was also the case for the factor measuring the academic ethos of the school.

As these aspects of student experience are to some extent inter-related they were also tested in combination. The measure 'positive relationships' was found to be the strongest predictor for all four social-behavioural outcomes (ES=0.42 - for self-regulation; ES=0.42 - for pro-social behaviour; ES=-0.49- for hyperactivity; ES=-0.43 - for anti-social behaviour, high versus low). However, the KS3 behaviour climate was still important as an additional predictor for self-regulation (ES=-0.36, high versus low), pro-social behaviour (ES=-0.21, high versus low) and levels of hyperactivity (ES=0.20, high versus

low). The measure of 'emphasis on learning' also predicted better pro-social behaviour (ES=0.30, high versus low), lower levels of hyperactivity (ES=-0.30, high versus low) and lower levels of anti-social behaviour (ES=-0.38, high versus low). Lastly, 'formative feedback' was an additional predictor of better pro-social behaviour outcomes (ES=0.29, high versus low), when tested in combination.

Table ES 1: Summary of the combined influence of students' views of school on social-behavioural outcomes in KS4: effect sizes (high vs low scores)

	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social behaviour
Students' views of school in KS3				
Emphasis on learning		0.30	-0.30**	-0.38
Poor behaviour climate	-0.36	-0.21	0.20	
Students' views of school in KS4				
Positive relationships	0.42***	0.42***	-0.49***	-0.43***
Formative feedback		0.29**		

Significance Levels: NS Not significant, # p<0.10, * p<0.05, ** p<0.01, *** p<0.001

N.B. views of school were tested in combination

Developmental progress between KS2-KS4

In these analyses the student's prior social behaviour measured in Year 6 of primary school was included as a baseline to model developmental change across the five years of secondary education, while testing whether the student, family, HLE and neighbourhood influences discussed above also predicted developmental change.

Individual and family factors

A significant gender gap was identified, with girls showing more change/progress in the positive social-behavioural outcomes (ES=0.40 – for pro-social behaviour; ES=0.30 – for self-regulation), and also greater reductions in the negative outcomes (ES=-0.24 - for both hyperactivity and anti-social behaviour). The occurrence of multiple behavioural problems in early childhood was also a significant predictor of students' developmental progress in self-regulation between KS2 and KS4 (ES=-0.44 - for self-regulation). Similarly, the student's age (relative age position within their academic cohort) predicted social-behavioural changes for students during KS3 and KS4. Younger students born later in the year (summer born) showed less developmental progress than older students (autumn born) in self-regulation (ES=-0.11) and pro-social behaviour (ES=0.14), although the size of the effects were small.

Coming from a large family (three or more siblings) predicted less developmental progress in self-regulation (ES=-0.24 compared to singletons) and increases in hyperactivity (ES=0.22) between KS2 and KS4.

A small equity gap associated with family poverty (eligibility for FSM) was found for changes in self-regulation (ES=-0.17), pro-social behaviour (ES=-0.20), hyperactivity (ES=0.28) and a somewhat stronger effect for anti-social behaviour (ES=0.33) placing students not living in poverty at an advantage. The gaps were larger for the measure of family socio-economic status. A moderate equity gap associated with SES was found for changes in self-regulation (ES=-0.44), pro-social behaviour (ES=-0.43); hyperactivity (ES=0.57) and anti-social behaviour (ES=0.52) for students with 'unskilled' parents compared to those with 'professional non-manual' parents.

A consistent pattern of differences in developmental progress, related to the level of parent's educational qualifications, emerged for self-regulation (ES=0.28 for degree versus no qualifications), pro-social behaviour (ES=0.37), and anti-social behaviour (ES=-0.23), with students of mothers holding a degree or equivalent, showing significant improvements in the two positive social-behavioural outcomes, and significant reductions in anti-social behaviour. Smaller reductions in 'hyperactivity were also found, but those just failed to reach significance (ES=-0.19 for degree), compared to students of parents with no qualifications.

The marital status of parents in the early years, when children were first recruited to the study, was also a significant predictor of changes in self-regulation during secondary education (ES=-0.25 - single parent compared to married) and pro-social behaviour (ES=-0.19 - single parent compared to married). Single parent status also predicted increases in hyperactivity (ES=0.24 - single parent versus married) and anti-social behaviour (ES=0.15). Students in lone parent families showed small but statistically significant increases in both negative behaviours and decreases in both positive behaviours. In addition, students of parents who were living with their partner but unmarried in the early years were found to show small decreases in self-regulation (ES=-0.18) and pro-social behaviour (ES=-0.14) and an increase in hyperactivity (ES=0.15).

Home Learning Environment (HLE)

The quality of the early years HLE was not found to predict better developmental progress between KS2 and KS4, once later HLE activities were taken into account. This is in contrast to findings for Year 11 GCSE outcomes for the EPPSE sample. However, academic enrichment activities in KS3 predicted better developmental progress in social-behavioural outcomes between KS2 and KS4. Students who experienced more learning opportunities (in terms of KS3 HLE academic enrichment) showed a significant positive change in self-regulation (ES=0.29 high versus low) and pro-social behaviour (ES=0.21 high versus low) from Year 6 to Year 11, and significant reductions in hyperactivity (ES=-0.33 high versus low) and anti-social behaviour (ES=-0.22 high versus low).

Neighbourhood

There was some evidence that living in an area of lower deprivation (IDACI) predicted more favourable developmental progress in self-regulation (ES=0.17 compared to high deprivation areas) and pro-social behaviour (ES=0.21) between KS2-KS4. Students from

areas with higher proportions of White British residents showed less favourable developmental progress in pro-social behaviour between KS2 and KS4 (ES=-0.18).

Secondary school influences

Several major features of teaching and school processes in secondary schools were found to influence students' social-behavioural developmental progress between KS2 and KS4. Although the academic effectiveness and quality of the secondary school were not found to predict developmental progress for any of the four social behavioural outcomes, student's own reports of their experiences of school were significant predictors of their own developmental progress between KS2 and KS4.

Individually, many of the experience of school factors predicted better developmental progress, in particular attending a secondary school rated more favourably for the factors 'positive relationships', 'monitoring students', 'formative feedback', 'emphasis on learning' and 'valuing pupils'.

The most important feature in predicting progress in all four social-behavioural measures, when tested in combination was the factor 'positive relationships' (ES=0.38 - for self-regulation, high versus low; ES=0.40 - for pro-social behaviour; ES=-0.46 - for hyperactivity; ES=-0.37 - for anti-social behaviour). 'Positive relationships' is concerned with the culture of valuing students, typified by the extent to which teachers and the students get on well, offer them friendly and respectful treatment, and the extent that teachers show an interest in students.

In addition, attending a secondary school rated more favourably for 'formative feedback' was associated with more favourable developmental progress in terms of students' pro-social behaviour (ES=0.26 high versus low). Moreover, attending a secondary school rated more favourably in terms of 'emphasis on learning' predicted decreases in hyperactivity between KS2 and KS4 (ES=-0.25).

Conclusions

The research adds to the body of evidence provided by earlier analyses conducted for the EPPSE sample at younger ages (school entry, KS1, KS2 and KS3). The latest results support and extend previous findings that investigated the role of different sources of influence (proximal to distal) that shape social behaviour over time. The approach has links to the ecological model of human development proposed by Bronfenbrenner (1994). EPPSE research has explored the way individual, family, home learning environment, neighbourhood pre-school, and school influences shape children's development from early childhood to adolescence.

There is clear evidence that various individual, family and home learning environment (HLE) characteristics continue to shape students' social behaviour in secondary school up to the end of KS4. As at younger ages, we have identified significant differences in outcomes for different groups of students. Although most students are rated fairly

favourably in terms of their social behaviour in Year 11, for a minority poor behaviour is evident. Certain influences increase the risk of poor behavioural outcomes. Just as an equity gap can be identified in terms of influences that promote or hinder learning and academic attainment, similar influences shape social-behavioural adjustment. Some influences reduce the likelihood of positive social-behavioural outcomes, others promote this. The same is found for the two measures of negative behaviour.

There are strong gender effects, as at younger ages. Girls show better social behaviour in terms of all four outcomes as rated by teachers compared to boys. This gap widens over time in the analyses of developmental progress from age 11 to 16. However, it is important to note that elsewhere it is shown that girls in the EPPSE project had poorer mental health (according to the self-report Warwick mental health scale) than boys, but this does not seem to be reflected in teacher assessments of their behaviours in school (see accompanying report Sammons et al, 2014c).

The experience of various indicators of disadvantage in the early years increases the risk of poorer social-behavioural development up to age 16 years, as well as predicting poorer attainment. The two are likely to be mutually reinforcing. Thus low family SES, eligibility for Free School Meal (FSM) status, single parent status and larger family size all predicted poorer outcomes. Although smaller in size, both neighbourhood disadvantage measures and school context are significant predictors of outcomes. Contextual effects linked to 'place poverty' and school composition also seem to shape social behaviour in adolescence.

By contrast higher parental qualification levels and positive parenting experiences in the early years, measured by the early years HLE, as well as HLE measured at later ages (especially enrichment learning experiences in KS3) predicted better longer term outcomes. Attending any pre-school did not show any continued effects on social behaviour up to age 16. However, there were some indications of small positive effects for those students who had attended high quality pre-school provision.

The measure of primary school academic effectiveness predicted better academic attainment in primary school and later in Year 9 and Year 11 but not better (or worse) social behaviour. Similar results are found for the academic effectiveness of the secondary school which, while important for academic attainment and progress, was not a predictor of social-behavioural outcomes for the EPPSE sample. In KS3, attending a poor quality secondary school, as measured by Ofsted judgements, predicted poorer behavioural outcomes for those unfortunate enough to attend a school rated as inadequate, even after controlling for the influence of individual, family and HLE characteristics. However, by age 16 this effect was not statistically significant. This may reflect changes in schools judged to be inadequate or satisfactory over the time of the research, given the strong pressure to improve inherent in the accountability system for schools in England.

The EPPSE research points to the importance of the ‘student voice’. Self-report surveys provided measures of students’ experiences and views of school in Year 9 and Year 11. The various factors derived from these show variation in students’ experiences. These measures are moderate to strong predictors of both academic outcomes at GCSE and also social behaviour as rated by teachers.

Student reports on the ‘quality of teaching’ , their school’s ‘behavioural climate’, the ‘emphasis on learning’, ‘positive relationships’ with staff, and feeling ‘valued’ were found to be consistent predictors of better social-behavioural as well as academic outcomes.

The findings in KS4 are in broad accord with those found in KS3. They highlight areas that could be addressed in school improvement policies intended to promote better outcomes for secondary school students. They also point to the potential role of using survey data and other ways to tap into the student ‘voice’ in assessing the quality of their educational experiences. The aspects about secondary school experience identified here show the importance to school leaders and teaching staff of focusing on enhancing the quality of teaching and learning, student support, improving the behavioural climate of the school, ensuring students feel valued, and promoting a high quality physical environment and learning resources. These aspects should be viewed as key features for school self-evaluation and planning for improvement as well as for external evaluation.

Overall the latest results for social-behavioural outcomes confirm and extend earlier findings. The life chances of some children are shaped by important individual, family, home and learning experiences. These early effects emerge at a young age and their influences continue to shape students’ educational outcomes throughout their educational careers. However, some influences can help to ameliorate the effects of disadvantage. Pre-school effects remain evident, while secondary school experiences are also relevant. There are important and probably reciprocal associations between academic outcomes and social-behavioural development (see accompanying reports Sammons et al 2014a; 2014b; 2014c).

Disadvantage remains a complex and multifaceted concept. The longitudinal EPPSE research indicates that it is by no means captured by one simple indicator such as the FSM status of a pupil. The concept of multiple disadvantage is important and the challenges facing schools in promoting better outcomes for students from disadvantaged homes and contexts remain strongly evident. Educational influences (including pre-school) have an important part to play in supporting those ‘at risk’ and can promote better outcomes. But the EPPSE data shows that equity gaps emerge early for all outcomes (cognitive/academic and social-behavioural) and remain strongly evident across different phases of education.

Table ES 2: Summary of background influences on social behaviours

Background characteristics	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social
Student characteristics				
Gender (boys)	0.43	0.59	-0.47	-0.39
Age (autumn)				
Spring	ns	ns	0.10	ns
Summer	-0.17	-0.12	0.17	ns
Number of siblings (none)				
1-2 siblings	ns	ns	ns	ns
3 siblings	-0.22	ns	0.18	ns
Ethnicity (White UK heritage)				
White European heritage	ns	ns	ns	ns
Black Caribbean heritage	ns	ns	ns	ns
Black African heritage	0.33	ns	ns	ns
Any other ethnic minority heritage	ns	ns	ns	ns
Indian heritage	0.33	ns	ns	ns
Pakistani heritage	ns	ns	ns	ns
Bangladeshi heritage	ns	ns	ns	ns
Mixed race heritage	ns	ns	ns	ns
Early behavioural problems (none)				
1 Behavioural Problem	-0.14	-0.20	0.15	ns
2+ Behavioural Problems	-0.44	-0.33	0.38	ns
Family characteristics				
Parents' Highest SES at age 3/5 (professional non-manual)				
Other Professional, non-Manual	-0.25	-0.26	ns	ns
Skilled, non-Manual	-0.28	-0.29	ns	ns
Skilled, manual	-0.43	-0.37	0.29	0.40
Semi-skilled	-0.37	-0.27	ns	ns
Unskilled	-0.61	-0.51	0.56	0.54
Not working/never worked	ns	ns	ns	ns
Parent's Highest Qualification Level at age 3/5 (no qualifications)				
Other Professional/Miscellaneous	ns	ns	ns	ns
Vocational	ns	ns	ns	ns
16 academic	0.17	0.21	-0.17	-0.23
18 academic	ns	ns	ns	ns
Degree or equivalent	0.44	0.35	-0.33	-0.32
Higher degree	0.43	0.37	-0.33	-0.36
Marital Status of Parent/Guardian/Carer (married)				
Single	-0.25	-0.28	0.24	0.21
Separated/Divorced	ns	Ns	ns	ns
Living with partner	-0.20	-0.19	0.19	0.14
Widow/Widower	~	~	~	~
Free School Meals (No)	-0.33	-0.30	0.39	0.44
Home Learning Environment (HLE)				
Early Years Home Learning Environment Index (Grouped) (Very low)				
Low (Index values: 14-19)	ns	ns	ns	ns
Average (Index values: 20-24)	ns	ns	ns	ns
High (Index values: 25-32)	0.19	0.23	ns	ns
Very high (Index values: 33-45)	0.29	0.21	-0.23	ns
KS3 Academic enrichment (Grouped) (Low)				
Medium	0.18	0.13	-0.14	ns
High	0.28	0.17	-0.25	-0.18
Neighbourhood				
IDACI (High deprivation)				
Low deprivation	0.22	0.25	-0.19	ns
Average deprivation	ns	0.12	ns	ns
% White British	ns	-0.20	0.15	0.18
School composition				
% SEN	-0.16	-0.15	ns	-0.12
% FSM	0.14	ns	ns	ns

N.B. Table displays significant effects at the p<0.05 level or above~ small student numbers so not shown

Table ES 3: Summary of background influences on social-behavioural developmental progress between KS2 and KS4

Background characteristics	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social behaviour
Student Factors				
Gender (boys)	0.30	0.40	-0.24	-0.24
Age (autumn)				
Spring	ns	ns	ns	ns
Summer	-0.11	-0.14	ns	ns
Number of siblings (none)				
1-2 siblings	ns	ns	ns	ns
3 siblings	-0.24	ns	0.22	ns
Ethnicity (White UK heritage)				
White European heritage	ns	ns	ns	ns
Black Caribbean heritage	ns	ns	-0.31	ns
Black African heritage	0.37	ns	ns	ns
Any other ethnic minority heritage	ns	ns	ns	ns
Indian heritage	ns	ns	ns	ns
Pakistani heritage	ns	ns	-0.25	ns
Bangladeshi heritage	ns	ns	ns	ns
Mixed race heritage	ns	ns	ns	ns
Early behavioural problems (none)				
1 Behavioural Problem	ns	-0.16	ns	ns
2+ Behavioural Problems	-0.44	ns	ns	ns
Family characteristics				
Parents' Highest SES at age 3/5 (professional non-manual)				
Other Professional, non-manual	ns	ns	ns	ns
Skilled, non-manual	ns	ns	ns	ns
Skilled, manual	-0.27	ns	0.29	0.24
Semi-skilled	ns	ns	ns	ns
Unskilled	-0.44	-0.43	0.57	0.52
Not working/never worked	ns	ns	ns	ns
Parent's Highest Qualification Level at age 3/5 (no qualifications)				
Other Professional/Miscellaneous	ns	ns	ns	ns
Vocational	ns	ns	ns	ns
16 academic	ns	0.19	ns	-0.19
18 academic	ns	ns	ns	ns
Degree or equivalent	0.28	0.37	ns	-0.23
Higher degree	ns	0.33	ns	ns
Marital Status of Parent/Guardian/Carer (married)				
Single	-0.25	-0.19	0.24	0.15
Separated/Divorced	ns	ns	ns	ns
Living with partner	-0.18	-0.14	0.15	ns
Widow/Widower	~	~	~	~
Free School Meals (No)	-0.17	-0.20	0.28	0.33
Home Learning Environment (HLE)				
KS3 Academic enrichment (Grouped) (Low)				
Medium	0.15	0.15	-0.17	ns
High	0.29	0.21	-0.33	-0.22
Neighbourhood				
Neighbourhood				
IDACI (High deprivation)	0.17	0.21	ns	ns
Low deprivation	ns	ns	ns	ns
Average deprivation	ns	-0.18	ns	ns

N.B. Table displays significant effects at the p<0.05 level or above

~ small student numbers so not shown

Introduction

Background: The EPPSE 3-16+ Project

The Effective Pre-school, Primary and Secondary Education 3-16+ (EPPSE 3-16+) project was originally commissioned in 1997 and funded by the then Department for Education and Employment (now the Department for Education: DfE). The EPPSE project is a large-scale longitudinal study which has explored the long-term effects of educational provision from pre-school to the end of Key Stage 4 (KS4) when students were age 16. The study began by sampling young children in a range of pre-school settings. The students used within the study are a nationally representative sample of approximately 3,000 children (see Sylva et al., 1999) who have been followed throughout their pre-school and compulsory education, collecting a range of data on developmental issues, social background, educational attainment, psychological measures and perceptions of their school and class environment.

Data were obtained from 2,857 children aged 3 plus attending 141 pre-school centres selected from five regions across England, drawn from a representative range of types of pre-school providers, including local authority day nurseries, integrated centres (which combine education and care), playgroups, private day nurseries, nursery schools, and nursery classes (Sammons et al., 2002; 2003, Sylva et al., 2010). A further 'home' sample, consisting of 315 children with minimal or no pre-school exposure, was added at entry to primary school bringing the total sample to 3,172 children.

Earlier phases of EPPSE sought to identify and explore individual pre-school settings and primary school effects (Sammons et al., 2004b). It was the first study in Europe which used a longitudinal, mixed-method, educational effectiveness design to study the enduring influence of pre-school across different phase of education. The original phase of the study (1997-2003) investigated which types of pre-school provision were the most effective in enhancing children's social-behavioural development and academic attainment at entry to primary school (age 5), and to what extent these effects persisted to the end of Key Stage 1 (age 7 plus years). The Effective Provision of Pre-school Education (EPPE) study was extended to follow students to the age of 11 at the end of Key Stage 2 (Sammons et al., 2007a; 2007b; 2008a; 2008b; Sylva et al., 2010). The EPPE 3-11 extension continued to explore children's academic and social-behavioural development across Key Stage 2 of primary education (age 7 to 11 years). The study explored the impact of a wide variety of child, parent, and family characteristics, including the early years home learning environment (HLE), as well as measures of primary school academic effectiveness, on pupils' academic and social-behavioural outcomes during this phase of education.

The third phase of the research followed the sample from primary through to the end of KS3 in secondary school (EPPSE 3-14) and investigated the continued impact of demographic, socio-economic, and educational influences from pre-school to primary school and secondary school on adolescents' academic attainment, socio-emotional and social-behavioural development across KS3 in secondary school (Sammons et al., (2011a; 2011c; 2011d).

The last and fourth phase of the EPPSE research investigated the continued impact of demographic, socio-economic, and educational influences from pre-school to primary school and secondary school on adolescents' academic attainment, socio-emotional and social-behavioural development in Year 11 at the end of KS4 (age 16) in secondary school. This report details the influences on social-behavioural outcomes in Year 11, as well as on developmental progress between KS2-KS4. The associations with students' academic attainment and dispositions are detailed in separate reports (Sammons et al., 2014a & 2014c).

Aims of the fourth phase of research: EPPSE 3-16+

This report investigates the influence of demographic, socio-economic, individual background and educational influences from pre-school to primary school and secondary school on adolescent's social-behavioural outcomes at the end of KS4 when students' are in the final year of their compulsory schooling (Year 11) and are approximately 16 years old.

It focuses on the most recent data that was collected on students' behaviour via their secondary school teachers' assessments in Year 11. EPPSE also collected data on students' reports of their own educational and personal experiences plus national indicators and census statistics regarding their neighbourhood. The analyses also included measures collected from earlier time-points as well as background characteristics collected when children were younger from parent interviews and surveys.

The four main aims were to:

- Investigate the variation in students' social-behavioural outcomes at the end of KS4.
- Identify which student background characteristics, including individual, family, home learning environment (HLE) and neighbourhood characteristics, predict social-behavioural outcomes at age 16.
- Explore the influence of pre-school, primary school and secondary school on Year 11 social-behavioural outcomes.
- Explore the role of secondary school processes and experiences on students' social-behavioural outcomes using self-report measures of such processes derived from student questionnaires.

Section 1: Characteristics of the sample at the end of Key stage 4

The original pre-school design over-sampled from more disadvantaged local authorities and groups to allow for higher attrition. By the end of KS4 the tracked sample with available social-behavioural information remained more disadvantaged than national demographics in terms of family poverty (FSM eligibility[2]). In total just under a fifth (18%) of the EPPSE sample with social-behavioural information were eligible for FSM compared to just over an eighth (13%) of Year 11 students nationally (see 4Table 1.1).

Table 1.1: Comparison of levels of deprivation for the EPPSE sample and Year 11 students in England

FSM eligibility age 15/16	2008/09		2009/10		2010/11		2011/12		All years	
	N	%	N	%	N	%	N	%	N	%
England[3]	71,200	12.3	74,260	13.0	76,015	13.6	76,635	13.9	298110	13.2
EPPE: Original sample eligible for FSM	33	17.6	218	18.7	260	17.9	19	29.2	530	18.4
EPPSE: Social-behavioural sample eligible for FSM	28	17.2	185	18.8	190	16.8	15	19.5	418	17.7

*NPD and Pupil profile combined. Pupil profile information was given precedent

The proportion of EPPSE participants from ethnic minority heritage groups was broadly in line with the national picture (25% compared to 22% nationally). Similarly the proportion of students with any kind of Special Educational Need (SEN) was in line with students in maintained schools nationally (21% compared to 20% nationally).

Error! Reference source not found. shows the background characteristics for the Year 11 EPPSE student sample that had valid social-behavioural data collected from EPPSE students' secondary school teachers in Year 11. In all 2401 students had age 16 social-behavioural profile data returned from schools. This represents three quarters (75.7%) of the original sample (3172).

[2] Data about the number and percentage of pupils known to be eligible for and claiming Free School Meals (FSM) are from performance tables in state secondary schools in England. The number of pupils known to be eligible for FSM is expressed as a percentage of the number (headcount) of pupils in each age group.

[3] Statistics are for English State secondary schools in England and are taken from the following sources: DfE: Schools, Pupils and their Characteristics, January 2012, first statistical release SFR10/2012; DfE: Special Educational Needs in England, January 2012.

Background characteristics	Complete		Missing		Total	
	N	%	N	%	N	%
Early Years home learning environment (HLE) Index	2401	100	771	100	3172	100
0 – 13 (Lowest)	218	9.1	90	11.7	308	9.7
14 – 19	521	21.7	144	18.7	665	21.0
20 – 24	535	22.3	192	24.9	727	22.9
25 – 32	746	31.1	214	27.8	960	30.3
33-45 (Highest)	281	11.7	65	8.4	346	10.9
Missing	100	4.2	66	8.6	166	5.2
Early child health problems	2350	100	717	100	3067	100
No health problems	1557	66.3	469	65.4	2026	66.1
1 health problem	610	26.0	175	24.4	785	25.6
2 health problems	158	6.7	55	7.7	213	6.9
3 or more health problems	25	1.1	18	2.5	43	1.4
Multiple Disadvantage Index	2401	100	771	100	3172	100
5 disadvantages	156	6.5	57	7.4	213	6.7
4 disadvantages	174	7.3	83	10.8	257	8.1
3 disadvantages	271	11.3	120	15.6	391	12.3
2 disadvantages	474	19.7	139	18.0	613	19.3
1 disadvantages	623	26.0	158	20.5	781	24.6
No disadvantage	178	7.4	95	12.3	273	8.6
Income Deprivation Affecting Children Index (IDACI)	2401	100	771	100	3172	100
Top 25% (higher disadvantage levels)	564	23.5	222	28.8	786	24.8
Middle 50%	1187	49.4	391	50.7	1578	49.8
Bottom 25% (lower disadvantage levels)	645	26.9	148	19.2	793	25.0
Missing	5	0.2	10	1.3	15	0.5

In addition, just under a fifth (17.6%) of the missing group but only fourteen percent of the valid sample were eligible for Free School Meals (FSM) an indicator of poverty. Similarly more of the missing group were from the most disadvantaged neighbourhoods measured by the IDACI scales (28.8%) than for the valid sample (23.5%).

Section 2: Theoretical and empirical description of social-behavioural outcomes at Key Stage 4 (Year 11)

Key findings

- Teachers ratings for 2401 EPPSE students were collected from an expanded version of Goodman's Strengths and Difficulties Questionnaire (1997), the same instrument used by EPPSE at earlier time points.
- Confirmatory factor analysis showed that the same underlying dimensions of social-behaviour identified by EPPSE at previous time points continued to be robust measures of social-behaviour at the end of Year 11, allowing developmental change over time to be investigated.
- The underlying dimensions of social-behaviour in Year 11 included two positive social-behaviours (self-regulation and pro-social behaviour) and two negative behaviours (hyperactivity and anti-social behaviour).
- Although most students were rated favourably by teachers, some differences between student groups were found.
- Girls were rated more positively than boys for all four measures.
- Students from background with a stronger 'educational capital' (in terms of parental qualifications, early years HLE) were also rated more favourably by teachers than other students for all four measures.
- Students from disadvantaged backgrounds (in terms of eligibility for FSM, lower family Socio-Economic Status) were rated less favourably in all of the social behaviour measures.
- Students on any of stage of the Special Educational Needs register had poorer teacher ratings for behaviour, and this was particularly marked for students on the later stages of the register (School Action Plus, Statement of SEN), reflecting the link between behaviour and SEN identification in schools.
- Family poverty, SES and educational capital are themselves inter-related but highlight differences in teacher ratings of social-behaviour for different student groups at this time point. However, further analyses are needed to establish which characteristics are the strongest predictors (see Section 3).

Section 2.1: Creating measures of students' social-behavioural outcomes in Year 11

The EPPSE Pupil Profile was the primary data source for studying students' social-behavioural outcomes in Year 11. The Pupil Profile is a proforma that captures general behavioural patterns exhibited by students in educational settings and includes the Strengths and Difficulties Questionnaire (SDQ - Goodman, 1997) together with additional items extending the range of social behaviours. It builds on similar measures collected when the students were younger (in Years 1, 2, 5, 6 & 9). The Pupil Profile is completed by the class teacher or Year Tutor most familiar with the EPPSE student.

Teachers assessed students' behaviours in terms of a range of items on a three-point agreement scale ('certainly true', 'somewhat true', and 'not true'). We supplemented the original SDQ measures by including additional items to extend the range of behaviours that might be seen in school. A list of the Pupil Profile items is illustrated in

Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings .

Analyses identified the underlying dimensions captured by the Profile. In order to explore change over time and to ensure consistent theoretical conceptualization and high reliability of the social-behavioural outcomes, the analyses adopted the same factorial clustering of items that emerged at earlier time points (Sammons et. al., 2007a; 2008b, 2011d), having substantiated the underlying factor structure within this sample (see

Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings and 6Table 2.2). The decisions and reasoning behind why the data were treated as interval level data in the analysis are detailed in Appendix 1.

Section 2.2: Exploring the latent social-behavioural measures of the Year 11 pupil profile

To explore the underlying dimensions of the Pupil Profile three key methods were used. A principal components analysis substantiated the underlying dimensions captured by the Profile (see 6Table 2.2). The analysis had a particular focus on four social-behavioural factors: self-regulation, pro-social behaviour, hyperactivity, and anti-social behaviour.

The relationship between the items was then substantiated with a reliability analysis using the Cronbach's alpha (using standardised items). Cronbach's alpha statistics were used to assess the internal consistency of all constructs, which were found to have medium to high reliability (between 0.7 and 0.9) as shown in 5Table 2.1. The reliability analyses indicated that the Cronbach's alpha for all of the social-behavioural constructs had high reliability. The Cronbach's alpha for pro-social behaviour was 0.886 (based on 8

items); self-regulation - 0.886 (based on 8 items); hyperactivity - 0.917 (based on 10 items) and anti-social behaviour - 0.770 (based on 5 items).

Table 2.1: Reliability analyses of the Year 11 items that create the social-behavioural constructs and internal consistency measures

N=2401	Mean	Variance	Standard Deviation (SD)	Number of items	Cronbach's alpha
Self-regulation	17.8	16.9	4.1	8	0.886
Pro-social behaviour	18.6	16.4	4.1	8	0.886
Hyperactivity	14.8	23.7	4.9	10	0.917
Anti-social behaviour	5.7	2.3	1.5	8	0.770

Exploratory and Confirmatory factor analysis were the methods of data reduction used to derive the underlying latent constructs. A factor analysis using principal components with varimax rotation (orthogonal rotations) identified several underlying dimensions of the Pupil Profile in Year 11. Factor analyses utilises the correlation matrix of the items used and so requires a large sample size, with a minimum of 10 observations per item/variable used. The EPPSE sample size was more than adequate to run the factor analyses satisfactorily[4]. The analyses confirmed the underlying dimensions of the social-behavioural constructs used in previous phases of the EPPSE research (Sammons et al. 2011d). All of the items within each construct were scored so that a high score represents high scores for the four factors: self-regulation, pro-social behaviour, hyperactivity, and anti-social behaviour. The Exploratory Factor Analyses (Principal Component Extraction) yielded four factors explaining over half (59.7%) of the variance amongst the social-behavioural items.

The analyses indicated that the underlying dimensions largely reflected findings from analyses at previous time points with only one small exception for anti-social behaviour. The item 'often argues with other children or bullies them' had a slightly stronger loading on hyperactivity (0.495) than on the anti-social behaviour factor (0.443). Given the loadings are quite similar, the original anti-social behaviour construct (further tested via confirmatory factor analyses) was retained, enabling comparisons to be made over time and factors.

4 The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.934; this statistic is a measure which varies between 0 and 1 (values above 0.6 and closer to 1 indicate sampling adequacy).

Table 2.2: Factor loadings from the Year 11 principal components analyses

Social-behavioural items	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social behaviour
Likes to work things out for self; seeks help rarely	0.56		-0.33	
Does not need much help with tasks	0.63		-0.37	
Persists in the face of difficult tasks	0.61	0.35	-0.43	
Can move on to a new activity after finishing a task	0.62	0.33	-0.37	
Is open and direct about what she/he wants	0.71			
Is confident with others	0.75			
Shows leadership in group work	0.72	0.32		
Can take responsibility for a task	0.67	0.34		
Restless, overactive, cannot stay still for long			0.74	
Constantly fidgeting or squirming			0.65	
Is easily distracted, concentration wanders	-0.31		0.70	
Thinks things out before acting*	-0.39*	-0.45*	0.47*	
Sees tasks through to the end, good attention span*	-0.54*	-0.33*	0.57*	
Quickly loses interest in what she/he is doing	-0.36		0.62	
Gets over excited			0.71	
Is easily frustrated			0.64	
Fails to pay attention	-0.31		0.67	
Makes careless mistakes	-0.38		0.61	
Considerate of other people's feelings		0.66	-0.37	
Shares readily with other children		0.67		
Helpful if someone is hurt, upset or feeling ill		0.79		
Kind to younger children		0.73		
Often volunteers to help others	0.40	0.66		
Offers to help others having difficulties with a task	0.56	0.58		
Is sympathetic to others if they are upset	0.33	0.73		
Apologises spontaneously		0.46		
Often argues with other children or bullies him		-0.30	0.49	0.43
Often lies or cheats			0.34	0.64
Steals from home, school or elsewhere				0.80
Shows inappropriate sexual behaviour toward others				0.52
Has been in trouble with the law				0.72

*Items reversed

All factor loadings below 0.3 are omitted from the table

These analyses were followed by confirmatory factor analyses as shown in

Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings . The confirmatory factor analyses estimated means and intercepts in order to provide a full maximum likelihood estimation.

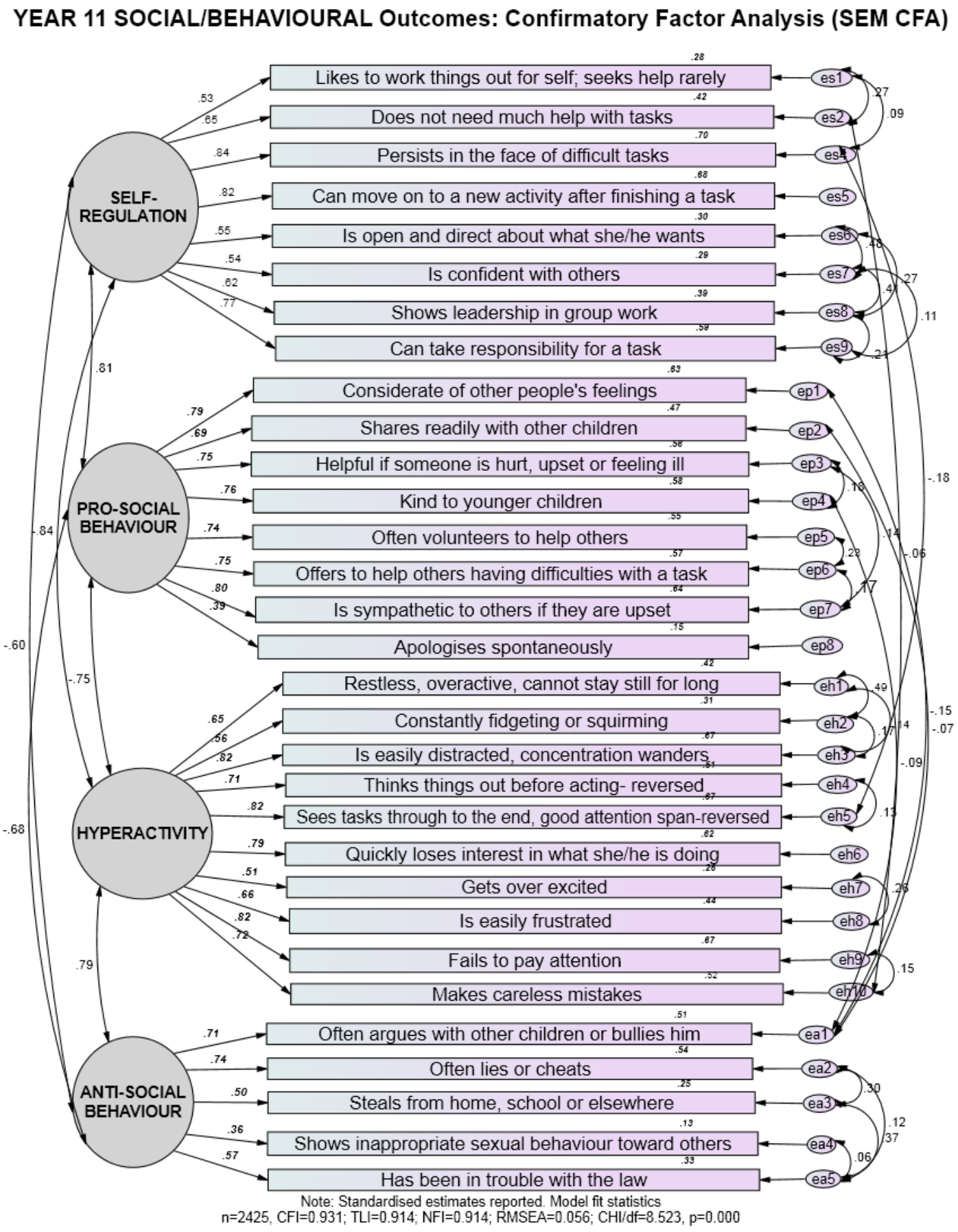
Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings shows a path diagram with standardized solutions in a four factor model. Self-regulation, pro-social behaviour, hyperactivity and anti-social behaviour represent the four latent constructs (as depicted in the oval boxes). The observed items for each of the social-behavioural latent constructs are shown in the rectangle boxes. The standardised estimates are also shown.

Taking self-regulation as an example, the item ‘persists in the face of difficult tasks’ (regression weight of 0.84 see Fig. 2.1) and the item ‘can move on to a new activity after finishing a task’ (regression weight of 0.82 see Fig. 2.1) are the strongest predictors of the latent constructs of self-regulation as they have the highest factor loadings.

Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings also illustrates the relationships between latent constructs as well as between the observed items. The regression weights indicated that there were strong relationships between all of the latent constructs; for example the correlation was 0.81 between self-regulation and pro-social behaviour (the two positive behaviours). The relationship between self-regulation and hyperactivity was strong but negative (-0.84), indicating that those who are rated by their teachers as more self-regulated are much less likely to be rated highly for hyperactivity.

The RMSEA (root mean square error of approximation) index evaluates the extent to which a model fails to fit the data per degree of freedom. This model had a RMSEA less than 0.1 indicating a good model fit.

Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings



Note: Standardised estimates reported. Model fit statistics
n=2425, CFI=0.931; TLI=0.914; NFI=0.914; RMSEA=0.056; CHI/df=8.523, p=0.000

Section 2.3: Variation between students in their social-behavioural outcomes

Section 2.3.1: General patterns

Figure 2.2 to Figure 2.5 examine the distributional properties of the four Year 11 social-behavioural constructs.

Table 2.3: Descriptive statistics of social-behavioural constructs (unstandardised)

	N	Unweighted		Skewness		Kurtosis	
		Mean	SD	Value	SE	Value	SE
Self-regulation	2414	2.2	0.5	-0.3	0.1	-0.8	0.1
Pro-social behaviour	2419	2.3	0.5	-0.6	0.1	-0.5	0.1
Hyperactivity	2421	1.5	0.5	0.9	0.1	-0.2	0.1
Anti-social behaviour	2412	1.1	0.3	2.6	0.1	7.1	0.1

7Table 2.3 shows the mean and standard deviation (SD) for the unstandardised factor scores and 8Table 2.4 shows the mean and SD for the standardised results. The distribution for each factor is shown in the following figures. In Figure 2.2 to Figure 2.5 it can be seen there is a is a high degree of skew in the distribution for the factors hyperactivity and anti-social behaviour (see Figure 2.4: Distribution of Year 11 standardised scores for hyperactivity

The scores for self-regulation and pro-social behaviour show less skewed distributions (see Figure 2.2 and 2.3). These findings indicate that teachers rated most EPPSE students favourably in term of the four social-behavioural factors. Only a small minority of students were rated unfavourably for hyperactivity or anti-social behaviour.

Table 2.4: Descriptive statistics of social-behavioural constructs (standardised)

	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Value	SE	Value	SE
Self-regulation	2414	60.7	120.5	100.0	15.0	-0.4	0.1	-0.7	0.1
Pro-social behaviour	2419	55.7	118.6	100.0	15.0	-0.7	0.1	-0.4	0.1
Hyperactivity	2421	83.6	144.9	100.0	15.0	0.9	0.1	-0.0	0.1
Anti-social behaviour	2412	86.8	170.7	99.9	14.9	2.0	0.1	4.1	0.1

Figure 2.2: Distribution of Year 11 standardised scores for self-regulation

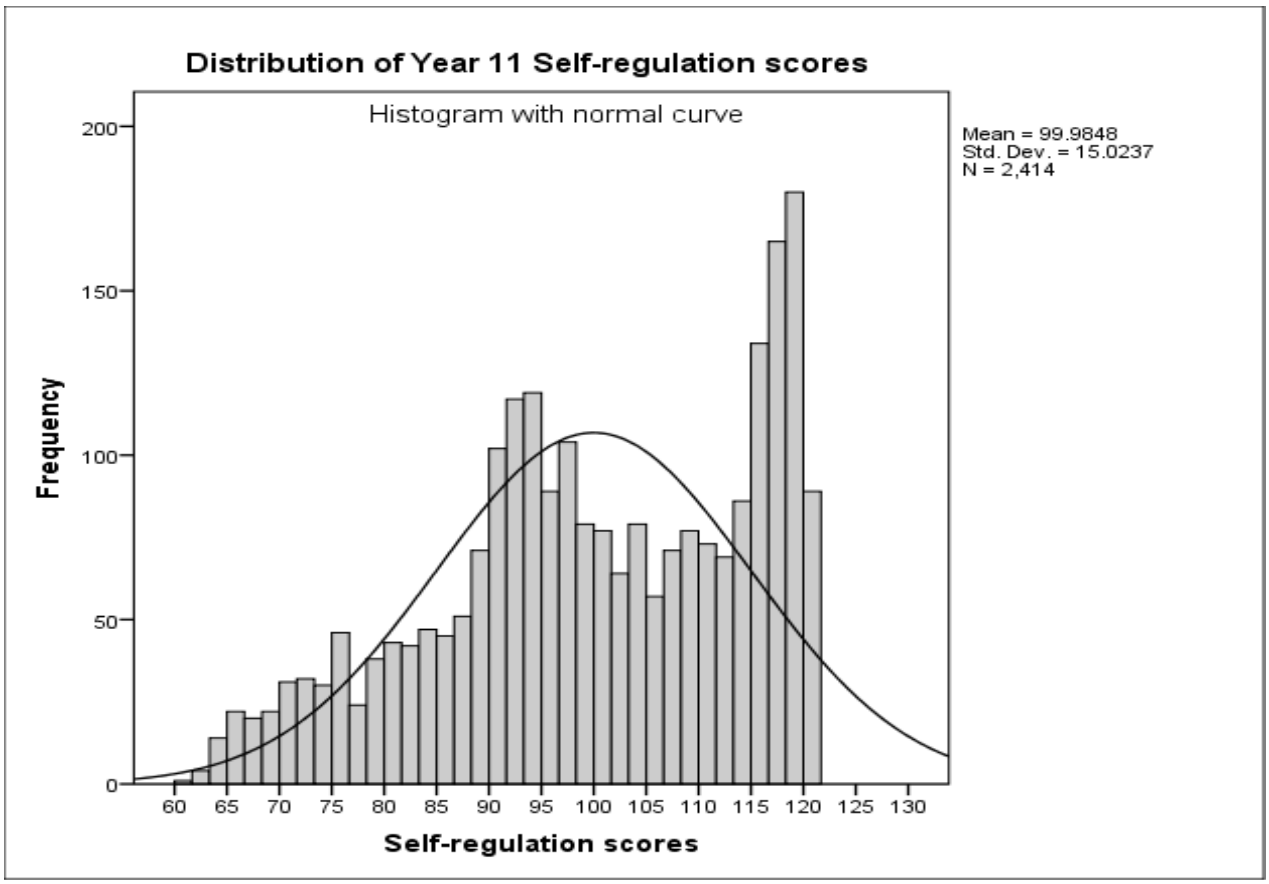


Figure 2.3: Distribution of Year 11 standardised scores for pro-social behaviour

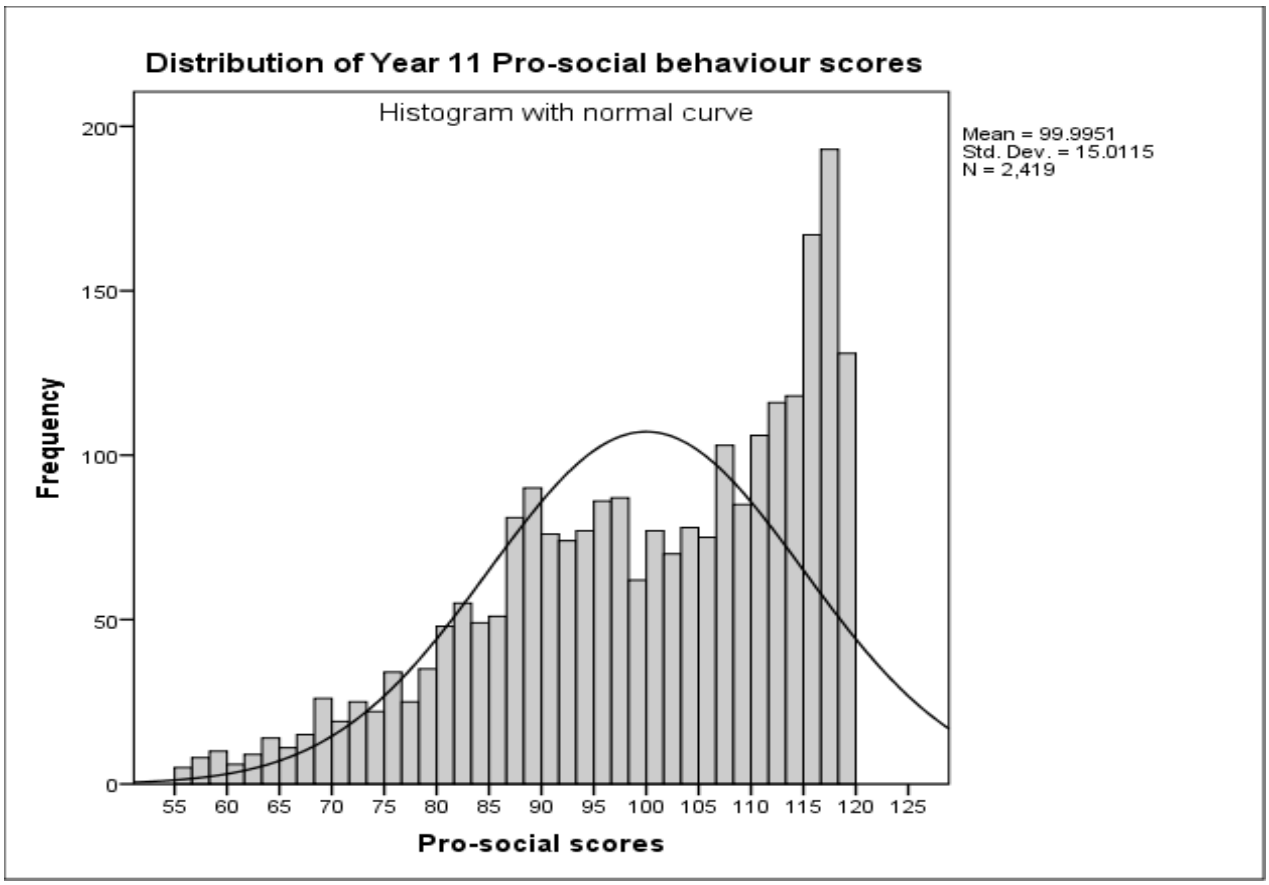


Figure 2.4: Distribution of Year 11 standardised scores for hyperactivity

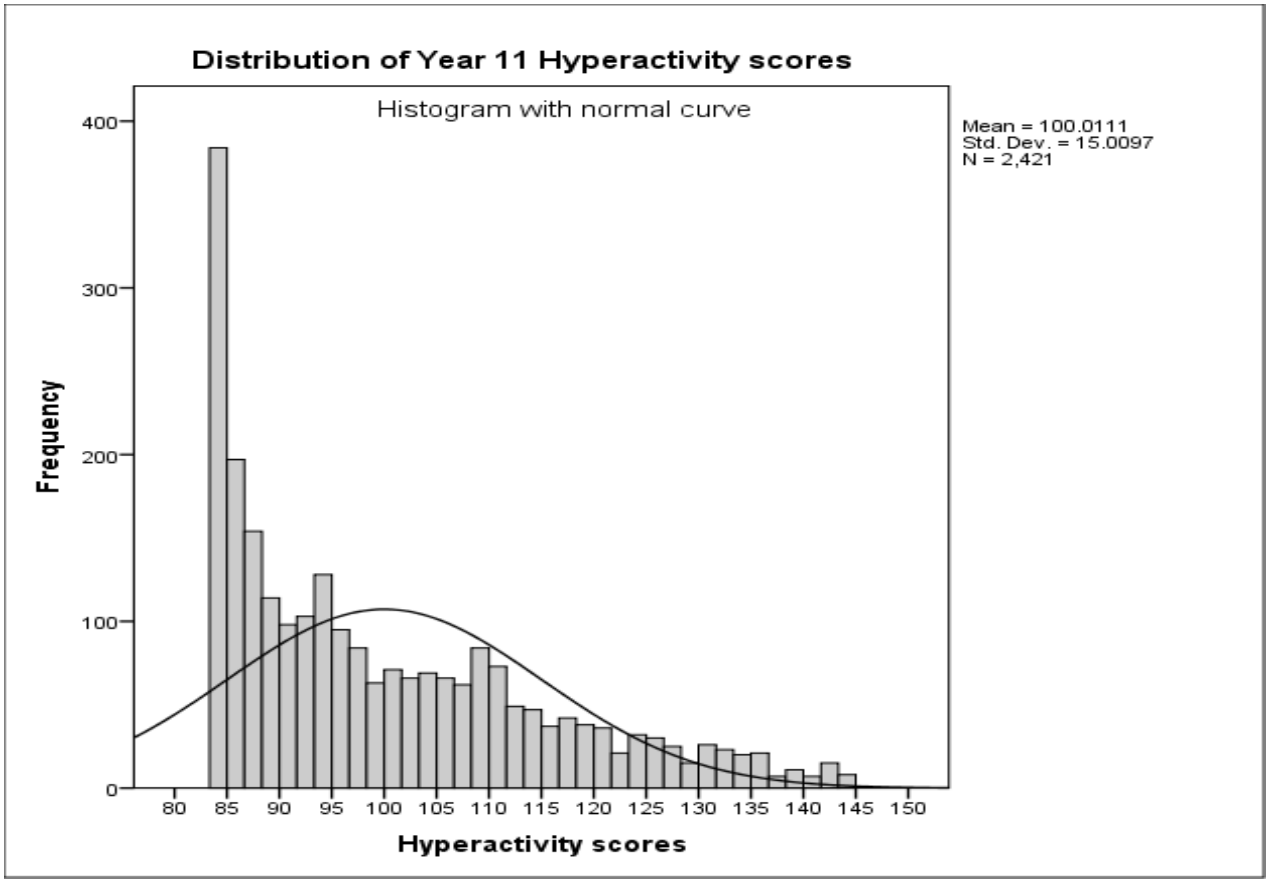
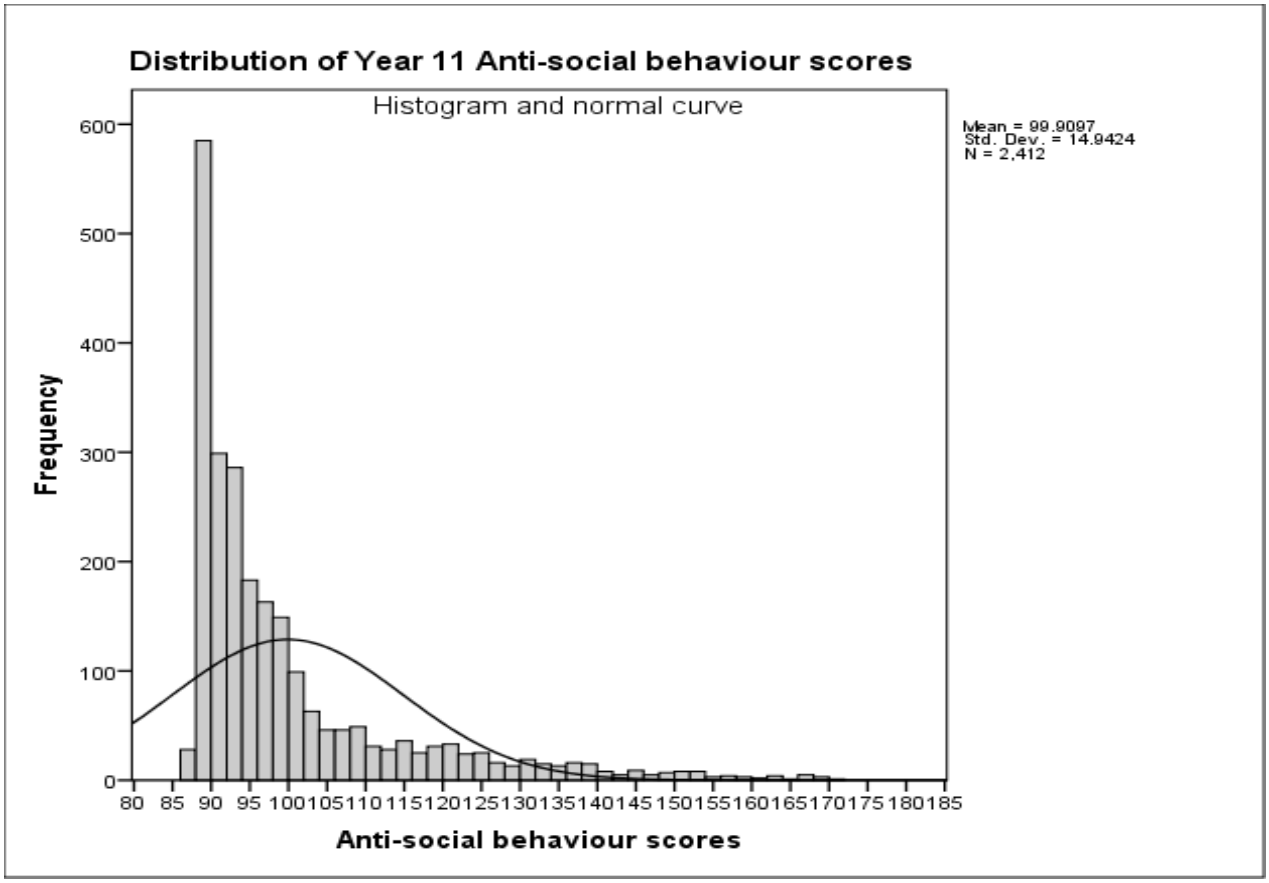


Figure 2.5: Distribution of Year 11 standardised scores for anti-social behaviour



Pearson's product moment correlations were used to explore the strengths of the relationships between student's scores on the different social-behavioural measures in Year 11 (see 9Table 2.5). The highest association was a negative association between self-regulation and hyperactivity (r=-0.89), indicating that students who were rated by their teachers as more hyperactive were also much more likely to be rated by their teachers as having lower self-regulation in Year 11. Similarly a strong negative correlation was found between pro-social behaviour and hyperactivity (r=-0.80). Self-regulation and pro-social behaviour had a high positive association (r=0.87). These correlations indicate that students who are rated by their teachers as having higher levels of pro-social behaviour were also rated as less hyperactive and as having higher levels of self-regulation.

As might be expected, anti-social behaviour was most strongly correlated with hyperactivity (r=0.87), indicating that students who were rated as exhibiting anti-social behaviour were also more likely to be rated as highly hyperactive. Anti-social behaviour was also negatively correlated with pro-social behaviour and self-regulation, indicating that students rated as exhibiting anti-social behaviour were also more likely be rated as having reduced levels of self-regulation and pro-social behaviour. For item level correlations within each of the constructs see Appendix 2.

Table 2.5: Correlations between student's scores on the social-behavioural constructs in Year 11 (age 16)

	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social behaviour
Self-regulation	1			
Pro-social behaviour	0.87** N=2412	1		
Hyperactivity	-0.89** N=2414	-0.80** N=2419	1	
Anti-social behaviour	-0.71** N=2403	-0.76** N=2408	0.87** N=2409	1

**. Correlation is significant at the 0.01 level (2-tailed).

Section 2.3.2: Student characteristics: exploring differences in responses within social-behavioural items by student background characteristics

Section 2.3.2.1: Self-regulation

10Table 2.6 demonstrates how groups of students with different backgrounds characteristics differed on teacher rated self-regulation scores. The results show that there were marked differences in the mean scores for some groups. For example, girls and students who were not eligible for free school meals (FSM) had higher scores for self-regulation. Students whose parents had a degree (or equivalent) or higher degree, or where more highly qualified, were also rated more favourably, as were those who experienced a more favourable early years home learning environment (HLE). Special Educational Needs (SEN) status also showed marked differences in teacher's ratings for different student groups on the self-regulation measure.

Table 2.6: Teacher reported student self-regulation by student background characteristics

Characteristic	Categories	N	Mean	SD	Sig.
Gender	Male	1238	96.7	15.4	***
	Female	1176	103.4	13.8	
FSM at Year 11	Not known	58	99.4	16.6	***
	No	1933	101.5	14.5	
	Yes	423	93.2	15.4	
SEN status at Year 11	Missing	52	96.8	17.0	***
	No special provision	69	103.1	14.0	
	School action	266	91.4	13.8	
	School action plus	147	84.4	13.4	
	Statement of SEN	75	86.7	13.4	
Parent's Highest Qualification Level at age 3/5	Missing	66	95.8	14.2	***
	No qualifications	360	93.8	14.7	
	Vocational	268	96.1	14.9	
	16 academic	906	99.3	15.2	
	18 academic	250	101.4	14.0	
	Degree or equivalent	366	106.4	12.8	
	Higher degree	161	108.5	11.8	
	Other professional/ Miscellaneous	37	101.9	14.5	
Early years HLE index grouped	Missing	100	95.5	14.9	***
	0-13 (Lowest)	219	94.8	14.6	
	14-19	523	97.2	14.7	
	20-24	538	99.2	15.2	
	25-32	751	102.2	14.8	
	33-45 (Highest)	283	106.4	13.2	

*** Statistically significant at p<0.001, missing category excluded

Cross-tabulations of individual items against various student background characteristics (gender, parents' highest qualifications level etc.) were studied to provide a more detailed picture of the variation in social behaviours (see 11Table 2.7 for selected items).

Table 2.7: Teacher reported student self-regulation (at item level) by student background

	Not true		Somewhat true		Certainly true		Total	
Likes to work things out for self; seeks help rarely	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	282	22.9	678	55.1	270	22.6	1230	100
Female	215	18.4	624	53.3	331	28.3	1170	100
Does not need much help with tasks	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	312	25.4	587	47.7	331	26.9	1230	100
Female	219	18.7	539	46.1	414	35.2	1170	100
Likes to work things out for self; seeks help rarely	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	103	28.8	201	56.1	54	15.1	358	100
Vocational	76	28.6	142	53.4	48	18.0	266	100
16 academic	199	22.1	481	53.5	219	24.4	899	100
18 academic	38	15.3	143	57.4	68	27.3	249	100
Other professional/Miscellaneous	2	5.4	20	54.1	15	40.5	37	100
Degree or equivalent or Higher degree	61	116	276	52.6	188	35.8	525	100
Does not need much help with tasks	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	117	32.6	182	50.7	60	16.7	359	100
Vocational	70	26.2	133	49.8	64	24.0	267	100
16 academic	222	24.8	406	45.3	268	29.9	896	100
18 academic	43	17.3	115	46.2	91	36.5	249	100
Other professional/Miscellaneous	5	13.5	19	51.4	13	35.1	37	100
Degree or equivalent or Higher degree	57	10.8	234	44.5	235	44.7	526	100
Shows leadership in group work	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	168	40.1	165	39.4	86	20.5	419	100
No	482	25.1	868	45.2	572	29.8	1922	100
Can take responsibility for a task	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	73	17.3	219	52.0	129	30.6	421	100
No	159	8.3	792	41.1	976	50.6	1927	100
Likes to work things out for self; seeks help rarely	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Early years HLE								
0-13 (Lowest)	63	29.2	109	50.5	44	20.4	216	100
14-19	126	24.1	291	55.7	105	20.1	522	100
20-24	106	19.8	313	58.4	117	21.8	536	100
25-32	143	19.2	390	52.3	213	28.6	746	100
33-45 (Highest)	33	11.7	140	49.8	108	38.4	281	100

Boys tended to have lower levels of overall self-regulation than girls. For example boys tended to be rated less favourably than girls for the item 'Likes to work things out for self' (22.6% versus 28.2%[5]). Likewise, boys were somewhat less likely than girls to be rated as 'Not needing much help with tasks' (26.9% versus 35.2%).

Students whose parents had no qualifications (at age 3/5) were rated as having lower levels of self-regulation in Year 11 than students whose parents had qualifications. For example, they were rated less favourably for the statement 'Likes to work things out for self' compared to students whose parents had a degree or a higher degree (15.1% versus 35.8%). Similarly those students whose parents had no qualifications (at age 3/5) were less likely to be positively rated in Year 11 for the statement 'Does not need much help with tasks' compared to those whose parents had a degree or higher degree (16.7% versus 44.7%).

Students' from poorer families (indicated by free school meal [FSM] eligibility) were less likely to 'Take responsibility for a task', compared to students who were not in receipt of FSM (30.6% versus 50.6%). Similarly FSM students were rated less favourably on the item 'Shows leadership in group work' compared to those students not in receipt of FSM (20.5% versus 29.8%).

Students who were from low early years HLE backgrounds had lower levels of self-regulation in Year 11 than students who had experienced a more favourable early years HLE. Students from high early years HLE backgrounds were rated more favourably in terms of 'Likes to work out things for self' compared to those from lower early years HLE backgrounds (Highest - 38.4% versus Lowest - 20.4%).

Section 2.3.2.2: Pro-social behaviour

12Table 2.8 demonstrates how students from different groups differed in terms of teacher rated pro-social behaviour scores.

The item level analyses in 13Table 2.9 indicated that boys had lower levels of pro-social behavior than girls.

Students whose parents had no qualifications (at age 3/5) were rated as having lower levels of pro-social behaviour in Year 11 than students whose parents had academic qualifications. Students whose parents had no qualifications (at age 3/5) were rated as less likely to help others if they were hurt, upset or feeling ill (47.2%), compared to students whose parents had a degree or higher degree (63.5%) who were rated most favourably.

Students in family poverty (receiving FSM) were rated as less likely to share readily with others (41.9%) compared to students who were not in receipt of FSM (56.6%).

[5] The differences shown between student groups is for the percentage rated as 'certainly true' by teachers.

Students who were from low early years HLE backgrounds showed lower levels of pro-social behaviour in Year 11 than students who had experienced a more favourable early years HLE. Students from high HLE backgrounds were more likely to be sympathetic to others if they were upset compared to those from lower early years HLE backgrounds (64.5% - High HLE versus 36.2% - Low HLE).

Students with SEN were rated lower on pro-social behaviour than students without SEN. Students with SEN were scored as less likely to be rated highly in terms of the Item 'Considerate of other people's feelings' compared to students with no SEN. Students who had a statement of SEN were the group with the lowest rating on this item (26.2%) compared to those with no SEN (56.4%), those on school action plus (33.0%) and those on school action (44.2%) of the SEN code of practice.

Table 2.8: Teacher reported student pro-social behaviour by student background characteristics

Characteristic	Categories	N	Mean	SD	Sig
Gender	Male	1241	95.9	15.5	***
	Female	1178	104.3	13.1	
FSM at Year 11	Not known	58	100.3	16.2	***
	No	1937	101.3	16.2	
	Yes	424	94.6	16.1	
SEN status at Year 11	Missing	51	96.3	16.5	***
	No special provision	1874	102.6	13.6	
	School action	266	93.9	15.6	
	School action plus	144	84.9	15.4	
	Statement of SEN	80	88.9	15.1	
Parent's Highest Qualification Level at age 3/5	Missing	66	97.2	15.6	***
	No qualifications	361	95.2	15.4	
	Vocational	269	95.8	15.8	
	16 academic	906	99.9	15.0	
	18 academic	251	100.6	14.8	
	Degree or equivalent	366	105.5	14.4	
	Higher degree	161	106.6	11.6	
	Other professional/Miscellaneous	37	97.6	15.5	
Early years HLE index grouped	Missing	100	96.7	15.8	***
	0-13 (Lowest)	218	95.5	14.5	
	14-19	525	97.6	14.9	
	20-24	538	98.8	15.6	
	25-32	754	102.4	14.4	
	33-45 (Highest)	283	104.9	13.4	

*** Statistically significant at p<0.001, missing category excluded

Table 2.9: Teacher reported student pro-social behaviour (at item level) by student background

	Not true		Somewhat true		Certainly true		Total	
Considerate of other people's feelings	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	81	6.5	536	43.3	621	50.2	1238	100
Female	33	2.8	297	25.2	848	72.0	1175	100
Shares readily with other children	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	156	12.7	527	43.1	541	44.2	1224	100
Female	56	4.8	371	31.8	740	63.4	1167	100
Helpful if someone is hurt, upset or feeling	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	38	10.7	150	42.1	168	47.2	356	100
Vocational	25	9.4	129	48.3	113	42.3	267	100
16 academic	63	7.0	351	38.9	489	54.2	903	100
18 academic	19	7.6	95	38.0	136	54.4	250	100
Other professional/Miscellaneous	4	10.8	14	37.8	19	51.4	37	100
Degree or equivalent or Higher degree	18	3.4	173	33.1	332	63.5	523	100
Is sympathetic to others if they are upset	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	41	11.5	173	48.3	144	40.2	358	100
Vocational	34	12.7	132	49.4	101	37.8	267	100
16 academic	63	7.0	385	42.8	451	50.2	899	100
18 academic	18	7.2	101	40.2	132	52.6	251	100
Other professional/Miscellaneous	5	13.5	18	48.6	14	37.8	37	100
Degree or equivalent or Higher degree	21	4.0	164	31.5	336	64.5	521	100
Shares readily with other children	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	66	15.9	170	40.9	180	41.9	416	100
No	139	7.2	712	37.1	1067	56.6	1918	100
Is sympathetic to others if they are upset	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	52	6.9	189	45.0	179	41.3	420	100
No	132	12.4	790	41.1	999	53.8	1921	100
Is sympathetic to others if they are upset	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Early years HLE								
0-13 (Lowest)	20	9.2	119	54.6	79	36.2	218	100
14-19	47	9.0	252	48.5	221	42.5	520	100
20-24	46	8.7	236	44.4	249	46.9	531	100
25-32	47	6.3	271	36.2	430	57.5	748	100
33-45 (Highest)	18	6.4	82	29.1	182	64.5	282	100
Considerate of other people's feelings	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
SEN status at Year 11								
No special provision	97	5.2	714	38.3	1051	56.4	1862	100
School action	33	12.5	144	54.5	87	44.2	264	100
School action plus	36	25.4	77	54.2	29	33.0	142	100
Statement of SEN	18	22.5	41	51.2	21	26.2	80	100

Section 2.3.2.3: Hyperactivity

Table 2.10 shows how groups of students from different backgrounds differed in terms of their overall teacher rated hyperactivity scores. 15Table 2.11 below gives further details for selected items.

Table 2.10: Teacher reported student hyperactivity in Year 11 by student background characteristics

Characteristic	Categories	N	Mean	SD	Sig
Gender	Male	1242	103.4	16.0	***
	Female	1179	96.5	13.0	
FSM at Year 11	Not known	58	103.0	17.0	***
	No	1939	98.3	14.0	
	Yes	424	107.3	16.8	
SEN status at Year 11	Missing	52	104.2	17.7	***
	No special provision	1875	98.7	12.8	
	School action	266	108.5	15.2	
	School action plus	148	117.9	16.6	
	Statement of SEN	80	112.6	14.9	
Parent's Highest Qualification Level at age 3/5	Missing	66	105.1	15.5	***
	No qualifications	361	105.8	16.0	
	Vocational	269	104.2	16.0	
	16 academic	908	100.2	15.0	
	18 academic	251	98.5	14.0	
	Degree or equivalent	367	94.4	11.9	
	Higher degree	162	92.6	10.8	
	Other professional/Miscellaneous	37	99.0	14.3	
Early years HLE index grouped	Missing	100	104.6	15.7	***
	0-13 (Lowest)	219	104.4	15.1	
	14-19	525	102.7	15.5	
	20-24	539	100.8	15.7	
	25-32	754	98.0	14.0	
	33-45 (Highest)	284	94.7	12.1	

*** Statistically significant at p<0.001, missing category excluded

Teachers' ratings of hyperactivity items indicated that in Year 11, on average, boys were more hyperactive than girls.

Students' whose parents had no qualifications (at age 3/5) were rated as having higher levels of hyperactivity in Year 11 than students whose parents had some qualifications. Students whose parents had no qualifications (at age 3/5) were rated as more likely to be 'easily distracted/concentration wonders' compared to students whose parents had a degree or a higher degree (20.3% versus 6.7%). They were also rated as more likely to 'Quickly lose interest in what s/he is doing' compared to those students whose parents had a degree or higher degree (13.3% versus 3.6%).

Table 2.11: Teacher reported student hyperactivity in Year 11 (at item level) by student background characteristics

	Not true		Somewhat true		Certainly true		Total	
Constantly fidgeting or squirming	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	954	77.5	208	16.9	69	5.6	1231	100
Female	1075	90.8	81	6.8	28	2.4	1184	100
Is easily distracted, concentration wanders	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	146	40.6	141	39.2	73	20.3	360	100
Vocational	127	47.2	93	34.6	49	18.2	269	100
16 academic	512	56.6	293	32.4	99	11.0	904	100
18 academic	152	60.6	73	29.1	26	10.4	251	100
Other professional/Miscellaneous	24	64.9	9	24.3	4	10.8	37	100
Degree or equivalent or Higher degree	376	71.9	112	21.4	35	6.7	523	100
Quickly loses interest in what s/he is doing	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	181	50.1	132	36.6	48	13.3	361	100
Vocational	153	56.9	84	31.2	32	11.9	269	100
16 academic	572	63.6	244	27.1	84	9.3	900	100
18 academic	168	67.5	69	27.7	12	4.8	249	100
Other professional/Miscellaneous	24	64.9	7	18.9	6	16.2	37	100
Degree or equivalent or Higher degree	426	81.0	81	15.4	19	3.6	526	100
Fails to pay attention	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	210	49.9	143	34.0	68	16.2	421	100
No	1283	66.5	504	26.1	141	7.3	1928	100
Quickly loses interest in what s/he is doing	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Early years HLE								
0-13 (Lowest)	121	55.5	72	33.0	25	11.5	218	100
14-19	297	56.8	172	32.9	54	10.3	523	100
20-24	331	62.0	147	27.5	56	10.5	534	100
25-32	525	70.0	172	22.9	53	7.1	750	100
33-45 (Highest)	229	80.9	45	15.9	9	3.2	283	100
Gets over excited	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
SEN status at Year 11								
No special provision	1501	80.2	293	15.7	77	4.1	1871	100
School action	188	70.9	58	21.9	19	7.2	265	100
School action plus	74	51.4	43	29.9	27	18.8	144	100
Statement of SEN	51	63.8	17	21.2	12	15.0	80	100

Family poverty was also linked to hyperactivity. Students' from poorer families (in receipt of FSM) were rated as more likely to 'Fail to pay attention' compared to those not in receipt of FSM (16.2% versus 7.3%).

The hyperactivity items indicated that students who had experienced a low early years HLE showed higher levels of hyperactivity than students who experienced a better early years HLE. Students from low early years HLE backgrounds were rated as more likely to quickly lose interest in what s/he is doing compared to those from high early years HLE backgrounds (Low 11.5% versus High 3.2%).

Students with SEN were rated with higher levels of hyperactivity than students without SEN. Students with SEN status were more likely to get over excited compared to students with no SEN. Students who were on the school action plus stage of the SEN register were the group most likely to be rated as showing hyperactivity (18.8%), followed closely by those with a 'statement of SEN' (15.0%). This compares to relatively low levels for students with no SEN (4.1%), and those on the school action stage of the register (7.2%).

Section 2.3.2.4: Anti-social behaviour

16Table 2.12 demonstrates how students from different backgrounds differed between one another in their overall teacher rated anti-social behaviour scores. 17Table 2.13 below gives further details for selected construct items.

Table 2.12: Teacher reported student anti-social behaviour in Year 11 by student background characteristics

Characteristic	Categories	N	Mean	SD	Sig
Gender	Male	1236	102.8	16.8	***
	Female	1176	96.8	12.0	
FSM at Year 11	Not known	57	101.6	16.9	***
	No	1932	98.3	13.4	
	Yes	423	107.0	18.9	
SEN status at Year 11	Missing	50	103.9	19.4	***
	No special provision	1871	96.9	11.7	
	School action	266	106.4	17.1	
	School action plus	145	118.5	21.8	
	Statement of SEN	80	117.7	19.5	
Parent's Highest Qualification Level at age 3/5	Missing	66	104.2	17.3	***
	No qualifications	358	104.8	17.1	
	Vocational	267	103.8	17.4	
	16 academic	902	99.6	14.9	
	18 academic	252	99.3	14.5	
	Degree or equivalent	367	95.2	10.2	
	Higher degree	163	93.9	7.7	
	Other professional/Miscellaneous	37	101.4	14.4	
Early years HLE index grouped	Missing	100	104.1	17.2	***
	0-13 (Lowest)	218	102.4	15.0	
	14-19	524	102.1	16.1	
	20-24	536	101.2	16.5	
	25-32	749	98.1	13.5	
	33-45 (Highest)	285	95.1	9.9	

*** Statistically significant at p<0.001, missing category excluded

Overall levels of anti-social behaviour were low. Most students were rated favourably by their teachers however, some group differences were found.

Boys were rated as showing higher anti-social behavior than girls. For example, girls were less likely than boys to be rated as having been in trouble with the law (see 17Table 2.13; 6.1% - boys versus 1.8% - girls).

Students whose parents had no qualifications (at age 3/5) were rated as having higher levels of anti-social behaviour in Year 11 than students whose parents had some qualifications. For example, students whose parents had no qualifications were more likely to have been identified as having been in trouble with the law (7.6%), compared to students whose parents had a degree or higher degree (only 1%). Similarly those students whose parents had no qualifications were more likely to have been rated as often arguing or bullying others (6.9%), compared to those students whose parents had a degree or higher degree (0.9%).

Poverty was also associated with higher levels of anti-social behavior. Students' from poorer families (in receipt of FSM) were more likely to have been in trouble with the law (9.8%) compared to students who were not in receipt of FSM (2.8%). Similarly students from poorer families were more likely to have been rated as showing inappropriate sexual behavior towards others (3.1%) compared to those not in receipt of FSM (1.6%).

Students with SEN were rated higher on levels of anti-social behavior than students without SEN. Students who were on the school action plus stage of the SEN register were the group most likely to be rated as having been in trouble with the law (24.2%) , followed by those with a 'statement of SEN' (10.4%). This compares to low levels for students with no SEN (1.9%), and those on the school action stage of the register (6.0%).

Table 2.13: Teacher reported student anti-social behaviour in Year 11 (at item level) by student background characteristics

	Not true		Somewhat true		Certainly true		Total	
Has been in trouble with the law	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	1052	87.7	75	6.2	73	6.1	1200	100
Female	1106	95.9	26	2.3	21	1.8	1153	100
Often lies or cheats	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Male	1012	81.7	152	12.3	75	6.1	1239	100
Female	1054	89.8	99	8.4	21	1.8	1174	100
Has been in trouble with the law	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	296	86.8	19	5.6	26	7.6	341	100
Vocational	224	86.5	17	6.6	18	6.9	259	100
16 academic	804	91.8	41	4.7	31	3.5	876	100
18 academic	235	93.3	12	4.8	5	2.0	252	100
Other professional/Miscellaneous	35	94.6	0	0.0	2	5.4	37	100
Degree or equivalent or Higher degree	511	97.3	9	1.7	5	1.0	525	100
Often argues with other children or bullies them	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Parent's Highest Qualification Level at age 3/5								
No qualifications	273	75.8	62	17.2	25	6.9	360	100
Vocational	206	76.9	45	16.8	17	6.3	268	100
16 academic	773	85.3	90	9.9	43	4.7	906	100
18 academic	213	84.5	24	9.5	15	6.0	252	100
Other professional/Miscellaneous	28	77.8	6	16.7	2	5.6	36	100
Degree or equivalent or Higher degree	493	93.0	32	6.0	5	0.9	530	100
Has been in trouble with the law	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	336	84.0	25	6.2	39	9.8	400	100
No	1774	93.5	70	3.7	53	2.8	1239	100
Shows inappropriate sexual behaviour toward others	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
FSM eligibility at Year 11								
Yes	1849	95.8	35	8.3	13	3.1	423	100
No	375	88.7	50	2.6	31	1.6	1930	100
Has been in trouble with the law	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
SEN status at Year 11								
No special provision	1756	95.2	54	6.3	35	1.9	1845	100
School action	219	87.3	17	6.8	15	6.0	251	100
School action plus	80	60.2	20	15.2	32	24.2	132	100
Statement of SEN	62	80.5	7	9.1	8	10.4	77	100

Section 3: The influence of background characteristics on students' development in Key Stage 4 (Year 11)

Key findings

This section reports the combined influence of background influences, such as individual, family, home learning environment (HLE) and neighbourhood influences:

- When tested in combination with other influences, girls had better social-behavioural profiles than boys for all four measures.
- Younger students in the year group (summer born) were rated as having lower levels of self-regulation and pro-social behaviour, and higher levels of hyperactivity than older students (autumn born), although the effects were weak.
- The occurrence of multiple behavioural problems in early childhood was also a significant predictor of students' later self-regulation, pro-social behaviour and hyperactivity at age 16.
- Lower family SES and lower levels of parental qualifications were generally moderate predictors of poorer social-behavioural outcomes. Eligibility for Free School Meals (FSM) was also a moderate predictor of poorer social-behaviour for all four measures.
- Students from single parent families (at entry to the study) showed poorer social-behavioural outcomes across all four measures, although the effect was generally small. Students from families where parents lived together but were not married also showed poorer social-behavioural outcomes than student in married families.
- As was found in KS3, (although the size of the effect was smaller), more enriched early years HLE continued to predict better self-regulation and pro-social behaviour and lower levels of hyperactivity (high versus low HLE). In addition, home learning measures related to levels of academic enrichment students engaged in during KS3 were found to positively predict better social-behavioural outcomes.
- Being on the SEN register was a powerful predictor of poorer social-behavioural outcomes. This was particularly marked for students on the later stages of the register (school action plus, statement of SEN).
- Students growing up in less deprived neighbourhoods, in terms of the proportion of children in a neighbourhood classified as 'income deprived' (IDACI) showed more favourable social-behaviours for some outcomes (self-regulation; pro-social behaviour and hyperactivity). Weak, but significant effects were found for one measure of ethnic homogeneity. Students from neighbourhoods with higher proportions of White British residents showed lower levels of pro-social behaviour, and elevated levels of hyperactivity and anti-social behaviour.

In this section, the influence of background characteristics as predictors of the four Year 11 social-behavioural outcomes is investigated. Section 2 explored the variation in social-behavioural outcomes using bivariate and univariate analyses. Sections 3 and 4 present the findings from contextualised multilevel statistical models.

In line with earlier phases of the research the influence of individual students' characteristics as predictors of students' social-behavioural outcomes were tested first (e.g., gender, ethnicity, birth weight, early child health / developmental / behavioural problems, special educational needs, and age as measured by term of birth).

Next the influences of a range of family characteristics were tested (whilst controlling for the influences of individual characteristics). The family measures were: family size (number of siblings at age 3/5), highest socio-economic status (at KS2), free school meal (FSM) status, parents' highest qualifications level (at age 3/5)**,** marital status (at age 3/5), family earned income (at KS1) and the early years home learning environment (HLE) and KS3 HLE.

The HLE measures were included after having established the effect of other family characteristics and the early years HLE was found to have a significant influence on some of the social behaviours measured. The KS2 HLE measures were also tested, in a reduced model as there were a substantial number of students' for whom KS2 HLE data was not available. However, none of the KS2 HLE measures had any significant independent influence and therefore they were not included in the model or discussed in the findings. The KS3 HLE measures were tested and the results are reported below (see Appendix 6 for details of KS3 HLE factors).

Previous EPPSE findings have indicated that for some of the social-behavioural outcomes certain neighbourhood measures of disadvantage and school context (measured by the % of students eligible for FSM) were important significant predictors. Neighbourhood measures were again tested as predictors of the four social-behavioural outcomes. After testing neighbourhood characteristics, school level composition was added to the models, for example school-level FSM measure[6]. Each of the neighbourhood characteristics were tested individually for each of the four social-behavioural outcomes[7]. The findings indicate that student's neighbourhood (in terms of

[6] This measure was based on the average of 2007-2009 PLASC data. The School census (previously known as the Pupil Level Annual School Census or PLASC) is completed by all maintained nursery, primary, middle, secondary and special schools in England. Matched to students Unique Pupil Numbers (UPNs) the census collects information on a range of pupil level characteristics such as ethnicity, date of birth, English as an additional language (EAL), special educational needs (SEN) classification, free school meal (FSM) eligibility, gender, attendance, exclusions, and deprivation level of home address. In addition, school level information related to the staff and school such as the number of pupils on roll, and number of staff is also collected. For more detailed information see http://www.education.gov.uk/researchandstatistics/stats/schoolcensus

[7] The Index of Multiple Disadvantage (IMD) is a measure of a range of characteristics evident in a neighbourhood. For further details see Noble et al. (2004; 2008). The IDACI represents the percentage of children in each Super Output Area (SOA) that live in families that are income deprived. For further details

income deprivation and the proportion of White British residents) predicted a number of social-behavioural outcomes.

3.1: Summary of the influence of background characteristics on self-regulation

on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender (Girls compared to boys)	5.49	***	0.60	0.43
Term of birth within the academic year (compared with Autumn born)				
Spring born	-0.69		0.69	-0.05
Summer born	-2.16	**	0.73	-0.17
Ethnicity (compared with White UK heritage)				
White European heritage	-3.28	#	1.76	-0.26
Black Caribbean heritage	4.17	*	1.66	0.33
Black African heritage	1.18		2.25	0.09
Any other ethnic minority	0.27		2.15	0.02
Indian heritage	4.21	*	2.02	0.33
Pakistani heritage	2.07		1.58	0.16
Bangladeshi heritage	5.49	#	2.87	0.43
Mixed race	-0.74		1.35	-0.06
Missing	1.66		9.83	0.13
Number of siblings in the house (at age 3/5) (compared with no siblings)				
1-2 Siblings	0.37		0.77	0.03
3+ Siblings	-2.81	**	1.05	-0.22
Missing	-2.41		5.24	-0.19
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	-1.82	#	1.01	-0.14
2+ Behavioural Problems	-5.70	**	2.13	-0.44
Missing	-4.67		9.01	-0.36
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	-3.17	*	1.43	-0.25
Skilled, non-manual	-3.56	*	1.53	-0.28
Skilled manual	-5.47	**	1.68	-0.43
Semi-skilled	-4.73	**	1.73	-0.37
Unskilled	-7.77	**	2.41	-0.61
Not working/never worked	-2.61		2.44	-0.20
Missing	-5.59		4.83	-0.44
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	-4.27	***	0.84	-0.33
Not known	-0.57		2.05	-0.04
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				

see Noble et al., (2008). N.B. there is collinear relationship between the IMD and IDACI scores given the two neighbourhood measures explain more than 81% of the variance in one another.

Vocational	-0.22		1.19	-0.02
16 academic	2.24	*	0.96	0.17
18 academic	2.37	#	1.30	0.19
Other professional/Miscellaneous	2.16		2.47	0.17
Degree or equivalent	5.62	***	1.34	0.44
Higher degree	5.49	**	1.87	0.43
Missing	5.00		3.70	0.39

displays the net effects of child, family, neighbourhood and school composition on self-regulation.

Gender

On average girls demonstrate higher levels of self-regulation compared to boys (ES=0.43). This is in line with findings throughout primary school and secondary school. These findings are significant after taking account of the influences of other individual background characteristics, family and neighbourhood characteristics.

Age as measured by term of birth

There was a statistically significant influence of age as measured by term of birth for Year 11 self-regulation. Students younger for their year group (summer born) were rated less highly in terms of self-regulation than autumn born students (ES=-0.17) although the effect was weak.

Ethnicity

Compared to students of White UK heritage, those of Bangladeshi (ES=0.43), Indian (ES=0.33) and Black Caribbean heritage (ES=0.33) had higher self-regulation scores, net of other influences.

Birth weight

There were no statistically significant effects for low birth weight. This measure was therefore removed from the final model that controlled for individual, family and neighbourhood characteristics.

Family size

The number of siblings students had provides a measure of family size. Students who had three or more siblings showed poorer self-regulation than those who had no siblings (ES=-0.22). However, those from smaller families (1-2 siblings) showed similar levels of self-regulation to singletons.

Early child behavioural problems

The original EPPE study collected information, from parent reports, on children's early behavioural problems at age 3-5. The analyses indicated that students who had shown

behaviour difficulties in early childhood (2 or more problems) had poorer self-regulation compared to those with no early behavioural problems (ES=-0.44).

Family socio-economic status (SES)

The baseline for comparison was students whose parents' highest SES grouping was 'professional non-manual'. After accounting for the influences of other individual and family background characteristics students from all other SES categories except the 'not working/never worked' category had significantly lower self-regulation scores (e.g., Other professional non-manual - ES=-0.25; skilled non-manual - ES=-0.28; Skilled manual - ES=-0.43; Semi-skilled - ES=-0.37; Unskilled - ES=-0.61).

Free school meals (FSM)

Another measure of poverty obtained in KS3 and KS4 was students' eligibility for free school meals (FSM). Students in receipt of FSM had lower self-regulation scores than those who were not in receipt of FSM (ES=-0.33).

Table 3.1: The influence of individual, family and neighbourhood characteristics on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender (Girls compared to boys)	5.49	***	0.60	0.43
Term of birth within the academic year (compared with Autumn born)				
Spring born	-0.69		0.69	-0.05
Summer born	-2.16	**	0.73	-0.17
Ethnicity (compared with White UK heritage)				
White European heritage	-3.28	#	1.76	-0.26
Black Caribbean heritage	4.17	*	1.66	0.33
Black African heritage	1.18		2.25	0.09
Any other ethnic minority	0.27		2.15	0.02
Indian heritage	4.21	*	2.02	0.33
Pakistani heritage	2.07		1.58	0.16
Bangladeshi heritage	5.49	#	2.87	0.43
Mixed race	-0.74		1.35	-0.06
Missing	1.66		9.83	0.13
Number of siblings in the house (at age 3/5) (compared with no siblings)				
1-2 Siblings	0.37		0.77	0.03
3+ Siblings	-2.81	**	1.05	-0.22
Missing	-2.41		5.24	-0.19
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	-1.82	#	1.01	-0.14
2+ Behavioural Problems	-5.70	**	2.13	-0.44
Missing	-4.67		9.01	-0.36
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	-3.17	*	1.43	-0.25
Skilled, non-manual	-3.56	*	1.53	-0.28
Skilled manual	-5.47	**	1.68	-0.43
Semi-skilled	-4.73	**	1.73	-0.37
Unskilled	-7.77	**	2.41	-0.61
Not working/never worked	-2.61		2.44	-0.20
Missing	-5.59		4.83	-0.44
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	-4.27	***	0.84	-0.33
Not known	-0.57		2.05	-0.04
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	-0.22		1.19	-0.02
16 academic	2.24	*	0.96	0.17
18 academic	2.37	#	1.30	0.19
Other professional/Miscellaneous	2.16		2.47	0.17
Degree or equivalent	5.62	***	1.34	0.44
Higher degree	5.49	**	1.87	0.43
Missing	5.00		3.70	0.39

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Marital Status of Parent (compared with Married)				
Single	-3.14	**	1.03	-0.25
Separated/Divorced	-0.72		0.98	-0.06
Living with partner	-2.59	**	0.86	-0.20
Widow/widower/other[8]	5.93	*	2.87	0.46
Missing	2.08		8.63	0.16
Early years HLE Index (compared with 0-13 Lowest)				
Low 14-19	0.71		1.14	0.06
Average 20-24	1.00		1.17	0.08
High 25-32	2.38	*	1.16	0.19
Very high 33-45	3.77	**	1.41	0.29
Missing	-0.34		2.21	-0.03
KS3 Academic enrichment (compared with Low)				
Medium	2.30	**	0.83	0.18
High	3.57	**	1.05	0.28
Missing	-3.11	***	0.82	-0.24
Neighbourhood IDACI (compared with High deprivation)				
Low deprivation	2.77	**	1.01	0.22
Medium deprivation	0.82		0.79	0.06
Missing	5.02		6.36	0.39
School composition % FSM	0.06	*	0.03	0.14
School composition % SEN	-0.59	*	0.29	-0.16
Intercept	98.65	***	2.28	
Random effects parameters				
Variance (Level 2)	14.66			
Variance (Level 1)	163.97			
Total Variance	178.65			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Intra-School Correlation	0.082			
Deviance (-2 x Log Restricted-Likelihood)	16982.02			
% of Level-1 Variance Reduction	20.07			
% of Level-2 Variance Reduction	30.91			
Proportion of Total Variance Reduction	21.08			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

[8] Findings for the 'Widow/widower/other' category are not reported in the text as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Parents' highest qualifications level

Mothers and fathers highest qualification levels (at age 3/5) were merged to create a measure of parents' highest qualifications level. After accounting for the influences of other individual and family background characteristics, parents' highest qualifications level remained a significant predictor of self-regulation. Using students whose parents had no qualifications (at age 3/5) as the comparison group, students whose parents had a degree or higher degree had the highest levels of self-regulation (Degree - ES=0.44; Higher degree - ES=0.43) in Year 11, then those whose parents had age 16 qualifications (GCSEs or equivalents; ES=-0.19).

Parents' marital status

After accounting for the influences of other individual and family background characteristics, parental marital status (as measured in the early year) showed a weak, but significant, effect on self-regulation. Those from single parent backgrounds (ES=-0.25) and those whose parents were 'living together' but not married (ES=-0.20) showed significantly lower scores for self-regulation compared to students whose parents were married.

Early years & KS3 home learning environment (HLE)

The early years HLE continued to have an influence on students' self-regulation (as found at KS3, KS2 and KS1). Students who were in the highest scoring early years HLE group had statistically significantly higher levels of self-regulation compared to those from the lowest early years HLE group (ES=0.29).

Students who experienced higher levels of 'academic enrichment' (e.g., EPPSE Child reads on their own for pleasure) during KS3, had higher reported self-regulation in KS4 compared to similar students who had the lowest scores for this activity (High ES=0.28, Medium ES=0.18).

Neighbourhood

There was an influence of IDACI scores on self-regulation. The IDACI measure indicated the extent to which children in a neighbourhood are considered to be living in poverty. Students living in neighbourhoods in the bottom twenty five per cent group of the IDACI scores (least poor) had higher levels of self-regulation compared to students in the top twenty five per cent of the IDACI group (most poor; ES=0.22).

School composition

There was a small but weak association between the percentage of students with a Special Educational Need (SEN) and poorer self-regulation (ES=-0.16). In addition, once other background had been accounted for, the students from schools with higher proportions of students in receipt of FSM had higher self-regulation (ES=014). This is likely to be a function of school based initiatives targeting disadvantaged areas.

Special educational needs (SEN)

Additional analyses on SEN indicates that students who were recorded as having 'school action' (ES=-0.62), 'school action plus' (ES=-1.13) or a 'statement of SEN' (ES=-1.02) showed significantly lower scores for self-regulation compared to students who had 'no special educational needs'.

3.2: Summary of the influence of background characteristics on pro-social behaviour

The analyses strategy discussed in relation to self-regulation was used for the study of the other social-behavioural outcomes. Here the main findings are summarised for pro-social behaviour.
displays the net effects of child, family, neighbourhood and school composition on pro-social behaviour.

Gender

There was a statistically significant influence of gender. Controlling for other influences, on average girls demonstrate higher levels of pro-social behaviour compared to boys (ES=0.59) in KS4 and the effect is moderately strong. Again this is in line with findings at younger ages.

Age as measured by term of birth

Term of birth showed a weak but statistically significant influence on pro-social behaviour at age 16. Summer born students had lower levels of pro-social behaviour than autumn born students (ES=-0.12) even after accounting for the influence of all other background characteristics.

Ethnicity

There were no statistically significant ethic differences and so ethnicity was therefore removed from the final model.

Table 3.2: The influence of individual characteristics on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender (Girls compared to boys)	7.51	***	0.60	0.59
Term of birth within the academic year (compared with Autumn born)				
Spring born	0.07		0.69	0.01
Summer born	-1.55	*	0.73	-0.12
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	-2.50	*	1.00	-0.20
2+ Behavioural Problems	-4.14	*	2.08	-0.33
Missing	-9.16		8.49	-0.72
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	-3.32	*	1.43	-0.26
Skilled, non-manual	-3.69	*	1.53	-0.29
Skilled manual	-4.71	**	1.67	-0.37
Semi-skilled	-3.39	*	1.72	-0.27
Unskilled	-6.45	**	2.40	-0.51
Not working/never worked	-2.01		2.41	-0.16
Missing	0.31		4.84	0.02
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	-3.77	***	0.84	-0.30
Not known	-0.41		2.07	-0.03
Parents' Highest Qualifications Level (at age 3/5) (compared with Professional non-manual)				
Vocational	-0.97		1.17	-0.08
16 academic	2.61	**	0.94	0.21
18 academic	1.81		1.28	0.13
Other professional/Miscellaneous	-1.65		2.46	-0.13
Degree or equivalent	4.50	**	1.32	0.35
Higher degree	4.68	*	1.85	0.37
Missing	5.49		3.65	0.43
Marital Status of Parent (compared with Married)				
Single	-3.54	***	0.98	-0.28
Separated/Divorced	0.00		0.97	0.00
Living with partner	-2.40	**	0.84	-0.19
Widow/ widower /other[9]	3.38		2.87	0.27
Missing	0.49		8.50	0.04
Early years Home Learning Environment (compared with 0-13 Lowest)				
Low 14-19	0.57		1.13	0.04
Average 20-24	0.75		1.16	0.06
High 25-32	2.89	*	1.15	0.23
Very high 33-45	2.71	*	1.39	0.21
Missing	-0.89		2.20	-0.07

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

[9] Findings for the 'Widow/widower/other' category are not reported in the text as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Academic enrichment (compared with Low)				
Medium	1.62	#	0.83	0.13
High	2.16	*	1.05	0.17
Missing	-3.30	***	0.82	-0.26
Neighbourhood IDACI (compared with High deprivation)				
Low deprivation	3.14	**	1.03	0.25
Medium deprivation	1.58	*	0.78	0.12
Missing	-0.73		13.69	-0.06
Neighbourhood % White British	-0.05	**	0.02	-0.20
School composition % FSM	0.06	#	0.03	0.15
School composition % SEN	-0.72	*	0.31	-0.15
Intercept	97.21	***	2.14	
Random effects parameters				
Variance (Level 2)	21.42		4.22	
Variance (Level 1)	161.71		5.39	
Total Variance	183.13			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Intra-School Correlation	0.119			
Deviance (-2 x Log Restricted-Likelihood)	17069.74			
% of Level-1 Variance Reduction	19.14			
% of Level-2 Variance Reduction	18.11			
Proportion of Total Variance Reduction	19.02			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Birth weight

There was no influence of low birth weight shown on pro-social behaviour and this was removed from the final model.

Early child behavioural problems

Students who had early behavioural problem were rated as showing lower levels of pro-social behaviour compared to those who had no early behaviour problems (one behavioural problem - ES=-0.20; two or more behaviour problems - ES=-0.33).

Family size

Family size (measured by number of siblings) showed no statistically significant effects on pro-social behaviour and was therefore removed from the final model.

Family highest socio-economic status (SES)

The baseline for comparison was students whose parents' highest SES grouping was 'professional non-manual'. After accounting for the influences of other individual and family background characteristics students from all other SES categories except the 'not working/never worked' category had significantly lower pro-social behaviour scores (e.g., Other professional non-manual - ES=-0.26; skilled non-manual - ES=-0.29; Skilled manual - ES=-0.37; Semi-skilled - ES=-0.27, Unskilled - ES=-0.51).

Free school meals (FSM)

Another measure of socio-economic disadvantage was data we obtained at KS4 on free school meals (FSM). Students in receipt of FSM had lower levels of pro-social behaviour scores than students who were not in receipt of FSM (ES=-0.30).

Parents' highest qualifications level

After accounting for the influences of other individual and family background characteristics parents' highest qualifications level (at age 3/5) was found to be a moderate predictor of pro-social behaviour in Year 11. Students whose parents had a degree (ES=0.35) or higher degree (ES=0.37) were rated as having higher levels of pro-social behaviour in Year 11 compared to students whose parents' highest qualifications level was no qualifications.

Parents' marital status

After accounting for the effects of other background characteristics, the marital status of students' parents (measured in the early years) showed a significant effect in predicting pro-social behaviour. Students from single parent households had significantly lower levels of pro-social behaviour than those whose parents were married (ES=-0.28). In line with other social-behavioural outcomes those students whose parents were 'living together' (but not married) showed lower levels of pro-social behaviour compared to students whose parents were married (ES=-0.19).

Early years & KS3 home learning environment (HLE)

The early years HLE was found to predict students' pro-social behaviour in KS4. Students who had experienced a higher quality early years HLE (top two categories) had statistically significantly higher levels of pro-social behaviour compared to those from the lowest scoring group (0-13), however the effects were weak (High - ES=0.23; Very high - ES=0.21).

Students who experienced the highest level of 'academic enrichment' (e.g., EPPSE Child reads on their own for pleasure) during KS3 had higher reported pro-social behaviour in KS4, compared to similar students who had the lowest scores for this activity (Medium - ES=0.13; High - ES=017).

Neighbourhood

Similar to self-regulation, there was an influence of neighbourhood poverty (IDACI scores) on pro-social behaviour. The IDACI measure indicated the extent to which children in a neighbourhood are considered to be living in poverty. Students living in neighbourhoods in the bottom twenty five per cent group of IDACI scores (least poor) had higher levels of pro-social behaviour compared to students in the top twenty five per cent of the IDACI group (ES=0.25). A small additional influence was found for the neighbourhood ethnic diversity. Higher proportions of White British residents in an area was associated with poorer pro-social behaviour (ES=-0.20).

School composition

There was a significant but weak association between the percentage of students with a Special Educational Need (SEN) in the school and poorer pro-social behaviour (ES=-0.15). In line with findings for self-regulation, once other background had been accounted for, the students from schools with higher proportions of students in receipt of FSM had higher scores for pro-social behaviour (ES=0.15).

Special educational needs (SEN)

Separate analyses investigated the impact of SEN, after accounting for the characteristics in Table 3.2 and indicated that students who were recorded as having a Special educational Need (SEN) had significantly lower pro-social behaviour than other students. Students having ‘school action’ (ES=-0.39), ‘school action plus’ (ES=-1.02) or a ‘statement of SEN’ (ES=-0.75) showed significantly lower scores for pro-social behaviour compared to students who had ‘no special educational needs’.

Section 3.3: Summary of the influence of background characteristics on hyperactivity

Table 3.3 displays the net effects of child, family, neighbourhood and school composition on hyperactivity.

Gender

Controlling for the effects of other background characteristics, on average girls showed significantly lower hyperactivity scores compared to boys (ES=-0.47). This finding is consistent with results from equivalent analyses conducted in previous phases of the study.

Age as measured by term of birth

There was a statistically significant but weak effect for term of birth on hyperactivity scores in Year 11. Summer and spring born students (younger in their year group) had

higher levels of teacher rated hyperactivity than older students (Spring born - ES=0.10; Summer born - ES=0.17).

Birth weight

There was no influence of birth weight on hyperactivity when controlling for background characteristics, so this measure was removed from the final model.

Early child behavioural problems

Students with a record of 2 or more early behavioural problems were rated as having higher levels of hyperactivity compared to those who had no early behavioural problems (ES=0.38).

English as an additional language

Controlling for background characteristics there was no significant effect for having ‘English as an additional language’ on hyperactivity therefore this measure was removed from the final model.

Family highest socio-economic status (SES)

After accounting for the influences of other background characteristics, family SES was found to have a statistically significant influence on hyperactivity scores for two categories only. Compared to students whose parents had ‘professional non-manual’ occupations, students with parents who were skilled manual (ES=0.29) and Unskilled (ES=0.56) had higher teacher reported hyperactivity levels.

Table 3.3: The influence of individual and family characteristics on hyperactivity

Hyperactivity[SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender (Girls compared to boys)	-5.98	***	0.57	-0.47
Term of birth within the academic year (compared with Autumn born)				
Spring born	1.30	*	0.65	0.10
Summer born	2.15	**	0.68	0.17
Ethnicity (compared with White UK heritage)				
White European heritage	2.48		1.61	0.19
Black Caribbean heritage	-2.80	#	1.69	-0.22
Black African heritage	-0.34		2.18	-0.03
Any other ethnic minority	-0.41		2.09	-0.03
Indian heritage	-3.28		2.02	-0.26
Pakistani heritage	-2.76		1.70	-0.22
Bangladeshi heritage	-3.00		2.90	-0.23
Mixed race	1.15		1.29	0.09
Missing	-13.57		13.13	-1.06
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	1.98	*	0.95	0.15
2+ Behavioural Problems	4.87	*	1.95	0.38
Missing	9.99		8.96	0.78
Number of siblings in the house (at age 3/5) (compared with no siblings)				
1-2 Siblings	-0.71		0.72	-0.06
3+ Siblings	2.25	*	0.99	0.18
Missing	2.94		5.22	0.23
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	0.51		1.17	0.04
Skilled, non-manual	1.63		1.30	0.13
Skilled manual	3.74	*	1.47	0.29
Semi-skilled	2.24		1.51	0.18
Unskilled	7.22	**	2.24	0.56
Not working/never worked	-0.25		2.25	-0.02
Missing	1.59		4.52	0.12
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	4.99	***	0.81	0.39
Not known	3.59	*	1.81	0.28
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	0.95		1.14	0.07
16 academic	-2.14	*	0.92	-0.17
18 academic	-1.79		1.24	-0.14
Other professional/Miscellaneous	-1.23		2.38	-0.10
Degree or equivalent	-4.22	**	1.25	-0.33
Higher degree	-4.24	**	1.62	-0.33
Missing	-3.22		3.57	-0.25

$^{\#}$p<0.10, *p<0.05, **p<0.01, ***p<0.001

Hyperactivity[SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Marital Status of Parent (compared with Married)				
Single	3.12	**	0.98	0.24
Separated/Divorced	1.17		0.94	0.09
Living with partner	2.37	**	0.81	0.19
Widow/ widower /other	-6.08	*	2.81	-0.48
Missing	-7.55		8.56	-0.59
Early years HLE Index (compared with 0-13 Lowest)				
Low 14-19	0.01		1.09	0.00
Average 20-24	-0.69		1.12	-0.05
High 25-32	-1.89	#	1.11	-0.15
Very high 33-45	-2.93	*	1.32	-0.23
Missing	1.41		2.08	0.11
KS3 Academic enrichment (compared with Low)				
Medium	-1.76	*	0.80	-0.14
High	-3.23	**	0.97	-0.25
Missing	3.11	***	0.79	0.24
Neighbourhood IDACI (compared with High deprivation)				
Low deprivation	-2.44	*	0.96	-0.19
Medium deprivation	-0.55		0.75	-0.04
Missing	5.31		9.45	0.42
Neighbourhood: % White British	0.04	*	0.02	0.15
Intercept	102.26	***	2.07	
Random effects parameters				
Variance (Level 2)	15.03		3.44	
Variance (Level 1)	163.63		5.19	
Total Variance	178.66			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Intra-School Correlation	0.084			
Deviance (-2 x Log Restricted-Likelihood)	19174.16			
% of Level-1 Variance Reduction	20.76			
% of Level-2 Variance Reduction	23.28			
Proportion of Total Variance Reduction	20.97			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Free school meals (FSM)

Students in receipt of FSM had higher levels of teacher reported hyperactivity than students who were not in receipt of FSM (ES=0.39).

Parents' highest qualifications level

Parents' highest qualification level (at age 3/5) was found to be a significant predictor of hyperactivity in Year 11 after controlling for other background characteristics. Students whose parents had a degree (ES=-0.33), or higher degree (ES=-0.33), were rated as having lower levels of hyperactivity compared to students whose parents had no qualifications.

Parental marital status

Parental marital status was a significant predictor of student's hyperactivity scores. Those from single parent backgrounds had significantly higher levels of hyperactivity than those whose parents were married (ES=0.24). Similarly those whose parents were 'living together' (not married) had higher levels of hyperactivity compared to students whose parents were married (ES=0.19).

Early years & KS3 home learning environment (HLE)

The early years HLE was found to have a continued effect in predicting students' hyperactivity scores at age 16. Students with the highest levels of HLE in the early years (33-45) had lower hyperactivity scores than those in the lowest HLE group (ES=-0.23).

Students with higher scores for the KS3 HLE factor 'Academic enrichment' (e.g., EPPSE Child reads on their own for pleasure) had lower teacher rated levels of hyperactivity than students from the low enrichment group (Medium - ES=-0.14; High - ES=-0.25).

Special educational needs (SEN)

Additional analyses, controlling for characteristics in

Table 3.3, found there were strong effects associated with SEN. Students who were on 'school action' (ES=0.65) and 'school action plus' (ES=1.33) and those with a 'statement of SEN' (ES=0.83) had significantly higher levels of hyperactivity compared to students who had 'no special educational needs'.

3.4: Summary of the influence of background characteristics on anti-social behaviour

Table 3.4 displays the net effects of child, family, neighbourhood and school composition on anti-social behaviour.

Gender

After taking account of the influences of other background characteristics there was a statistically significant influence of gender; on average girls were rated as showing lower levels of anti-social behaviour compared to boys (ES=-0.39).

Age as measured by term of birth

In contrast to findings for other social behaviours there was no statistically significant effect for age on anti-social behaviour and therefore this was removed from the final model.

Birth weight

There were no statistically significant effects for birth weight on anti-social behaviour and therefore this was removed from the final model.

Early child behavioural problems

Students with a record of one early behavioural problem had higher levels of anti-social behaviour compared to those who had no early behavioural problems though this effect was weak at age 16 (ES=0.14) and only verged on statistical significant ($p<0.10$). This measure was therefore retained in the final model.

English as an additional language

After taking account of the influences of other background characteristics there were no effects for 'English as an additional language' and so this was removed from the final model.

Family size

There were no significant effects of family size (measured by number of siblings) on anti-social behaviour and so this was removed from the final model.

Family highest socio-economic status (SES)

There was a little evidence of SES differences in the data. Students from 'skilled manual' and 'unskilled' backgrounds had slightly higher levels of anti-social behaviour than those from 'professional non manual' backgrounds (skilled manual - ES=0.40; unskilled - ES=0.54).

Free school meals (FSM)

Controlling for other influences, students in receipt of FSM had significantly higher levels of anti-social behaviour than students who were not in receipt of FSM (ES=0.44). These effects were moderately strong.

Parents' highest qualifications level

Parents' highest qualification level (at age 3/5) was found to be a significant predictor of anti-social behaviour in Year 11 after controlling for other background characteristics. Students whose parents had a degree (ES=-0.32), or higher degree (ES=-0.36), were rated as having lower levels of anti-social behaviour compared to students whose parents had no qualifications.

Parents' marital status

Parental marital status (in the early years) had a small but significant association with Year 11 students' anti-social behaviour scores. Students from single parent backgrounds had higher levels of teacher reported anti-social behaviour than those whose parents were married (ES=0.21). Similarly, although to a lesser extent, those whose parents were living together (not married) had higher levels of anti-social behaviour compared to students whose parents were married (ES=0.14).

Early years & KS3 home learning environment (HLE)

The early years HLE did not predict student's anti-social behaviour scores in Year 11. However, students with higher scores for the KS3 factor 'Academic enrichment' (e.g., EPPSE Child reads on their own for pleasure) had lower levels of teacher rated anti-social behaviour than those students with lower enrichment scores (High versus low ES=-0.18).

Neighbourhood

There was no statistically significant neighbourhood effects related to IDACI for anti-social behaviour in Year 11. In contrast, a higher percentage of White British residents in the neighbourhood was associated with higher anti-social behaviour levels (ES=0.18).

School composition

There was a small but weak association between the percentage of students with a Special Educational Need (SEN) and poorer anti-social behaviour (ES=0.12).

Table 3.4: The influence of individual characteristics on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender (Girls compared to boys)	-5.14	***	0.61	-0.39
Ethnicity (compared with White UK heritage)				
White European heritage	1.73		1.82	0.13
Black Caribbean heritage	1.32		1.79	0.10
Black African heritage	0.63		2.36	0.05
Any other ethnic minority	0.23		2.24	0.02
Indian heritage	-1.20		2.20	-0.09
Pakistani heritage	-0.43		1.81	-0.03
Bangladeshi heritage	-1.75		3.01	-0.13
Mixed race	2.42	#	1.43	0.18
Missing	-0.81		13.60	-0.06
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	1.83	#	1.05	0.14
2+ Behavioural Problems	2.48		2.16	0.19
Missing	21.00	*	8.71	1.58
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	1.97		1.48	0.15
Skilled, non-manual	2.31		1.58	0.17
Skilled manual	5.36	**	1.73	0.40
Semi-skilled	3.30	#	1.77	0.25
Unskilled	7.15	**	2.48	0.54
Not working/never worked	0.98		2.52	0.07
Missing	-0.01		4.99	0.00
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	5.90	***	0.85	0.44
Not known	3.05		2.14	0.23
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	0.13		1.21	0.01
16 academic	-3.09	**	0.97	-0.23
18 academic	-1.37		1.31	-0.10
Other professional/Miscellaneous	0.09		2.54	0.01
Degree or equivalent	-4.30	**	1.36	-0.32
Higher degree	-4.82	*	1.90	-0.36
Missing	-5.06		3.82	-0.38
Marital Status of Parent (compared with Married)				
Single	2.83	**	1.04	0.21
Separated/Divorced	0.92		1.02	0.07
Living with partner	1.92	*	0.88	0.14
Widow/ widower /other	-4.95	#	2.97	-0.37
Missing	-10.34		8.77	-0.78

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Academic enrichment (compared with Low)				
Medium	-1.24		0.87	-0.09
High	-2.35	*	1.08	-0.18
Missing	3.41	***	0.85	0.26
Neighbourhood % White British	0.05	*	0.02	0.18
School composition % SEN	0.59	*	0.30	0.12
Intercept	99.09	***	1.91	
Random effects parameters				
Variance (Level 2)	14.84			
Variance (Level 1)	177.04			
Total Variance	191.88			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Intra-School Correlation	0.077			
Deviance (-2 x Log Restricted-Likelihood)	17137.24			
% of Level-1 Variance Reduction	14.66			
% of Level-2 Variance Reduction	16.06			
Proportion of Total Variance Reduction	14.84			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Special educational needs (SEN)

Being identified as showing some record of SEN was a strong predictor of teachers' ratings of anti-social behaviour in KS4. The data for students who were on 'school action' (ES=0.51), 'school action plus' (ES=1.36) and who had a 'statement of SEN' (ES=0.56) in Year 11 showed strong associations with significantly higher scores on anti-social behaviour compared to students who had 'no special educational needs'.

Section 4: The influence of pre-school, primary and secondary school on social-behavioural outcomes in Year 11

Key findings

This section presents findings on the continuing impact of pre-school and primary, as well as the influence of secondary school on students' social-behavioural outcomes in Year 11:

- The results indicate that just attending any pre-school centre did not predict social-behavioural outcomes in Year 11, as was found in Year 9.
- Further, the influence of a single pre-school effectiveness measure (reducing anti-social/worried/upset behaviour) was significant in Year 11 for predicting hyperactivity. This is in contrast to findings in Year 9 when the influence of pre-school effectiveness measures was no longer visible for any of the four social-behavioural outcomes.
- The effects of pre-school quality, though relatively small, are consistent in their direction and in line with those found previously for the EPPSE sample in Year 9 indicating that the influence of quality lasts throughout secondary schooling.
- As was found in Year 9, primary school academic effectiveness does not show any significant trends in predicting social-behavioural outcomes at the end of Year 11, in contrast to findings for academic measures.
- Furthermore, the academic effectiveness of the secondary school (national CVA measure provided by DfE) did not predict significant differences in students' social-behavioural outcomes in Year 9 or in Year 11, when account was taken of the influence of individual student, family, home learning environment (HLE), school composition and neighbourhood characteristics.
- The quality of the secondary school, as measure by Ofsted inspection judgements of the secondary school, did not predict better social-behavioural outcomes for EPPSE students. These results are in contrast to findings for the academic attainments of the EPPSE students in Year 11 measured by GCSE results.

In this section the potential influences of pre-school, primary school and secondary school on students' social-behavioural outcomes in Year 11 is explored by testing various measures in the contextualised multilevel models that contain individual, family and neighbourhood background characteristics.

4.1: The influence of pre-school on social behaviours in Year 11

This section investigates the effects of measures of pre-school attendance and of the quality of pre-schools as predictors of students' later social-behavioural outcomes at the end of KS4.

Firstly, the effect of having attending pre-school was compared to non-attendance. Similar to findings at KS3 the results indicate that attendance at pre-school, in itself did not predict students' Year 11 social-behavioural scores.

Next, different aspects of pre-school quality and academic effectiveness were tested.

The quality of the pre-school's curricular provisions was assessed using the ECERS-E observational scale which consists of 18 items across 4 subscales:

- Literacy (e.g., adult reading with child).
- Mathematics (e.g., counting, concepts related to space and shape).
- Science/Environment (e.g., science resources).
- Diversity (e.g., planning for individual needs, race and gender equality).

The ECERS-R instrument was used to assess various characteristics of pre-school centre-based care and education across 43 items, within 7 subscales:

- Personal care routines (e.g., greeting/departing, health and safety practices).
- Space and furnishings (e.g., spatial arrangements for play, child-related display).
- Language-reasoning (e.g., the use of language to develop reasoning skills).
- Activities (e.g., fine motor, dramatic play).
- Interactions (e.g., discipline, general supervision of children).
- Programme structure (e.g., schedule, free play, group time).
- Parents and staff (e.g., provisions for staff and parents, staff interaction and cooperation).

Academic effectiveness measures included four measures of the academic effectiveness of the pre-school in promoting:

- independence & concentration
- co-operation & conformity
- peer sociability
- anti-social/worried/upset behaviour.

4.1.1: The effects of pre-school quality and effectiveness on self-regulation

The possibility of a continued effect of pre-school, at age 16, in terms of a centre's ECERS-E and ECERS-R scores was tested for self-regulation, after controlling for students' background characteristics, their early years and KS3 HLE and their neighbourhood (see

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender (Girls compared to boys)	5.49	***	0.60	0.43
Term of birth within the academic year (compared with Autumn born)				
Spring born	-0.69		0.69	-0.05
Summer born	-2.16	**	0.73	-0.17
Ethnicity (compared with White UK heritage)				
White European heritage	-3.28	#	1.76	-0.26
Black Caribbean heritage	4.17	*	1.66	0.33
Black African heritage	1.18		2.25	0.09
Any other ethnic minority	0.27		2.15	0.02
Indian heritage	4.21	*	2.02	0.33
Pakistani heritage	2.07		1.58	0.16
Bangladeshi heritage	5.49	#	2.87	0.43
Mixed race	-0.74		1.35	-0.06
Missing	1.66		9.83	0.13
Number of siblings in the house (at age 3/5) (compared with no siblings)				
1-2 Siblings	0.37		0.77	0.03
3+ Siblings	-2.81	**	1.05	-0.22
Missing	-2.41		5.24	-0.19
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	-1.82	#	1.01	-0.14
2+ Behavioural Problems	-5.70	**	2.13	-0.44
Missing	-4.67		9.01	-0.36
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	-3.17	*	1.43	-0.25
Skilled, non-manual	-3.56	*	1.53	-0.28
Skilled manual	-5.47	**	1.68	-0.43
Semi-skilled	-4.73	**	1.73	-0.37
Unskilled	-7.77	**	2.41	-0.61
Not working/never worked	-2.61		2.44	-0.20
Missing	-5.59		4.83	-0.44
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	-4.27	***	0.84	-0.33
Not known	-0.57		2.05	-0.04
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	-0.22		1.19	-0.02

16 academic	2.24	*	0.96	0.17
18 academic	2.37	#	1.30	0.19
Other professional/Miscellaneous	2.16		2.47	0.17
Degree or equivalent	5.62	***	1.34	0.44
Higher degree	5.49	**	1.87	0.43
Missing	5.00		3.70	0.39

for a full list of characteristics).

Year 11 students who had attended a high quality pre-school in terms of the ECERS-R scale (top 20%) showed higher self-regulation scores (ES=0.14) compared to similar students who had attended low quality pre-school settings (controlling for background), although this just failed to reach conventional significance levels (see Table 4.1).

Table 4.1: The effects of pre-school quality (ECERS-R) on self-regulation in Year 11

Fixed effects parameters **ECERS-R** (compared to Low quality)	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
No quality (i.e. home children)	0.18		1.38	0.01
High quality (highest 20%)	1.84	#	1.07	0.14
Medium quality (middle 60%)	-0.13		0.93	-0.01
Intercept	98.31	***	2.39	
Random effects parameters				
Variance (Level 2)	13.32		3.53	
Variance (Level 1)	164.50		5.50	
Total Variance	177.82			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16970.60			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Similarly, students who had attended an effective pre-school in terms of reducing anti-social behaviour (top 20%) showed higher self-regulation scores (ES=0.18) compared to similar students who had attended low quality pre-school settings (controlling for background), although again this just failed to reach conventional significance levels (23Table 4.2).

Table 4.2: The effects of pre-school effectiveness (reducing anti-social/worried/upset behaviour) on self-regulation

Fixed effects parameters **Anti-social effectiveness** (compared to Low effectiveness)	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
No effectiveness (i.e. home children)	0.28		1.03	0.02
High effectiveness (highest 20%)	2.35	#	1.22	0.18
Medium effectiveness (middle 60%)	0.29		1.03	0.02
Intercept	98.02	***	2.45	
Random effects parameters				
Variance (Level 2)	14.22		3.41	
Variance (Level 1)	163.95		5.19	
Total Variance	178.17			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16970.12			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

4.1.2: The effect of pre-school quality on pro-social behaviour

The pattern of findings for pro-social behaviour is similar to that found for self-regulation. The quality of pre-school provision continued to have a small impact at the end of KS4, even after controlling for a student's background characteristics, their early years HLE and KS3 HLE, their neighbourhood and school composition. Students who had experienced high quality pre-school had increasing positive social-behavioural traits when they were in Year 11.

Year 11 students who had experienced high quality pre-school (ECERS-R) had higher pro-social behaviour scores than those who had experienced lower quality (ES=0.16, see 24Table 4.3).

Table 4.3: The influence of pre-school quality (ECERS-R) on pro-social behaviour

Fixed effects parameters **ECERS-R** (compared to Low quality)	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
No quality (i.e. home children)	1.82		1.36	0.14
High quality (highest 20%)	2.02	#	1.08	0.16
Medium quality (middle 60%)	0.58		0.93	0.05
Intercept	96.86	***	2.57	
Random effects parameters				
Variance (Level 2)	21.02		4.20	
Variance (Level 1)	161.29		5.40	
Total Variance	182.31			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17043.06			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

4.1.3: The influence of pre-school quality and effectiveness on hyperactivity

As with the model for self-regulation and pro-social behaviour, the influence of ECERS-R on Year 11 hyperactivity is reported after controlling for students background characteristics, HLE, neighbourhood and school composition characteristics (see

20Table 3.3 for a full list). The quality of pre-school provision, measured by the ECERS-R continued to show a small lasting impact at the end of KS4. High quality pre-school decreased negative social behaviours (hyperactivity) when the students were in Year 11, as shown in 25Table 4.4 below.

Table 4.4: The effects of pre-school quality (ECERS-R) on hyperactivity

Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
ECERS-R (compared to Low quality)				
No quality (i.e. home children)	-1.20		1.32	-0.09
High quality (highest 20%)	-2.55	**	0.97	-0.20
Medium quality (middle 60%)	0.14		0.85	0.01
Intercept	102.63	***	2.14	
Random effects parameters				
Variance (Level 2)	12.73		3.30	
Variance (Level 1)	164.29		5.21	
Total Variance	187.02			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	11145.82			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Students who had experienced high quality provision had lower scores for hyperactivity than those who experience low quality provision (ES=-0.20). The findings demonstrate that Year 11 students who had attended a high quality pre-school (upper 20% on ECERS-R) showed lower levels of hyperactivity compared to similar students who had attended a low quality setting (bottom 20% of pre-schools).

A small effect was found for pre-school effectiveness in terms of reducing anti-social behaviours in the early years. Students who had attended these pre-schools had significantly lower hyperactivity scores at the end of Year 11 than students who had attended less effective pre-schools (ES=-0.20, see 26Table 4.5).

Table 4.5: The effects of pre-school effectiveness (reducing anti-social/worried/upset behaviour) on hyperactivity

Fixed effects parameters **Anti-social effectiveness** (compared to Low effectiveness)	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
No effectiveness (i.e. home children)	0.94		1.40	-0.09
High effectiveness (highest 20%)	-2.46	*	1.14	-0.20
Medium effectiveness (middle 60%)	-0.08		0.95	0.01
Intercept	102.72	***	2.22	
Random effects parameters				
Variance (Level 2)	14.43		3.41	
Variance (Level 1)	163.54		5.19	
Total Variance	187.98			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19159.84			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

4.2: The effect of primary school academic effectiveness on social behaviours in Year 11

The next set of analyses explored the potential influence of primary school on social-behavioural outcomes when investigated in Year 11.

Using National Assessment data, value-added indicators of primary school academic effectiveness at KS2 were calculated for all primary schools in England (Melhuish et al., 2006).

Students' KS1 scores were linked to their KS2 results to create the value-added measures.

The KS4 analysis revealed that primary school academic effectiveness measures were not statistically significant predictors of any of the later social-behavioural outcomes in Year 11. These results mirror findings during earlier phases of the research (Sammons et al., 2007a; 2008b; 2011d). These findings are in contrast to the results for the equivalent analyses of EPPSE students' GCSE outcomes in Year 11 (Sammons et al., 2014a).

4.3: The effect of secondary school academic effectiveness on social behaviours in Year 11

In order to explore the potential influence of secondary school effectiveness on social-behavioural outcomes in Year 11, the secondary school academic effectiveness 'Key Stage 2 to Key Stage 4 Contextual Value Added (KS2-KS4 CVA[10])' measure was used.

This indicator of school performance was provided by the Department for Education (DfE). All mainstream schools, including academies and maintained special schools had a KS2-KS4 CVA score calculated on their students' attainment results. This measures the relative progress made by students from one Key Stage[11] to the next. The KS4 measure compares each student's best eight GSCEs and equivalent outcomes against the typical performance of a student with similar levels of attainment and background characteristics.

Students' positive and negative departures from average GSCE results achieved by similar students are further aggregated to produce school averages. These school averages are subsequently adjusted to the number of students in the year group. Scores are then computed as numbers centred around 1000: with scores above 1000 representing schools where students have made more progress relative to similar students nationally; and scores below 1000 indicating schools where students have shown less relative progress.

The measure of secondary school academic effectiveness CVA KS2-KS4 score was not a significant predictor of social-behavioural outcomes at Year 11.

4.4: The effects of secondary school quality as measured by Ofsted grades on social-behavioural outcomes

In order to explore the potential influence of secondary school quality, judgments made by The Office for Standards in Education, Children's Services and Skills (Ofsted) during school inspections were obtained. These ratings provided several indicators of school quality.

Ofsted inspectors conduct independent external evaluations of the education system in England. The purpose of the inspection process is to ensure that the learning needs of

[10] The EPPSE CVA indicator is based on DfE CVA results for 4 successive years, covering the 4 EPPSE cohorts, 2006-2009 for all secondary schools attended by EPPSE students. The EPPSE results have an overall CVA averaged mean of 1004, which is close to the national CVA mean of 1000. The students in the sample (based on their secondary school's average CVA score) were divided into high, medium and low CVA effectiveness groups based on the average CVA score to 1 SD above or below the mean; nationally, approximately 10% of secondary schools are 1 SD above the mean and approximately 10% of secondary schools are 1 SD below the mean.

[11] In the English education system the four Key Stages (KS) are: KS1= age 6-7, KS2=8-11, KS3=12-14, KS4=14=16 with KS4 being the end of compulsory schooling.

students are being met and that all schools reach a minimum threshold of standards. Ofsted produces a framework for inspections which sets out expectations, priorities, and grade descriptors for each judgment. The Ofsted inspection data explore the quality of a schools provision in academic attainment, the quality of school provision, how 'at risk' students are encouraged to succeed, how students develop skills that will contribute to their future economic well-being, as well as school safety, leadership, and effective management of financial resources.

The grading scale used for the judgments, when EPPSE students were in KS4, consists of four categories: Grade 1 (Outstanding), Grade 2 (Good), Grade 3 (Satisfactory), Grade 4 (Inadequate)[12]. Data on schools during 2005 - 2010 was used. In all twenty Ofsted judgements were tested as shown in Table 4.6. None of the Ofsted measures tested in the analyses were found to be statistically significant predictors of social behaviour Year 11.

[12] In 2012 a new Framework was published and the category 'Satisfactory' was changed to 'Requires Improvement'.

Table 4.6: Ofsted inspection judgements

Overall 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 at school level
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?
Personal development and well-being	How good is the overall personal development and well-being of the learners?
	How good is the overall behaviour of learners?
	How good is the overall 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?
Teaching and learning	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?

Section 5: The impact of students' views of school on Year 11 social-behavioural outcomes

Key Findings

EPPSE students provided another perspective on secondary school characteristics through self-report surveys collected in KS3 and KS4:

- Eight measures of secondary school experiences were derived from this data in KS3 and an additional five derived in KS4. Most of the measures were found to be moderate or strong predictors of social-behavioural outcomes, when tested individually.
- Only two views of school measures did not consistently predict social-behavioural outcomes. They were the learning resources of the school in KS3 (e.g., quality of the library, having enough computers) and the 'academic ethos' of the school in KS4. Having better 'learning resources' only weakly predicted lower levels of anti-social behaviour, and having a stronger 'academic ethos' only weakly predicted better pro-social behaviour, when tested individually.
- When tested in combination, to help identify the strongest associations between school characteristics and social-behavioural outcomes, three measures appeared to be particularly influential. They were the quality of secondary school students' experience of 'positive relationships', 'poor behaviour climate' and 'emphasis on learning'.
- The measure 'positive relationships' covers aspects such as how well staff and students 'get along' and how valued students felt, and captures aspects of the emotional climate of the school. More favourable reports of 'positive relationships' within the schools were found to predict better outcomes for all four social-behavioural measures.
- Students who reported that their schools laid a greater 'emphasis on learning' in KS3 showed more favourable self-regulation and pro-social behaviour and reduced negative behaviour (hyperactivity and anti-social behaviour) in KS4.
- A negative behavioural climate in the secondary school in KS3, also predicted poorer social-behavioural outcomes at age 16. In combination with other views of school measures a more negative school behavioural climate predicted poorer self-regulation and pro-social behaviour and increased levels of hyperactivity and anti-social behaviour.

5.1 The impact on concurrent views of school

The influence of secondary school on social-behavioural outcomes was also investigated through student self-report that provided students' perspectives on secondary school characteristics. Information about students' views of school was collected using a questionnaire completed by EPPSE students in Year 11. This was similar to a survey conducted with these same students when they were in Year 9. The responses provided an alternative set of indicators that are directly related to students' own school experiences that cannot be readily captured in official evaluations, and which provide further insights into teaching and school processes in secondary schools. The analyses which explored students' perceptions served as an additional tool to establish the influence of the secondary school experience on Year 11 social-behavioural outcomes.

The 'Life in Year 11' questionnaire sought students' responses via a 4-point Likert scale that ranged from strong agreement to strong disagreement. In order to establish underlying dimensions to the survey, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) was carried out. The EFA and CFA analyses are discussed in a separate report (Sammons et al., 2014b forthcoming). A total of five separate factors that reflect features of school and classroom processes in KS4 were identified. The five indicators were:

- teacher professional focus
- positive relationships
- monitoring students
- academic ethos
- formative feedback.

The items that relate to these factors are described in Appendix 4. See Appendix 3 for more detailed tables that list the other controls in the model.

These five factors were then tested for each of the four social-behavioural outcomes after controlling for the effects of significant individual, family, home learning environment (HLE), school composition and neighbourhood characteristics (see section 4). The results reveal stronger effects from students' ratings of their schools than for the CVA and Ofsted indicators. This may reflect greater student understanding of their own school experience. Although most of these aspects of school experience In KS4 predicted social-behavioural outcomes, as can be seen in

, positive relationships between teachers and students was the strongest predictor of outcomes. In contrast, the Academic ethos of the school showed no significant association with self-regulation, hyperactivity or anti-social behaviour. However, this was a weak but significant predictor of better pro-social behaviour.

Table 5.1: Summary of the individual influences of students' views of school on social-behavioural outcomes in KS4: effect sizes (high vs low scores) for KS4 factors

Year 11 Views of School	Year 11 Self-regulation	Year 11 Pro-social behaviour	Year 11 Hyperactivity	Year 11 Anti-social behaviour
Teacher professional focus	0.22*	0.32**	-0.28**	-0.26**
Positive relationships	0.47***	0.60***	-0.55***	-0.46***
Monitoring students	0.30***	0.35***	-0.22*	ns
Formative feedback	0.38***	0.53***	-0.33***	-0.36***
Academic ethos	ns	0.21*	ns	ns

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

The full models can be found in Appendix 3.

5.1.1. The effects of 'positive relationships with teachers' on Year 11 social-behavioural outcomes

The factor 'positive relationships' relates to how well students feel their teachers treat them; the construct taps into how students feel their teachers relate to them on a personal level e.g., 'my teachers are interested in me as a person' and 'the teachers and pupils get on well in this school'. A high score on 'positive relationships' predicted significantly higher scores for students' social-behavioural development at Year 11. The construct contained four items and the Cronbach's Alpha suggested a medium internal reliability (0.79).

Students in secondary schools characterised by high levels of 'positive relationships'[13] had better 'positive' social-behaviour scores compared to similar students in secondary schools which had low levels of 'positive relationships'. Similarly, students in secondary schools with better scores for 'positive relationships' also showed decreased levels of 'negative' social-behavioural. The findings suggest that schools may support students' social-behavioural outcomes by encouraging the development of good relationships between students and teachers and by creating an overall ethos of mutual respect and acceptance.

shows that students who were in schools that were characterised as having higher 'positive relationships' (high and middle groups) were rated as having higher levels of self-regulation scores by their Year 11 teachers than students who were in schools that reported less favourable views of 'positive relationships' (ES=0.47 & ES=0.40 respectively).

[13] Scores were split into three groups for all views of school factors: Top 20%, middle 60%, bottom 20%.

Table 5.2: The effects of Year 11 'positive relationships' on Year 11 self-regulation

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Positive relationships (compared to Low)				
High	5.91	***	1.18	0.47
Middle	5.04	***	0.94	0.40
Missing	-0.02		0.96	-0.00
Intercept	95.81	***		
Random effects parameters				
Variance (Level 2)	15.92		3.73	
Variance (Level 1)	157.58		5.29	
Total Variance	173.50			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16904.44			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Students in secondary schools reported as having higher scores for 'positive relationships' (high and middle group) had higher pro-social behaviour scores than students who were in schools less favourably rated for 'positive relationships' (ES=0.60 and ES=0.49 respectively), as displayed in Table 5.3: The effects of Year 11 'positive relationships' on Year 11 pro-social behaviour.

Table 5.3: The effects of Year 11 'positive relationships' on Year 11 pro-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Positive relationships (compared to Low)				
High	7.42	***	1.17	0.60
Middle	6.12	***	0.93	0.49
Missing	1.29		0.95	0.10
Intercept	93.23	***	2.25	
Random effects parameters				
Variance (Level 2)	21.96		4.23	
Variance (Level 1)	154.99		5.19	
Total Variance	176.95			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16982.10			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 5.4**Error! Reference source not found.** shows that attending a secondary school that scored higher on 'positive relationships' (high and middle groups) predicted lower scores for hyperactivity, compared with attending a school where relationships were less positive (ES=-0.55 and ES=-0.43 respectively).

Table 5.4: The effects of 'positive relationships' on hyperactivity

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Positive relationships (compared to Low)				
High	-6.84	***	1.09	-0.55
Middle	-5.39	***	0.89	-0.43
Missing	-0.06		0.92	-0.00
Intercept	105.02	***	2.18	
Random effects parameters				
Variance (Level 2)	16.38		3.55	
Variance (Level 1)	156.02		4.98	
Total Variance	172.40			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19071.88			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Students who were in schools which were characterised as having higher 'positive relationships' (high and middle groups) were also rated as having lower levels of anti-social behaviour than students who were in schools where students' views were less favourable (low group) for 'positive relationships' (ES=-0.46 and ES=-0.42 respectively, see Table 5.5: The effects of 'positive relationships' on anti-social behaviour).

Table 5.5: The effects of 'positive relationships' on anti-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Positive relationships (compared to Low)				
High	-6.06	***	1.22	-0.46
Middle	-5.51	***	0.97	-0.42
Missing	-0.31		1.00	-0.02
Intercept	102.42	***	2.06	
Random effects parameters				
Variance (Level 2)	15.34		3.86	
Variance (Level 1)	170.72		5.72	
Total Variance	186.06			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17060.42			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

5.2 The impact on earlier views of school in KS3

In the previous section the relationships between students' perceptions of class and school processes and their social behaviour in Year 11 were investigated. In this section the influences of students' previous views of their secondary school experiences in Key Stage 3 (in Year 9) and later social-behavioural outcomes in Year 11 are studied. These are an additional set of indicators that can provide further insights into the impact of teaching and school processes on students' social behaviours. The inclusion of both current and former perceptions of students' judgements of school provides a more comprehensive picture of their experiences of secondary education across time.

During Year 9 students completed a questionnaire similar to that completed two years later in Year 11. Although similar the two questionnaires had some key differences. The Year 9 questionnaire inquired about students' academic life in their secondary school, including amenities and surroundings, library and computing facilities, the behavioural climate and safety, the head teacher's involvement and efficiency, teachers' learning strategies, student support and the respect they showed towards students. Both surveys sought students' responses via a 4-point Likert agreement scales that ranged from strong agreement to strong disagreement. For both surveys, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were carried out to establish their underlying dimensions (see Sammons et al., 2011b for Year 9 results). The EFA and CFA analyses in Year 11 are contained in a separate report (Sammons et al., 2014b).

A total of eight separate factors that reflect features of school and classroom processes were tested for each of the four social-behavioural dimensions after controlling for significant individual, family, home learning environment (HLE) and neighbourhood influences (see Appendix 4). The eight indicators were:

- emphasis on learning
- poor behavioural climate
- headteacher qualities
- school environment
- valuing students
- school/learning resources
- teacher discipline
- teacher support.

As with views of school in KS4, most of the factors were found to be predictors of social-behavioural outcomes, once other contextual factors had been accounted for (controls from models described in section 3). Two factors proved to be poor predictors or in some cases not significantly related to social-behavioural outcomes: they were the learning resources available and the school physical environment. Table 5.6 displays the effect

sizes for high versus low factor scores, representing the difference between the most and least positive views.

Table 5.6: Summary of the individual influence of students' Year 9 views of school on Year 11

Year 9 views of school	Year 11 Self-regulation	Year 11 Pro-social behavioural	Year 11 Hyperactivity	Year 11 Anti-social behavioural
Emphasis on learning	0.43***	0.42***	-0.41***	-0.42***
Poor behaviour climate	-0.44***	-0.38***	0.36***	0.29**
Headteacher qualities	ns	0.29**	-0.17*	-0.22*
School environment	#	0.23*	-0.19*	-0.19*
Valuing students	0.43***	0.43***	-0.50***	-0.45***
School/learning resources	ns	#	#	-0.20*
Teacher discipline	0.20*	0.22*	#	-0.21*
Teacher support	0.32*	0.39**	-0.29**	-0.29**

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Emphasis on Learning, the behavioural climate and the extent the school valued pupils were most strongly associated with social-behaviour at the end of KS4. These are described below. See Appendix 3 for the full models for all outcomes and factors.

5.2.1 The effect of 'poor behavioural climate' on Year 11 social-behavioural outcomes

Attending a secondary school rated as having an overall 'poor behaviour climate' in KS3 predicted poorer social-behaviours outcomes in Year 11. This construct was derived from five items concerning poor behaviour. Students were asked for their views on safety ('there are often fights', 'some kids bring knives or weapons into school'), regard for authority ('students who work hard are given a hard time by others', 'most students take no notice of school rules') and disaffection ('most students want to leave this school as soon as they can').

Table 5.733: The effects of 'poor behavioural climate' on self-regulation

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Poor behaviour climate (compared to Low)				
High	-5.61	***	1.23	-0.44
Middle	-3.34	**	1.02	-0.26
Missing	-3.88	*	1.90	-0.30
Intercept	102.00	***	2.43	
Random effects parameters				
Variance (Level 2)	14.75			
Variance (Level 1)	162.45			
Total Variance	177.20			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16954.74			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Attending a secondary school rated as having a poor behavioural climate (high and middle levels of poor behaviour) predicted lower scores for self-regulation (ES=-0.44 and ES=-0.26 respectively, see) and pro-social behaviour (ES=-0.38 and ES=-0.20 respectively, see Table 5.8).

Table 5.8: The effects of 'poor behavioural climate' on pro-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Poor behaviour climate (compared to Low)				
High	-4.77	***	1.22	-0.38
Middle	-2.48	*	1.02	-0.20
Missing	-0.19		1.90	-0.01
Intercept	99.77	***	2.31	
Random effects parameters				
Variance (Level 2)	21.24		4.14	
Variance (Level 1)	160.59		5.37	
Total Variance	181.83			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17045.56			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Students' who reported their school had a poorer behavioural climate also had higher teacher reported hyperactivity (see Table 5.1). Those attending schools having a worse 'behavioural climate' (high and middle groups) had higher scores for hyperactivity (ES=0.36 & ES=0.22 respectively).

Table 5.1: The effects of 'poor behavioural climate' on hyperactivity

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Poor behaviour climate (compared to Low)				
High	4.58	***	1.12	0.36
Middle	2.83	**	0.89	0.22
Missing	2.75		1.77	0.22
Intercept	99.68	***	2.17	
Random effects parameters				
Variance (Level 2)	15.63		3.53	
Variance (Level 1)	162.24		5.16	
Total Variance	177.87			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19511.02			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

In addition, very high levels of 'poor behaviour climate' in a school (high group), predicted higher scores for students' anti-social behaviour (ES=0.29, Table 5.2).

Table 5.2: The effects of 'poor behavioural climate' on anti-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Poor behaviour climate (compared to Low)				
High	3.88	**	1.27	0.29
Middle	1.88	#	1.06	0.14
Missing	-0.85		1.98	0.06
Intercept	97.22	***	2.10	
Random effects parameters				
Variance (Level 2)	14.80		3.82	
Variance (Level 1)	176.20		5.88	
Total Variance	191.00			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17117.88			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

5.2.2 The effects of 'valuing students' on Year 11 social-behavioural outcomes

Secondary schools that promoted a culture of valuing pupils in KS3 predicted better social-behavioural outcomes in KS4. Students who rated their secondary schools more highly for 'valuing students' showed significantly better social-behavioural outcomes across the board.

The construct 'valuing students' captured students' perceptions of how they felt all students were treated by teachers in their school during KS3. This was derived from the following items on the Year 9 questionnaire: 'the school values students' views'; 'teachers listen to what students say about the school'; 'the teachers in this school show respect for all students; 'teachers are unpleasant if I make mistakes' and 'teachers are friendly towards me'.

Attending secondary schools rated more favourably for the construct 'valuing students' in KS3 (high and middle groups) predicted better self-regulation (ES=0.43 and ES=0.25 respectively, Table 5.3) and pro-social behaviour scores in Year 11 compared to similar students in schools with less favourable ratings for 'valuing students' (ES=0.43 and ES= 0.25 respectively, Table 5.4).

Table 5.3: The effects of 'valuing students' on self-regulation

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Valuing student grouped (compared to Low)				
High	5.49	***	1.16	0.43
Middle	3.18	**	0.92	0.25
Missing	2.81		1.80	0.22
Intercept	95.60	***	2.39	
Random effects parameters				
Variance (Level 2)	14.65		3.61	
Variance (Level 1)	162.65		5.43	
Total Variance	177.30			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16954.04			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 5.4: The effects of 'valuing students' on pro-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Valuing student grouped (compared to Low)				
High	5.41	***	1.16	0.43
Middle	3.11	**	0.92	0.25
Missing	5.78	**	1.80	0.46
Intercept	94.77	***	2.55	
Random effects parameters				
Variance (Level 2)	21.54		4.19	
Variance (Level 1)	159.33		5.33	
Total Variance	180.87			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17021.10			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Similarly attending secondary schools rated more favourably for 'valuing students' (high and middle groups) predicted lower scores for hyperactivity (ES=-0.50 and ES=-0.37 respectively, Table 5.5) and anti-social behaviour than similar students in the group rated lowest (ES=-0.45 and ES=-0.33 respectively, see Table 5.6).

Table 5.5: The effects of 'valuing students' on hyperactivity

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Valuing student grouped (compared to Low)				
High	-6.30	***	1.08	-0.50
Middle	-4.65	***	0.88	-0.37
Missing	-4.03	*	1.72	-0.32
Intercept	106.48	***	2.17	
Random effects parameters				
Variance (Level 2)	15.22		3.47	
Variance (Level 1)	160.99		5.12	
Total Variance	166.21			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19134.42			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 5.6: The effects of 'valuing students' on anti-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Valuing student grouped (compared to Low)				
High	-6.01	***	1.20	-0.45
Middle	-4.34	***	0.95	-0.33
Missing	-6.56	***	1.87	-0.50
Intercept	102.95	***	2.03	
Random effects parameters				
Variance (Level 2)	14.83			
Variance (Level 1)	174.49			
Total Variance	189.42			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17098.74			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

5.2.3 The effects of 'emphasis on learning' on Year 11 social-behavioural outcomes

The factor 'emphasis on learning' relates to the use of critical reasoning skills. A high focus on 'emphasis on learning' skills in KS3 continued to predict significantly better social-behavioural outcomes in Year 11. Students in secondary schools characterised by high levels of 'emphasis on learning' had better social-behaviour compared to similar students in secondary schools which had a weaker 'emphasis on learning'. The construct was derived from the following items: 'most students want to do well in exams'; 'teachers expect me to do my best'; 'lessons are usually challenging but do-able', 'most teachers want me to understand something, not just memorise it'; 'most teachers believe that mistakes are OK so long as we learn'.

Attending a secondary schools rated more favourably for 'emphasis on learning' (high and middle groups) predicted higher self-regulation (ES=0.43 and ES=0.23 respectively, see Table 5.7) and pro-social behaviour scores in comparison with attending a school in the low group (ES=0.42 and ES=0.26 respectively, Table 5.8).

Table 5.7: The effect of 'emphasis on learning' on self-regulation

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Emphasis on learning (compared to Low)				
High	5.51	***	1.78	0.43
Middle	2.91	**	0.91	0.23
Missing	3.39		1.83	0.27
Intercept	95.85	***	2.39	
Random effects parameters				
Variance (Level 2)	13.79		3.51	
Variance (Level 1)	162.91		5.44	
Total Variance	176.70			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16953.68			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 5.8: The effect of 'emphasis on learning' on pro-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Emphasis on learning (compared to Low)				
High	5.32	***	1.17	0.42
Middle	3.27	***	0.91	0.26
Missing	6.49	***	1.84	0.51
Intercept	94.11	***	2.25	
Random effects parameters				
Variance (Level 2)	20.61		4.08	
Variance (Level 1)	160.28		5.35	
Total Variance	180.89			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17037.84			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

As can be seen in

43Table 5.9, a similar pattern was found for the influence of Year 9 ‘emphasis on learning’ on Year 11 hyperactivity and anti-social behaviour scores. Attending a school in the high and middle groups predicted lower hyperactivity (ES=-0.41 and ES=-0.30 respectively) and anti-social behaviour scores when compared to schools in the low group for Year 9 ‘emphasis on learning’ (ES=-0.42 and ES=-0.29 respectively, table 5.18).

Table 5.9: The effect of 'emphasis on learning' on hyperactivity

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Emphasis on learning (compared to Low)				
High	-5.17	***	1.09	-0.41
Middle	-3.79	***	0.88	-0.30
Missing	-4.12	*	1.76	-0.32
Intercept	105.67	***	2.18	
Random effects parameters				
Variance (Level 2)	14.65		3.41	
Variance (Level 1)	162.23			
Total Variance	176.88			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19142.84			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 5.10: The effect of 'emphasis on learning' on anti-social behaviour

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Year 9 Emphasis on learning (compared to Low)				
High	-5.53	***	1.21	-0.42
Middle	-3.81	***	0.95	-0.29
Missing	-6.85	***	1.91	-0.52
Intercept	102.37	***	2.03	
Random effects parameters				
Variance (Level 2)	14.58		3.80	
Variance (Level 1)	175.08		5.85	
Total Variance	189.66			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17102.86			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Modelling the combined effects of students' experiences of school, (measured in both KS3 and KS4) revealed the strongest net effects. Once other influences were accounted for, students attending a secondary school perceived to have positive relationships between staff and students had better social-behavioural outcomes. In addition, the behavioural climate and emphasis placed on learning was also important in predicting many of the social-behavioural outcomes (see Table 5.11).

Table 5.11: Summary of the combined influence of students' views of school on social-behavioural outcomes in KS4: effect sizes (high vs low scores)

		Year 11 Self-regulation	Year 11 Pro-social behaviour	Year 11 Hyperactivity	Year 11 Anti-social behaviour
Students' views of school in KS3	Emphasis on learning		0.30	-0.30**	-0.38
	Poor behavior climate	-0.36	-0.21	0.20	
Students' views of school in KS4	Positive relationships	0.42***	0.42***	-0.49***	-0.43***
	Formative feedback		0.29**		

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

N.B. views of school were tested in combination

Section 6: Exploring students' social-behavioural developmental progress between Key Stage 2 and 4

Key findings

Relative progress, measured from the end of Year 6 of primary school to the end of Year 11 was investigated in this section. The analyses build on findings discussed in Section 3, measuring whether students with particular characteristics are falling further behind or making greater gains than other students whilst in secondary school.

- Earlier social-behavioural ratings (Year 6) were strong predictors of later outcomes. However, social-behavioural outcomes are less stable over time than academic attainment over the same time period.

Background influences

- A significant gender gap was identified, with girls showing more developmental progress in the positive social-behavioural outcomes (self-regulation, pro-social behaviour), and also greater reductions in the negative outcomes (hyperactivity and anti-social behaviour).
- The occurrence of multiple behavioural problems in early childhood was also a significant predictor of students' developmental progress in self-regulation and hyperactivity between KS2 and KS4.
- Similarly, student's age predicted social-behavioural changes from KS2 to KS4. Students born later in the year (summer born) showed less developmental progress than older students (autumn born) in self-regulation and pro-social behaviours, although the size of the effects were small.
- A small equity gap associated with family poverty (eligibility for FSM) was found for changes in self-regulation, pro-social behaviour, hyperactivity and a somewhat stronger effect for anti-social behaviour. A moderate equity gap was found for family SES for all four measures (for students with 'unskilled' parents compared to those with 'professional non-manual' parents).
- The level of parents' educational qualifications was also associated with developmental progress; students whose mothers held a degree or equivalent showed significant improvements in the two positive social-behavioural outcomes, and significant reductions in anti-social behaviour. Smaller reductions in hyperactivity were also found, but those just failed to reach significance.
- The marital status of parents in the early years was a significant predictor of changes in all four measures. In addition, students of parents who were living with their partner but unmarried or single in the early years were found to show small decreases in self-regulation and pro-social behaviour and increases in hyperactivity.

- A high quality HLE during KS3 (in terms of academic enrichment) showed a significant positive effect on improvements in self-regulation (high versus low quality) and pro-social behaviour from Year 6 to Year 11, and significant reductions in hyperactivity and anti-social behaviour.
- There was some evidence that growing up in an area of lower deprivation (IDACI) predicted more favourable developmental progress in self-regulation and pro-social behaviour between KS2-KS4. Students from areas with higher proportions of White British residents also showed less favourable developmental progress in pro-social behaviour between KS2KS4.

Pre-school, primary school and secondary school influences

- Measures of pre-school, primary school and secondary school quality and effectiveness did not predict developmental progress from Year 6 to Year 11.
- However, students own reports of school predicted progress in all four outcomes. Students' reports of 'positive relationships' between teachers and students were found to be the strongest predictor of developmental progress (all four measures).
- In addition, better reports of 'formative feedback' were associated with improvements in pro-social behaviour (high versus low), and better 'emphasis on learning' was associated with decreases in hyperactivity between KS2 and KS4.

This section reports on the statistical relationships between students' social-behavioural outcomes at the end of primary schooling (Year 6, age 11) and the completion Key Stage 4 (KS4, age 16) using value-added (VA) models and correlation analyses. The influence of individual, family, home learning environment (HLE), neighbourhood, and educational characteristics that predict developmental progress between KS2-KS4 using contextual value-added (CVA) models will also be investigated. A structural equations confirmatory factor analysis (SEM CFA) measurement model, similar to the one used for social-behavioural outcomes in Year 11, was also employed for deriving corresponding social-behavioural outcome measures in Year 6, prior to conducting these analyses of developmental progress. By controlling for prior social-behavioural development the analysis shows whether some groups of students are doing better or worse in their later outcomes than would be predicted by their KS2 social-behavioural levels.

Section 6.1: Statistical associations between end of primary and Key Stage 4 Levels of social-behavioural outcomes

Table 6.1 presents the correlations between the four social-behavioural measures between the end of Key Stage 4 (Year 11) and earlier time points covering KS1, KS2 and KS3. The correlations are all moderately strong and positive indicating a fair degree of stability in students' behaviour across the ten year time span. As might be expected the strongest associations are found between the most recent teacher ratings conducted in

secondary school during Year 9 and Year 11 (self-regulation (r=0.57), pro-social behaviour (r=0.53), hyperactivity (r=0.62) and anti-social behaviour (r=0.56).

Table 6.1: Correlations between the four social-behavioural factors over time[14]

	Year 11 Self-regulation	Year 11 Pro-social behaviour	Year 11 Hyperactivity	Year 11 Anti-social behaviour
Year 9	0.57**	0.53**	0.62**	0.56**
Year 6	0.52**	0.42**	0.54**	0.48**
Year 5	0.45**	0.37**	0.50**	0.41**
Year 2	0.42**	0.35**	n/a	0.39**
Year 1	0.39**	0.32**	n/a	0.36**

**Significant at the 0.01 level (2-tailed)

n/a not applicable as outcomes not available in Years 1 and 2

Generally, prior levels of social-behavioural outcomes at Year 6 were predictive of Year 11 levels (Table 6.2 to Table 6.5 and Figure 6.1: Correlation Analysis of pro-social behaviour Levels in Year 11 and Year 6 to Figure 6.3), particularly for self-regulation as measured by the ES. This is in line with findings at younger ages (e.g. between KS1 and KS2, and KS2 and KS3).

The multilevel analyses show that there is more variation between secondary schools for the two positive outcomes (self-regulation and pro-social behaviour) than for the two negative behavioural outcomes (hyperactivity and anti-social behaviour) when we study developmental change across the five years of secondary schooling (see Table 6.2 to Table 6.5), although significant school level variation was found for all four measures. It should be noted that the average number of students per secondary school was very low (averaging between 3.5 and 3.6 per school, depending on the outcome). Given this the estimates of school level variance (measured by the Intra-school correlation) should be treated with caution.

[14] N ranges from Year 11 and Year 9 (1607-1616); Year 11 and Year 6 (2227-2237); Year 11 and Year 5 (2112-2120); Year 11 and Year 2 (2136-2138); Year 11 and Year 1 (2139-2150).

Table 6.2: Value-Added Model for self-regulation in Year 11

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Value-Added Model	Estimate	Sig	Std. Error	Effect Size
Year 6 Self-Regulation: SEM CFA Derived Latent Factor, IQ-Standardized	0.52	***	0.02	1.29
Intercept	99.91	***	0.35	
Random-effects parameters				
Variance (Level 2)	15.38	***	3.61	
Variance (Level 1)	147.30	***	4.96	
Total Variance	162.68			
Number of Level-1 Observations	2190			
Number of Level-2 Units	632			
Deviance (-2 x Log Restricted-Likelihood)	17362.80			
Variance Partitioning Coefficient (VPC)/ Intra-School Correlation	0.095			
Proportion of Level-1 Variance Reduction [Compared to Null Model] (%)	26.61			
Proportion of Level-2 Variance Reduction [Compared to Null Model] (%)	34.50			
Proportion of Total Variance Reduction [Compared to Null Model] (%)	27.48			

# p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Figure 6.1: Correlation Analysis of self-regulation Levels in Year 11 and Year 6

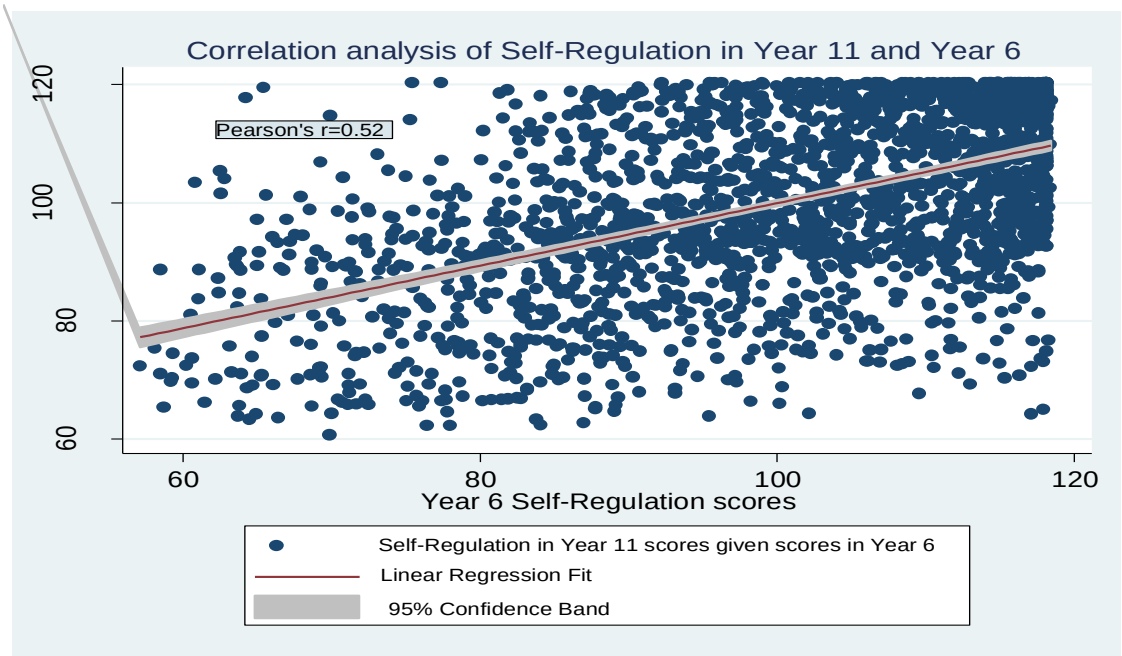


Table 6.3: Value-Added Model for pro-social behaviour in Year 11

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Value Added Model	Estimate	Sig	Std. Error	Effect Size
Year 6 Pro-Social behaviour: SEM CFA Derived Latent Factor, IQ-Standardized	0.45	***	0.02	1.05
Intercept	100.06	***	0.36	
Random-effects parameters				
Variance (Level 2)	18.68	***	3.77	
Variance (Level 1)	157.62	***	5.18	
Total Variance	176.30			
Number of Level-1 Observations	2235			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17841.68			
Variance Partitioning Coefficient (VPC)/ Intra-School Correlation	0.106			
Proportion of Level-1 Variance Reduction [Compared to Null Model] (%)	18.92			
Proportion of Level-2 Variance Reduction [Compared to Null Model] (%)	34.32			
Proportion of Total Variance Reduction [Compared to Null Model] (%)	20.89			

# p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Figure 6.1: Correlation Analysis of pro-social behaviour Levels in Year 11 and Year 6

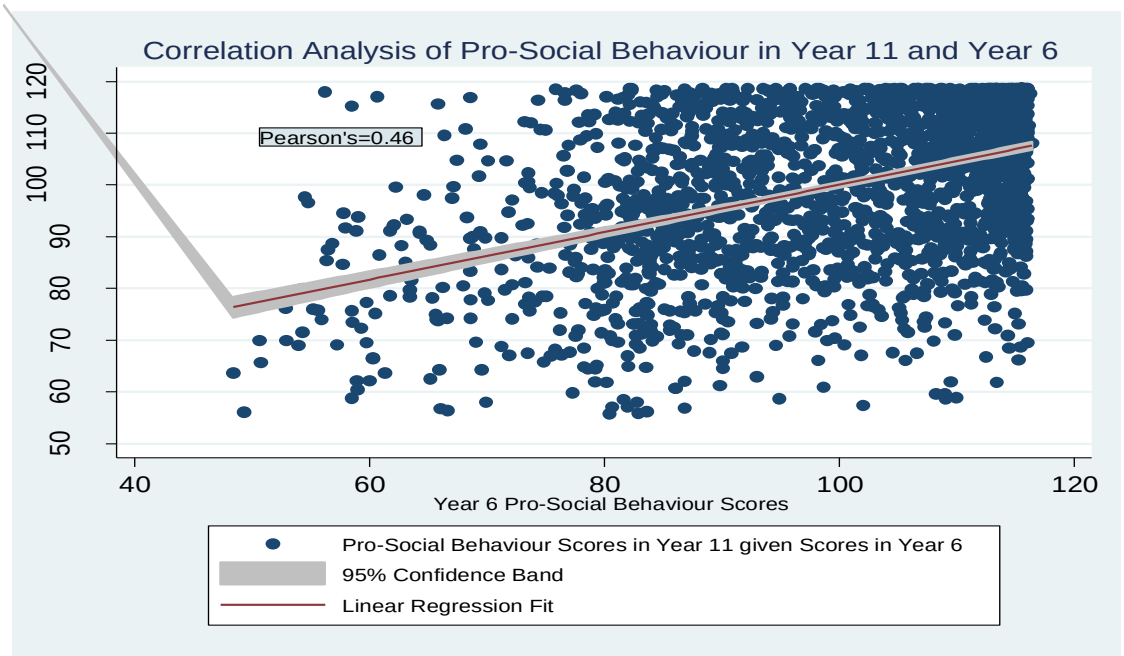


Table 6.4: Value-Added Model for hyperactivity in Year 11

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Value Added Model	Estimate	Sig	Std. Error	Effect Size
Year 6 Hyperactivity: SEM CFA Derived Latent Factor, IQ-Standardized	0.55	***	0.02	1.37
Intercept	100.13	***	0.33	
Random-effects parameters				
Variance (Level 2)	11.84	***	3.06	
Variance (Level 1)	144.63	***	4..74	
Total Variance	156.47			
Number of Level-1 Observations	2237			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17618.56			
Variance Partitioning Coefficient (VPC)/ Intra-School Correlation	0.076			
Proportion of Level-1 Variance Reduction [Compared to Null Model] (%)	28.96			
Proportion of Level-2 Variance Reduction [Compared to Null Model] (%)	36.99			
Proportion of Total Variance Reduction [Compared to Null Model] (%)	29.64			

# p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Figure 6.2: Correlation Analysis of hyperactivity Levels in Year 11 and Year 6

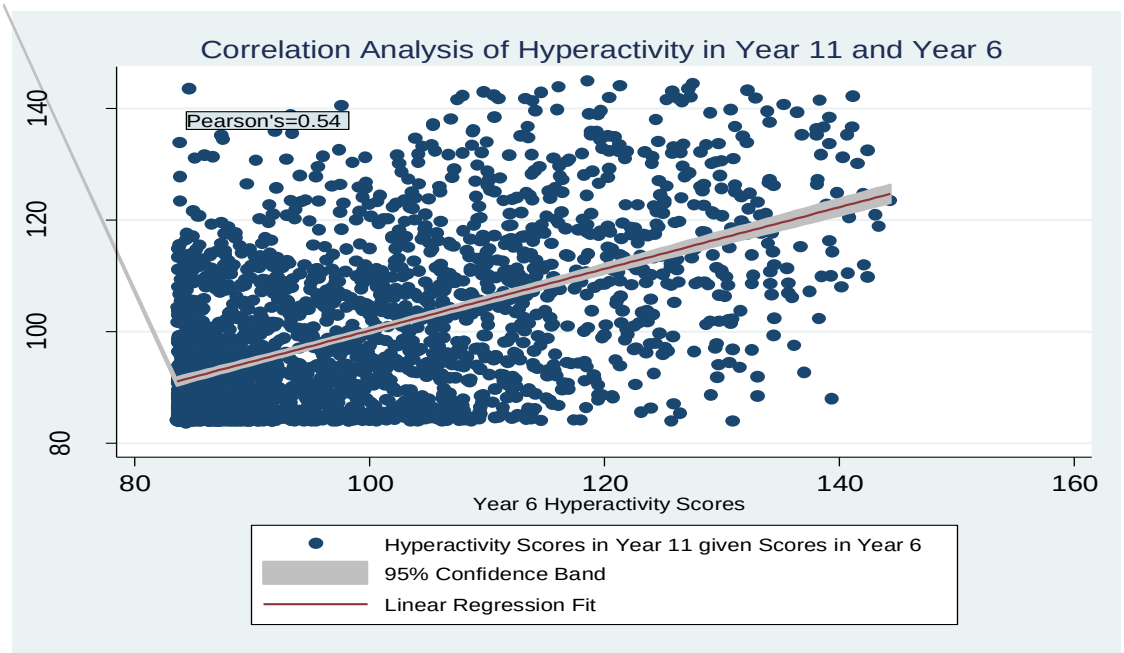
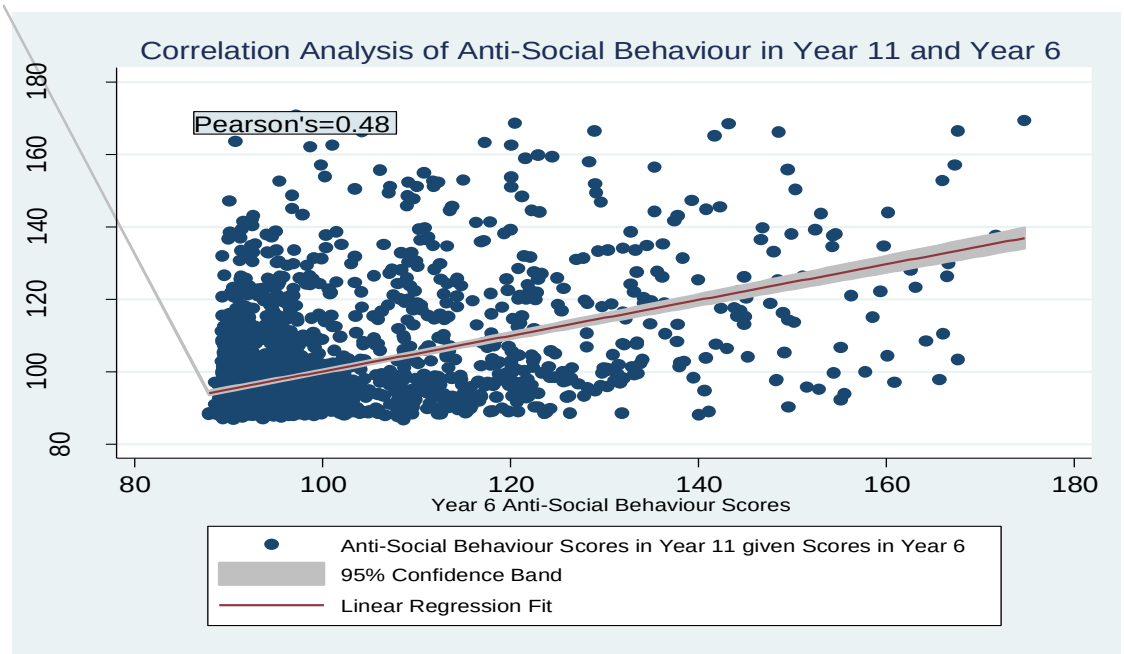


Table 6.5: Value-Added Model for anti-social behaviour in Year 11

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Value Added Model	Estimate	Sig	Std. Error	Effect Size
Year 6 Anti-social behaviour : SEM CFA Derived Latent Factor, IQ-Standardized	0.49	***	0.02	1.17
Intercept	99.99	***	0.33	
Random-effects parameters				
Variance (Level 2)	10.45	***	3.01	
Variance (Level 1)	158.67	***	5.17	
Total Variance	169.12			
Number of Level-1 Observations	2228			
Number of Level-2 Units	637			
Deviance (-2 x Log Restricted-Likelihood)	17731.64			
Variance Partitioning Coefficient (VPC)/ Intra-School Correlation	0.062			
Proportion of Level-1 Variance Reduction [Compared to Null Model] (%)	20.76			
Proportion of Level-2 Variance Reduction [Compared to Null Model] (%)	48.90			
Proportion of Total Variance Reduction [Compared to Null Model] (%)	23.37			

# p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Figure 6.3: Correlation Analysis of anti-social behaviour Levels in Year 11 and Year 6



Section 6.2: Characteristics associated with developmental progress between Key Stage 2 (KS2) and Key Stage 4 (KS4)

Section 6.2.1: The influence of individual, family, home learning environment (HLE) and neighbourhood characteristics on developmental progress between KS2 and KS4

Individual characteristics

Gender: As the analyses reported in Section 3 found, female students show more favourable social-behavioural outcomes in Year 11, all other things being equal. Additionally, the contextual value-added models reported in this section reveal that, assuming otherwise similar socio-demographic circumstances, girls tend to show more favourable progress in terms of self-regulation and pro-social behaviour between KS2 and KS4, and at the same time a greater reduction in hyperactivity and anti-social behaviour. An implication of this is that the gender gap has widened in favour of girls during KS3 and KS4.

Age: There was evidence that relative age within their cohort (measured by term of birth) predicted developmental progress between KS2 and KS4 for both self-regulation and pro-social behaviour. Summer born students (young for their year) were found to make less progress in self-regulation and pro-social behaviour than autumn born students (old for their year) between KS2-KS4 (self-regulation was significant at $p<0.10$). In contrast, while younger students' levels of hyperactivity tended to be higher in Year 11, they showed similar developmental progress from Year 6 as the older cohort members. These results suggest that age effects for some outcomes have become stronger during secondary education.

Behavioural problems: Students' behavioural history in early childhood was generally a good predictor of their developmental progress between KS2 and KS4 in three of the investigated behavioural domains. Thus, students whose parents had reported one or more behavioural problems during early childhood tended to make less developmental progress between Year 6 and Year 11. The occurrence of behavioural problems in early childhood, all else equal, predicted poorer developmental progress in terms of self-regulation and pro-social behaviour, and increased hyperactivity between KS2 and KS4.

Family characteristics

Family Size: The number of siblings in the student's household was related to their developmental progress between KS2 and KS4 for self-regulation and hyperactivity. Student from large families (three or more siblings) showed decreases in self-regulation from KS2 to KS4 (ES=-0.24) and increases in hyperactivity (ES=0.22) over the same time period.

Family Socio-economic Status (SES) and Family poverty: Differences in developmental progress between KS2-KS3 were predicted by family socio-economic status for all

outcomes, although in some cases they did not reach the conventional significance levels. Thus, as
indicates, compared to students with parents in professional non-manual occupational categories, students with parents in all other SES categories (except never worked/not working) show significantly less improvements in their self-regulation abilities from Year 6 to Year 11, especially students of parents from unskilled occupations. Since students from families with lower SES had already started from lower levels, these findings support the notion that the equity gap in terms of self-regulation has been broadened during KS3 and KS4.

With respect to pro-social behaviour, significant progress differences were only found between the professional non-manual and unskilled categories, with students of unskilled parents making significantly less progress compared to students of parents in professional non-manual occupations (it should be noted that both skilled categories also tended to show lower levels of pro-social behaviour but failed to reach the $p<0.05$ significance level).

As regards the negative social-behavioural outcomes, the unskilled group also displayed significant differences in terms of developmental progress for hyperactivity and anti-social behaviour during KS3 and KS4, as did students with skilled manual parents.

Family poverty: Similarly, students who were eligible for free school meals (FSM) showed poorer developmental progress between KS2 and KS4 than students who were not eligible for FSM in terms of self-regulation and pro-social behaviour, although the size of the effects was small (self-regulation - ES=-0.17; pro-social behaviour - ES=-0.20). Eligibility for FSM also predicted increased hyperactivity and anti-social behaviour, and the ES were stronger than those found for the two outcomes measuring positive behaviours (hyperactivity - ES=0.28; anti-social behaviour - ES=0.33).

Table 6.6: The influence of individual background, family factors, HLE and neighbourhood on changes in self-regulation between KS2 and KS4 (contextual value-added model)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
Gender (Girls compared to boys)	3.51	***	0.55	0.30
Term of birth within the academic year (compared with Autumn born)				
Spring born	0.09		0.62	0.01
Summer born	-1.30	*	0.66	-0.11
Ethnicity (compared with White UK heritage)				
White European heritage	-0.37		1.53	-0.03
Black Caribbean heritage	4.24	**	1.50	0.37
Black African heritage	1.32		2.02	0.11
Any other ethnic minority	0.46		2.08	0.04
Indian heritage	2.17		1.81	0.19
Pakistani heritage	1.84		1.35	0.16
Bangladeshi heritage	4.78	#	2.73	0.41
Mixed race	0.97		1.18	0.08
Missing	5.30		8.90	0.46
Number of siblings in the house (at age 3/5) (compared with no siblings)				
1-2 Siblings	0.09		0.69	0.01
3+ Siblings	-2.79	**	0.95	-0.24
Missing	-0.95		4.74	-0.08
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	-0.96		0.90	-0.08
2+ Behavioural Problems	-5.04	**	1.89	-0.44
Missing	-6.94		8.11	-0.60
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	-1.56		1.11	-0.13
Skilled, non-manual	-1.91		1.24	-0.17
Skilled manual	-3.12	*	1.39	-0.27
Semi-skilled	-2.28		1.44	-0.20
Unskilled	-5.04	*	2.13	-0.44
Not working/never worked	-0.69		2.14	-0.06
Missing	-0.63		4.59	-0.05
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	-1.93	*	0.77	-0.17
Not known	-0.96		1.77	-0.08
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Vocational	-0.46		1.10	-0.04
16 academic	1.13		0.88	0.10
18 academic	1.28		1.18	0.11
Other professional/Miscellaneous	0.39		2.20	0.03
Degree or equivalent	3.28	**	1.18	0.28
Higher degree	2.71	#	1.56	0.23
Missing	3.45		3.24	0.30
Marital Status of Parent (compared with Married)				
Single	-2.91	**	0.94	-0.25
Separated/Divorced	-0.29		0.91	-0.03
Living with partner	-2.06	**	0.79	-0.18
Widow/ widower /other [15]	7.48	**	2.74	0.65
Missing	0.05		7.89	0.00

[15] Findings for the 'Widow/ widower /other' category are not reported in the text as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
KS3 Academic enrichment (compared with Low)				
Medium	1.77	*	0.76	0.15
High	3.30	***	0.93	0.29
Missing	-1.53	#	0.76	-0.13
Neighbourhood IDACI (compared with High deprivation)				
Low deprivation	2.01	*	0.88	0.17
Medium deprivation	0.97		0.70	0.08
Missing	4.81		5.72	0.42
Year 6 Self-Regulation: SEM CFA Derived Latent Factor, IQ-Standardized	0.41	***	0.02	1.06
Intercept	98.83	***	1.83	
Random-effects parameters				
Variance (Level 2)	14.43		3.38	
Variance (Level 1)	133.65		4.54	
Total Variance	148.08			
Number of Level-1 Observations	2190			
Number of Level-2 Units	632			
VPC)/ Intra-School Correlation	0.097			
Deviance (-2 x Log Restricted-Likelihood)	16962.30			
% of Level-1 Variance Reduction	33.46			
% of Level-2 Variance Reduction	38.54			
Proportion of Total Variance Reduction	33.99			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Highest Qualifications Level: Educational qualifications held by their parents were predictive of the students' levels of social-behaviour in Year 11 (see Section 5), but had a more limited influence on progress from Year 6 to Year 11, especially for self-regulation and hyperactivity. Accordingly, students of mothers holding a degree or equivalent showed a tendency for increases in their levels of self-regulation and weak decreases in hyperactivity but these only verged on statistical significance (p=0.08) between KS2 and KS4 compared to students of mothers with no educational qualifications.

A stronger pattern of differences in developmental progress was identified in terms of pro-social behaviour. Students of mothers holding lower academic qualifications (16 academic, 18 academic) and higher academic qualifications (degree, higher degree) made more developmental progress than students of mothers with no qualifications. Maternal educational qualifications were significant predictors of diminished levels of anti-social behaviour between KS2 and KS4. Thus, students of mothers holding lower academic qualifications (16 academic), a degree or equivalent, or a higher degree, displayed significant reductions in anti-social behaviour compared to students of mothers with no qualifications.

Table 6.7: The influence of individual background, family factors, HLE and neighbourhood on changes in pro-social behaviour between KS2 and KS4 (contextual value-added model)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
Gender (Girls compared to boys)	4.74	***	0.57	0.40
Term of birth within the academic year (compared with Autumn born)				
Spring born	0.15		0.63	0.01
Summer born	-1.68	*	0.66	-0.14
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	-1.93	*	0.95	-0.16
2+ Behavioural Problems	-2.66		1.94	-0.23
Missing	-11.35		9.90	-0.96
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	-1.24		1.13	-0.11
Skilled, non-manual	-2.17	#	1.25	-0.18
Skilled manual	-2.65	#	1.40	-0.22
Semi-skilled	-1.62		1.45	-0.14
Unskilled	-5.13	*	2.16	-0.43
Not working/never worked	-0.24		2.14	-0.02
Missing	4.24		4.69	0.36
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	-2.33	**	0.78	-0.20
Not known	-0.33		1.80	-0.03
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	-0.53		1.09	-0.04
16 academic	2.28	**	0.88	0.19
18 academic	1.80		1.18	0.15
Other professional/Miscellaneous	-2.33		2.20	-0.20
Degree or equivalent	4.31	***	1.17	0.37
Higher degree	3.86	*	1.54	0.33
Missing	6.25		3.27	0.53
Marital Status of Parent (compared with Married)				
Single	-2.24	*	0.90	-0.19
Separated/Divorced	0.80		0.91	0.07
Living with partner	-1.66	*	0.78	-0.14
Widow/widower/other[16]	4.99	#	2.79	0.42
Missing	-1.82		7.94	-0.15
KS3 Academic enrichment (compared with Low)				
Medium	1.75	*	0.77	0.15
High	2.48	**	0.94	0.21
Missing	-2.36	**	0.77	-0.20

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

[16] Findings for the 'Widow/widower/other' category are not reported in the text as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Neighbourhood IDACI (compared with High deprivation)				
Low deprivation	2.43	*	0.96	0.21
Medium deprivation	1.80	*	0.75	0.15
Missing	-14.60		8.93	-1.24
Neighbourhood: % White British	-0.04	**	0.01	-0.18
Year 6 Pro-social behaviour: SEM CFA Derived Latent Factor, IQ-Standardized	0.35	***	0.02	0.89
Intercept	97.47	***	1.73	
Random-effects parameters				
Variance (Level 2)	18.01		3.50	
Variance (Level 1)	139.19		4.62	
Total Variance	157.20			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
VPC)/ Intra-School Correlation	0.115			
Deviance (-2 x Log Restricted-Likelihood)	17453.68			
% of Level-1 Variance Reduction	28.40			
% of Level-2 Variance Reduction	36.67			
Proportion of Total Variance Reduction	29.46			

$^{\#}$p<0.10, *p<0.05, **p<0.01, ***p<0.001

Marital Status of Parents: Family structure as indicated by the marital status of the parents at entry to the study predicted progress for all four social-behavioural outcomes between KS2 and KS4. Thus, students from the group classified as lone parent families in the early years on average showed decreases in self-regulation and pro-social behaviour from Year 6 to Year 11 compared to students from families consisting of a married couple (self-regulation - ES=-0.25; pro-social behaviour - ES=-0.19). Students from families where parents lived together but were not married also made les developmental progress than students from married households, although the size of the effect was weaker (self-regulation - ES=-0.18; pro-social behaviour - ES=-0.14,p<0.10).

Lone parenthood was also a significant predictor of increases in hyperactivity and anti-social behaviour between KS2 and KS4 (hyperactivity - ES=0.24; anti-social behaviour - ES=-0.15). Students from families where parents lived together but were not married also showed greater increases in hyperactivity during KS3 and KS4 (hyperactivity ES=0.15).

Table 6.8: The influence of individual background, family factors, HLE and neighbourhood on changes in hyperactivity between KS2 and KS4 (contextual value-added model)

Hyperactivity[SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
Gender (Girls compared to boys)	-2.77	***	0.54	-0.24
Ethnicity (compared with White UK heritage)				
White European heritage	0.68		1.49	0.06
Black Caribbean heritage	-3.59	*	1.44	-0.31
Black African heritage	-1.18		1.97	-0.10
Any other ethnic minority	0.18		1.98	0.02
Indian heritage	-1.77		1.74	-0.15
Pakistani heritage	-2.85	*	1.31	-0.25
Bangladeshi heritage	-1.40		2.55	-0.12
Mixed race	-0.62		1.14	-0.05
Missing	-11.61		8.35	-1.01
Early child behavioural problems (compared with no behavioural problems)				
1 Behavioural Problem	0.56		0.88	0.05
2+ Behavioural Problems	3.27	#	1.80	0.29
Missing	9.83		7.98	0.86
Number of Siblings in the house (at age 3/5) (compared with no Siblings)				
1-2 Siblings	-0.32		0.67	-0.03
3+ Siblings	2.51	**	0.93	0.22
Missing	2.83		4.67	0.25
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	0.80		1.08	0.07
Skilled, non-manual	1.91		1.21	0.17
Skilled manual	3.27	*	1.36	0.29
Semi-skilled	2.18		1.40	0.19
Unskilled	6.47	**	2.08	0.57
Not working/never worked	0.32		2.08	0.03
Missing	0.57		4.52	0.05
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	3.21	***	0.75	0.28
Not known	3.81	*	1.36	0.33
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	0.75		1.07	0.07
16 academic	-1.25		0.86	-0.11
18 academic	-0.73		1.14	-0.06
Other professional/Miscellaneous	-0.19		2.13	-0.02
Degree or equivalent	-2.21	#	1.15	-0.19
Higher degree	-1.60		1.50	-0.14
Missing	-3.54		3.18	-0.31

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Hyperactivity[SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
Marital Status of Parent (compared with Married)				
Single	2.76	**	0.91	0.24
Separated/Divorced	0.58		0.88	0.05
Living with partner	1.73	*	0.76	0.15
Widow/ widower /other	-7.71	**	2.69	-0.67
Missing	-4.13		7.77	-0.36
KS3 Academic enrichment (compared with Low)				
Medium	-1.96	**	0.74	-0.17
High	-3.83	***	0.90	-0.33
Missing	1.32	#	0.74	0.12
Year 6 Hyperactivity: SEM CFA Derived Latent Factor, IQ-Standardized	0.44	***	0.02	1.16
Intercept	100.22	***	1.62	
Random-effects parameters				
Variance (Level 2)	12.39		3.01	
Variance (Level 1)	130.79		4.35	
Total Variance	143.18			
Number of Level-1 Observations	2237			
Number of Level-2 Units	638			
VPC)/ Intra-School Correlation	0.086			
Deviance (-2 x Log Restricted-Likelihood)	17274.74			
% of Level-1 Variance Reduction	35.76			
% of Level-2 Variance Reduction	34.33			
Proportion of Total Variance Reduction	35.64			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Home Learning Environment (HLE)

The quality of the early years HLE was not predictive of students' developmental progress from year 6 for any of the four KS4 social-behavioural outcomes. However, levels of HLE enrichment activities experienced during KS3 did predict better developmental progress for all outcomes. Medium or high levels of enrichment activities, were predictive of increases in self-regulation, and pro-social behaviour and reductions in negative behaviours (hyperactivity and anti-social behaviour), compared to low levels of enrichment in KS3.

Table 6.9The influence of individual background, family factors, HLE and neighbourhood on changes in anti-social between KS2 and KS4 (contextual value-added model)

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
Gender (Girls compared to boys)	-2.84	***	0.56	-0.24
Ethnicity (compared with White UK heritage)				
White European heritage	0.09		1.55	0.01
Black Caribbean heritage	-2.62	#	1.50	-0.22
Black African heritage	-1.30		2.04	-0.11
Any other ethnic minority	-0.76		2.06	-0.06
Indian heritage	-1.05		1.81	-0.09
Pakistani heritage	-2.46	#	1.34	-0.20
Bangladeshi heritage	-3.06		2.65	-0.25
Mixed race	0.75		1.19	0.06
Missing	-5.95		8.78	-0.49
Parents' Highest SES (at age 3/5) (compared with Professional non-manual)				
Other Professional, non-manual	0.27		1.13	0.02
Skilled, non-manual	1.02		1.26	0.08
Skilled manual	2.91	*	1.42	0.24
Semi-skilled	1.81		1.47	0.15
Unskilled	6.31	**	2.18	0.52
Not working/never worked	-1.38		2.17	-0.11
Missing	-1.20		4.65	-0.10
Free School Meals (FSM) status (compared with no FSM)				
Eligible for FSM	4.03	***	0.78	0.33
Not known	2.17		1.81	0.18
Parents' Highest Qualifications Level (at age 3/5) (compared with no qualifications)				
Vocational	0.38		1.11	0.03
16 academic	-2.29	*	0.90	-0.19
18 academic	-0.84		1.19	-0.07
Other professional/Miscellaneous	1.09		2.24	0.09
Degree or equivalent	-2.75	*	1.19	-0.23
Higher degree	-2.80	#	1.56	-0.23
Missing	-2.31		3.21	-0.19
Marital Status of Parent (compared with Married)				
Single	1.87	*	0.93	0.15
Separated/Divorced	0.06		0.93	0.00
Living with partner	1.34	#	0.80	0.11
Widow/ widower /other	-6.05	*	2.82	-0.50
Missing	6.14		5.41	0.51
KS3 Academic enrichment (compared with Low)				
Medium	-1.32	#	0.78	-0.11
High	-2.68	**	0.95	-0.22
Missing	2.03	**	0.77	0.17
Year 6 Antisocial: SEM CFA Derived Latent Factor, IQ-Standardized	0.41	***	0.02	1.02

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added	Estimate	Sig.	Std. Error	Effect Size
Intercept	100.93	***	1.58	
Random-effects parameters				
Variance (Level 2)	9.85		2.89	
Variance (Level 1)	146.00		4.82	
Total Variance	155.85			
Number of Level-1 Observations	2238			
Number of Level-2 Units	637			
VPC)/ Intra-School Correlation	0.063			
Deviance (-2 x Log Restricted-Likelihood)	17433.24			
% of Level-1 Variance Reduction	27.17			
% of Level-2 Variance Reduction	51.83			
Proportion of Total Variance Reduction	29.38			

$^{\#}$p<0.10, *p<0.05, **p<0.01, ***p<0.001

Neighbourhood

The Income Deprivation Affecting Children Index (IDACI) is a measure of deprivation specially looking at the proportion of children within a neighbourhood considered 'income deprived'. Living in a more advantaged area, as measured by lower scores on the IDACI was a positive predictor of students' developmental progress from year 6 for self-regulation and pro-social behaviour (self-regulation - ES=0.17; pro-social behaviour - ES=0.21; low compared to high deprivation). Students from areas with lower percentages of children living in poverty showed greater developmental progress between KS2-KS4 for self-regulation and pro-social behaviour, but the IDACI measure was not associated with developmental progress for the two negative social-behavioural outcomes. Students living in neighbourhoods with a higher proportion of white British residents also made less developmental progress form Year 6 to Year 11 for pro-social behaviour than those living in areas with lower proportions white British residents (ES=-0.18).

Section 6.2.2: The influence of educational environments on developmental progress between Key Stage 2 and Key Stage 4

Pre-school

There were no statistically significant results showing that EPPSE students who had attended pre-school made better developmental progress between KS2-KS4 than those who had not attended pre-school. However, a small positive effect was found for self-regulation but it failed to reach conventionally accepted significance levels (ES=0.15, p=0.11).

Although high pre-school quality (top 20 percentiles) as measured by the ECERS-R and ECERS-E observational scales has been found to have an enduring protective impact on social-behavioural outcomes in KS4 (see earlier section), there were few significant effects of pre-school quality on developmental progress from Year 6 to Year 11. Nonetheless, students who had attended a high quality pre-school (as measured by the ECERS-R instrument) made greater increases in pro-social behaviour than students who had attended low quality pre-schools (ES=0.21).

Table 6.10: The influence of pre-school quality (ECERS-R) on progress in pro-social behaviour between KS2 and KS4 (contextualised value added)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
ECERS-R (Grouped): (compared to Low)				
Medium	0.79		0.82	0.07
High	2.49	*	0.94	0.21
No quality (home)	0.86		1.26	0.07
Intercept	96.40	***	1.33	
Random-effects parameters				
Variance (Level 2)	17.11		3.46	
Variance (Level 1)	139.33		4.63	
Total Variance	156.44			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17440.8			

$^{\#}$p<0.10, *p<0.05, **p<0.01, ***p<0.001

Measures of pre-school effectiveness, based on the amount of progress children made across the pre-school period, were also investigated. Students from highly effective pre-schools (those that had promoted better developmental progress for children whilst in pre-school in terms of peer sociability) subsequently also made more developmental progress between KS2-KS4 in self-regulation than students who had previously attended pre-school settings with low effectiveness for these areas. It should be noted that the size of effect is relatively small (ES=0.13, high versus low). Also, those who went to a more effective pre-school in terms of reducing anti-social behaviour, also showed better developmental progress in self-regulation in secondary school (ES=0.18, high versus low), see Table 6.11 and Table 6.12).

Table 6.11: The influence of pre-school effectiveness (peer sociability) on progress in self-regulation between KS2 and KS4 (contextualised value added)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Peer sociability (Grouped): (compared to Low)				
Medium	1.86	*	0.90	0.16
High	1.52	#	1.10	0.13
No quality (home)	-0.16		1.35	-0.01
Intercept	96.99	***	2.01	
Random-effects parameters				
Variance (Level 2)	14.85		3.40	
Variance (Level 1)	133.14		4.53	
Total Variance	147.99			
Number of Level-1 Observations	2190			
Number of Level-2 Units	574			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.12: The influence of pre-school effectiveness (anti-social behaviour) on progress in self-regulation between KS2 and KS4 (contextualised value added)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Anti-social behaviour (Grouped): (compared to Low)				
Medium	1.52	#	0.90	0.13
High	2.04	#	1.09	0.18
No quality (home)	-0.32		1.35	-0.03
Intercept	97.40	***	2.00	
Random-effects parameters				
Variance (Level 2)	14.47		3.36	
Variance (Level 1)	133.40		4.53	
Total Variance	149.44			
Number of Level-1 Observations	2190			
Number of Level-2 Units	632			
Deviance (-2 x Log Restricted-Likelihood)	17486.14			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Primary school academic effectiveness

Primary school academic effectiveness (in maths) showed a small long-term effect on students' improvement in anti-social behaviour, although this just failed to reach the conventional levels of significance (p<0.05 is usually considered statistically significant). This factor had been found to be a significant predictor of reductions in anti-social behaviour during KS2 at younger ages.

Table 6.13: The influence of primary school effectiveness (Maths) on progress in anti-social behaviour between KS2 and KS4 (contextualised value added)

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Primary Maths effectiveness (Grouped): (compared to Low)				
Medium	-0.53		0.80	-0.04
High	-2.09	#	1.15	-0.17
Missing	0.04		0.99	-0.00
Intercept	101.33	***	1.71	
Random-effects parameters				
Variance (Level 2)	10.45		2.99	
Variance (Level 1)	145.52		4.82	
Total Variance	155.97			
Number of Level-1 Observations	2228			
Number of Level-2 Units	637			
Deviance (-2 x Log Restricted-Likelihood)	17424.68			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Similarly, primary school academic effectiveness (in Science) showed evidence of a small long-term impact on students' improvement in hyperactivity (ES=-0.15), when comparing students from high and low effectiveness primary schools.

Secondary school quality and effectiveness

There are large differences in the reported social-behaviours of students for many of the Ofsted quality judgements when no account is made of background or prior social-behavioural level (see

Figure 6.4 and

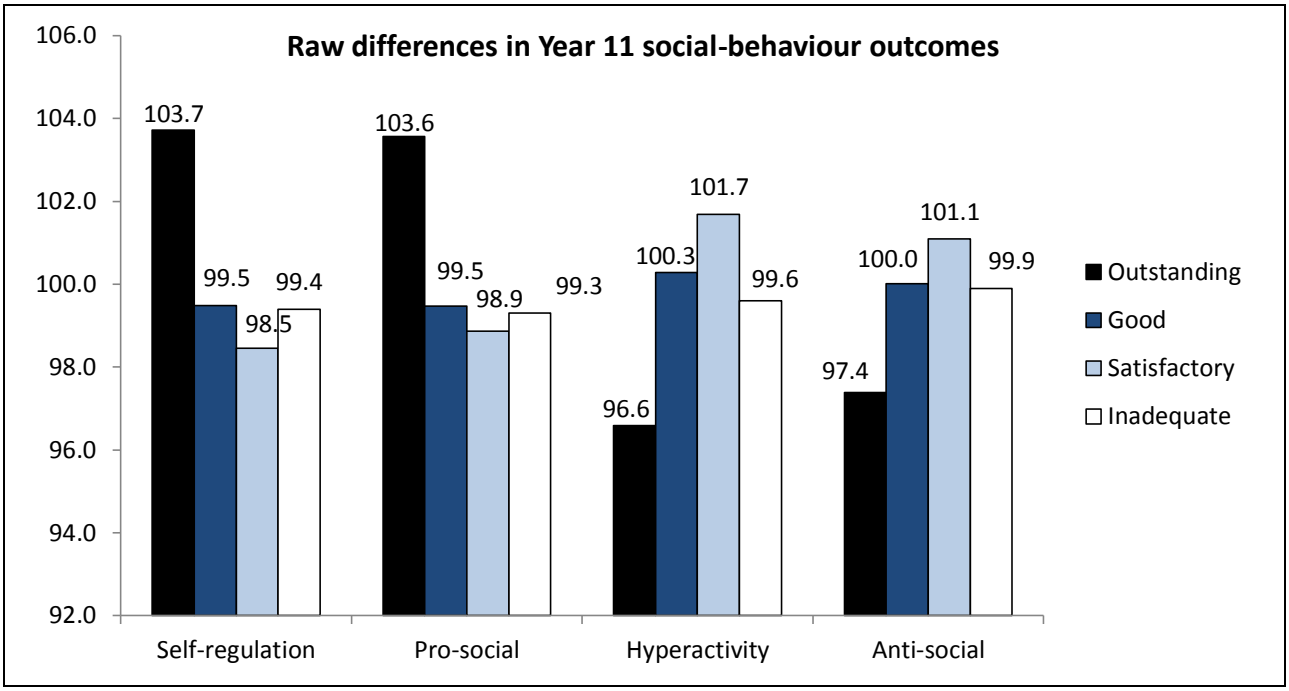


Figure 6.5).

Figure 6.4: Overall Ofsted judgement and social-behavioural outcomes in Year 11

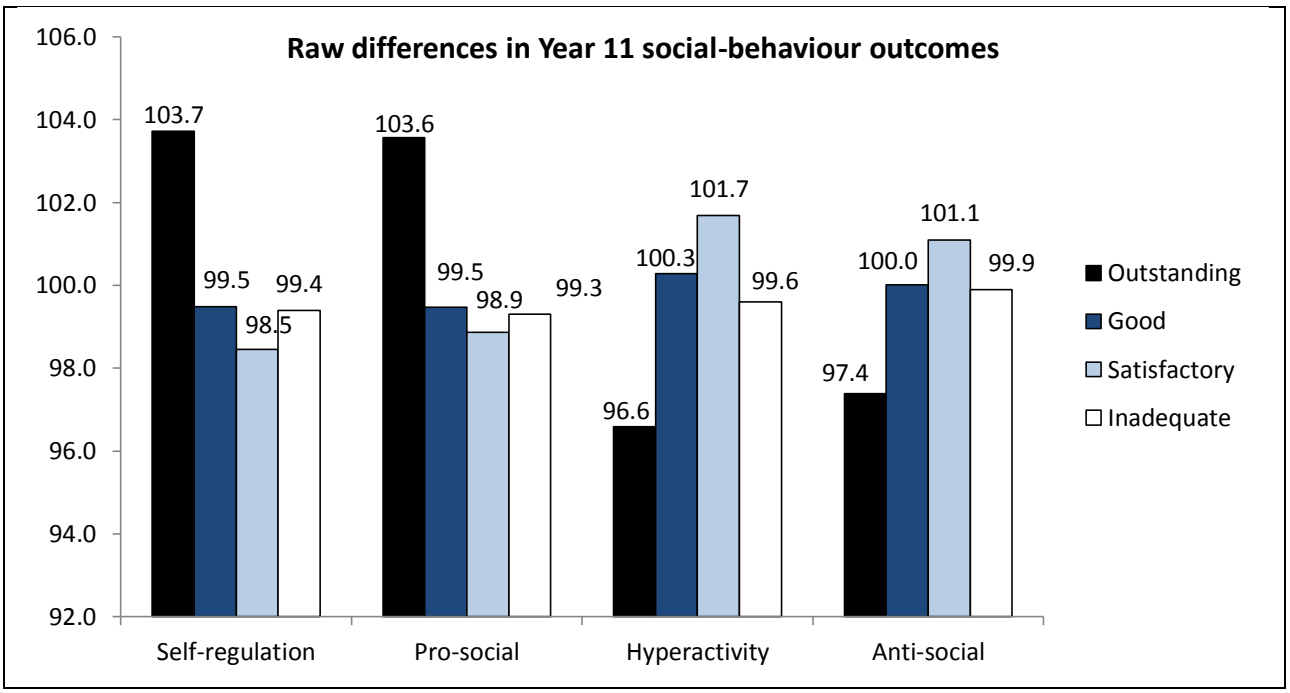
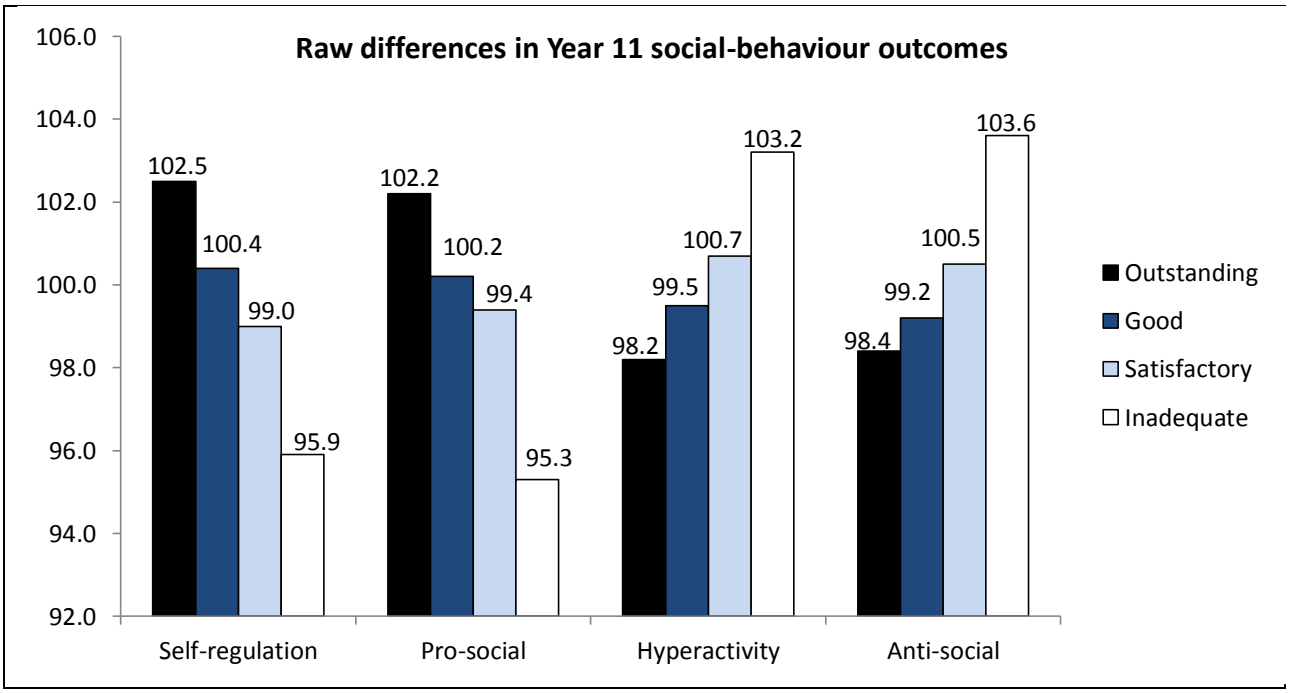


Figure 6.5: Ofsted judgement on attendance and social-behavioural outcomes in Year 11



However, once prior social-behaviour (measured at the end of Year 6) and background influences have been accounted for, the quality of secondary school attended (as measured by Ofsted inspection judgments) were generally not significant predictors of changes in EPPSE students' social-behavioural outcomes between Year 6 and Year 11. This is in line with findings from previous analyses of social-behavioural progress from Year 6 to Year 9 (Sammons et al., 2011d).

Measures based on standardised test results (the KS2-KS4 secondary school CVA measure) that provided indicators of secondary school overall academic effectiveness did

not predict students' progress in social-behavioural outcomes between KS2-KS4. This is in contrast to findings on GCSE outcomes and progress for the EPPSE sample.

Students' self-reports of their experiences of secondary school proved to be stronger predictors of social-behavioural outcomes. Several major domains pertaining to teaching and school processes in secondary schools, as reported by students in Year 9 and Year 11 accounted for developmental progress between KS2 and KS4, after controlling for the influence of individual student, family, home learning environment (HLE) and neighbourhood characteristics.

Emphasis on Learning

One important feature of school culture was the 'emphasis on learning' students experienced in their secondary school. A strong emphasis on learning, as reported by students, predicted significant improvements in students' self-regulation between KS2 and KS4 (ES=0.28; high versus low levels of emphasis on learning), and similar positive progress in terms of pro-social behaviour (ES=0.25).

Table 6.14: The influence of students' views of school (Emphasis on learning) on progress in self-regulation between KS2 and KS4 (contextualised value added)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Emphasis on learning in KS3 (Grouped): (compared to Low)				
Medium	2.15	*	0.84	0.19
High	3.19	**	1.04	0.28
Missing	2.58		1.63	0.22
Intercept	96.85	***	1.95	
Random-effects parameters				
Variance (Level 2)	14.07		3.34	
Variance (Level 1)	133.39		4.54	
Total Variance	147.46			
Number of Level-1 Observations	2190			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17481.78			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.15: The influence of students' views of school (Emphasis on learning) on progress in pro-social behaviour between KS2 and KS4 (contextualised value added)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Emphasis on learning in KS3 (Grouped): (compared to Low)				
Medium	1.99	*	0.85	0.17
High	2.94	**	1.06	0.25
Missing	4.55	**	1.66	0.39
Intercept	95.58	***	1.86	
Random-effects parameters				
Variance (Level 2)	17.68		3.47	
Variance (Level 1)	138.80		4.61	
Total Variance	156.48			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood	17436.60			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Further, emphasis on learning was a significant predictor of reductions in hyperactivity from Year 6 to Year 11 (ES=-0.30) and of anti-social behaviour (ES= -0.27).

Table 6.16: The influence of students' views of school (Emphasis on learning) on progress in hyperactivity between KS2 and KS4 (contextualised value added)

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Emphasis on learning in KS3 (Grouped): (compared to Low)				
Medium	-2.76	***	0.82	-0.24
High	-3.47	***	1.01	-0.30
Missing	-3.94	*	1.60	-0.35
Intercept	102.60	***	1.75	
Random-effects parameters				
Variance (Level 2)	12.28		3.00	
Variance (Level 1)	130.10		4.34	
Total Variance	142.38			
Number of Level-1 Observations	2237			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17254.32			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.17: The influence of students' views of school (Emphasis on learning) on progress in anti-social behaviour between KS2 and KS4 (contextualised value added)

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Emphasis on learning in KS3 (Grouped): (compared to Low)				
Medium	-2.45	**	0.86	-0.20
High	-3.25	**	1.06	-0.27
Missing	-5.50	**	1.68	-0.46
Intercept	103.14	***	1.71	
Random-effects parameters				
Variance (Level 2)	9.95		2.92	
Variance (Level 1)	145.08		4.80	
Total Variance	155.03			
Number of Level-1 Observations	2228			
Number of Level-2 Units	637			
Deviance (-2 x Log Restricted-Likelihood)	17412.30			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Behaviour climate

Another important feature of secondary school culture was the behaviour climate in KS3. A poorer behaviour climate predicted significant decreases in students' self-regulation abilities between KS2 and KS4 (ES=-0.26, high versus low levels), and similar decreases in pro-social behaviour (ES=-0.23).

Table 6.18: The influence of students' views of school (Poor behaviour climate) on progress in self-regulation between KS2 and KS4 (contextualised value added)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Poor behaviour climate in KS3 (Grouped): (compared to Low)				
Medium	-2.17	*	0.85	-0.19
High	-2.96	**	1.07	-0.26
Missing	-2.31		1.64	-0.20
Intercept	100.63	***	1.93	
Random-effects parameters				
Variance (Level 2)	14.73		3.41	
Variance (Level 1)	133.09		4.53	
Total Variance	149.45			
Number of Level-1 Observations	2190			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	15670.72			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.19: The influence of students' views of school (Poor behaviour climate) on progress in pro-social behaviour between KS2 and KS4 (contextualised value added)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Poor behaviour climate in KS3 (Grouped): (compared to Low)				
Medium	-1.77	*	0.85	-0.15
High	-2.74	*	1.09	-0.23
Missing	0.38		1.67	0.03
Intercept	98.97	***	1.85	
Random-effects parameters				
Variance (Level 2)	18.21		3.51	
Variance (Level 1)	138.68		4.61	
Total Variance	157.25			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17439.16			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

A poor behaviour climate was also predictive of increases in hyperactivity, but to a lesser extent (see Table 6.20, below).

Table 6.20: The influence of students' views of school (Poor behaviour climate) on progress in hyperactivity between KS2 and KS4 (contextualised value added)

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Poor behaviour climate in KS3 (Grouped): (compared to Low)				
Medium	1.68	*	0.82	0.16
High	2.02	#	1.04	0.19
Missing	0.54		1.61	0.08
Intercept	98.94	***	1.73	
Random-effects parameters				
Variance (Level 2)	12.73		3.06	
Variance (Level 1)	130.43		4.35	
Total Variance	143.16			
Number of Level-1 Observations	2237			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17263.97			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Headteacher qualities

Students who reported more favourable views of their headteacher showed increases in pro-social behaviour and decreases in anti-social behaviour, although the effects were weak (see 66Table 6.21and 67Table 6.22, below).

Table 6.21: The influence of students' views of school (Headteacher qualities) on progress in pro-social behaviour between KS2 and KS4 (contextualised value added)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Headteacher qualities in KS3 (Grouped): (compared to Low)				
Medium	1.62	#	0.86	0.14
High	2.01	*	1.04	0.17
Missing	3.85	*	1.63	0.33
Intercept	96.11	***	1.83	
Random-effects parameters				
Variance (Level 2)	18.38		3.53	
Variance (Level 1)	138.69		4.61	
Total Variance	157.07			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17740.76			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.22: The influence of students' views of school (Headteacher qualities) on progress in anti-social behaviour between KS2 and KS4 (contextualised value added)

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Headteacher qualities in KS3 (Grouped): (compared to Low)				
Medium	-2.16	*	0.86	-0.18
High	-2.19	*	1.05	-0.18
Missing	-4.18	*	1.65	-0.35
Intercept				
Random-effects parameters				
Variance (Level 2	10.33		2.94	
Variance (Level 1)	145.23		4.80	
Total Variance	155.56			
Number of Level-1 Observations	2228			
Number of Level-2 Units	637			
Deviance (-2 x Log Restricted-Likelihood)	17418.19			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Valuing students

As was the case in Year 9, attending a secondary school where students reported that pupils were valued and listened to also predicted significant increases in self-regulation (ES=0.38), and pro-social behaviour (ES=0.28), controlling for other factors.

Table 6.23: The influence of students' views of school (Valuing pupils) on progress in self-regulation between KS2 and KS4 (contextualised value added)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Valuing students in KS3 (Grouped): (compared to Low)				
Medium	3.18	***	0.85	0.28
High	4.36	***	1.03	0.38
Missing	2.82	#	1.59	0.25
Intercept	95.93	***	1.94	
Random-effects parameters				
Variance (Level 2)	14.79		3.63	
Variance (Level 1)	132.34		4.74	
Total Variance	147.13			
Number of Level-1 Observations	2190			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	16932.36			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.24: The influence of students' views of school (Valuing pupils) on progress in pro-social behaviour between KS2 and KS4 (contextualised value added)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Valuing students in KS3 (Grouped): (compared to Low)				
Medium	2.48	**	0.86	0.21
High	3.31	***	1.04	0.28
Missing	4.57	*	1.63	0.39
Intercept	95.24	***	1.85	
Random-effects parameters				
Variance (Level 2)	18.15		3.51	
Variance (Level 1)	138.35		4.60	
Total Variance	156.50			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17433.86			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

The factor Valuing students also predicted significant decreases in students' hyperactivity between KS2 and KS4 (ES=-0.44; high vs low levels), and similar reductions in anti-social behaviour (ES=-0.36).

Table 6.25: The influence of students' views of school (Valuing pupils) on progress in hyperactivity between KS2 and KS4 (contextualised value added)

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Valuing students in KS3 (Grouped): (compared to Low)				
Medium	-3.82	***	0.83	-0.34
High	-5.02	***	1.00	-0.44
Missing	-4.26	**	1.56	-0.38
Intercept	103.74	***	1.75	
Random-effects parameters				
Variance (Level 2)	12.63		3.03	
Variance (Level 1)	129.01		4.30	
Total Variance	141.64			
Number of Level-1 Observations	2237			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17240.36			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.26: The influence of students' views of school (Valuing pupils) on progress in anti-social behaviour between KS2 and KS4 (contextualised value added

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Valuing students in KS3 (Grouped): (compared to Low)				
Medium	-3.68	***	0.87	-0.31
High	-4.34	***	1.05	-0.36
Missing	-5.98	***	1.64	-0.50
Intercept	104.19	***	1.71	
Random-effects parameters				
Variance (Level 2)	10.42		2.95	
Variance (Level 1)	144.06		4.77	
Total Variance	154.48			
Number of Level-1 Observations	2228			
Number of Level-2 Units	637			
Deviance (-2 x Log Restricted-Likelihood)	17402.08			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Teacher discipline

Teacher discipline in KS3 predicted developmental progress in only one outcome. High levels of reported teacher discipline predicted reductions in anti-social behaviour scores (ES=-0.20, p<0.05, high versus low).

Teacher support

A more positive view of teacher support predicted greater progress in students' self-regulation abilities between KS2 and KS4 (ES=0.29; high versus low levels), and similar increases in pro-social behaviour (ES=0.30), again controlling for individual student, family, HLE and neighbourhood characteristics and Year 6 prior social behaviour.

Table 6.27: The influence of students' views of school (Teacher support) on progress in self-regulation between KS2 and KS4 (contextualised value added)

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Teacher support in KS3 (Grouped): (compared to Low)				
Medium	2.02	*	0.84	0.17
High	3.35	**	1.02	0.29
Missing	1.95		1.45	0.17
Intercept	96.77	***	1.96	
Random-effects parameters				
Variance (Level 2)	14.52		3.39	
Variance (Level 1)	133.07		4.53	
Total Variance	147.59			
Number of Level-1 Observations	2190			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17481.32			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 6.28: The influence of students' views of school (Teacher support) on progress in pro-social behaviour between KS2 and KS4 (contextualised value added)

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Teacher support in KS3 (Grouped): (compared to Low)				
Medium	2.35	**	0.85	0.20
High	3.57	**	1.03	0.30
Missing	3.84	**	1.47	0.33
Intercept	95.12	***	1.87	
Random-effects parameters				
Variance (Level 2)	17.97		3.50	
Variance (Level 1)	138.46		4.61	
Total Variance	156.43			
Number of Level-1 Observations	2232			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17434.21			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

In addition, teacher support also predicted reduced hyperactivity (ES=-0.32).

Table 6.29: The influence of students' views of school (Teacher support) on progress in hyperactivity between KS2 and KS4 (contextualised value added)

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextual Value Added				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Teacher support in KS3 (Grouped): (compared to Low)				
Medium	-2.20	**	0.82	-0.19
High	-3.60	***	0.99	-0.32
Missing	-2.54	#	1.41	-0.22
Intercept	102.54			
Random-effects parameters				
Variance (Level 2)	12.61			
Variance (Level 1)	129.99			
Total Variance	142.60			
Number of Level-1 Observations	2237			
Number of Level-2 Units	638			
Deviance (-2 x Log Restricted-Likelihood)	17256.14			

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

In KS4 students were again asked about their experiences of school and classroom life and these measures were also found to be associated with progress in social-behaviour between KS2 and KS4.

Positive relationships

The strongest associations were found for views of Positive relationships in Year 11. Higher levels of reported positive relationships were associated with greater progress in self-regulation (high - ES=0.41, p<0.001; medium - ES=0.35, p<0.001; compared to low), and pro-social behaviour (high - ES=0.50, p<0.001; medium - ES=0.4 p<0.001;), reductions in hyperactivity (high - ES=-0.49, p<0.001; medium - ES=-0.40, p<0.001) and reductions in anti-social behaviour (high - ES=-0.45, p<0.001; medium - ES=-0.39, p<0.001).

Formative feedback

Smaller but moderate effects were also found for Formative feedback. Higher levels of reported Formative feedback were associated with greater progress in self-regulation (high - ES=0.33, p<0.001; medium - ES=0.24, p<0.01; compared to low), greater progress in pro-social behaviour (high - ES=0.42, p<0.001; medium - ES=0.30, p<0.001), reductions in hyperactivity (high - ES=-0.32, p<0.001; medium - ES=-0.22, p<0.01) and reductions in anti-social behaviour (high - ES=-0.33, p<0.001; medium - ES=-0.27, p<0.001).

Monitoring students

Similar size associations were also found for monitoring students. Higher levels of reported monitoring predicted greater progress in self-regulation (high - ES=0.35, p<0.001; medium - ES=0.15, p<0.05; compared to low), greater progress in pro-social

behaviour (high - ES=0.29, p<0.001; medium - ES=0.12, p<0.10), reductions in hyperactivity (high - ES=-0.28, p<0.001; medium - non-significant) and reductions in anti-social behaviour (high - ES=-0.15, p<0.10; medium - non-significant)

Teacher professional focus

Smaller but still moderate effects were also found for teacher professional focus. Higher levels of reported teacher professional focus were associated with greater progress in self-regulation (high - ES=0.21, p<0.05; medium - non-significant; compared to low), greater progress in pro-social behaviour (high - ES=0.29, p<0.01; medium ns), reductions in hyperactivity (high - ES=-0.27, p<0.01; medium - non-significant) and reductions in anti-social behaviour (high - ES=-0.26, p<0.01; medium - non-significant).

Academic ethos

Academic ethos showed only weak associations with developmental progress, in all cases not reaching conventionally acceptable significance levels.

Table 6.30 below summarises the difference in developmental progress made by students with the most and least positive views of their secondary schools on the various self-report factors measured (top and bottom 20%), after background had been controlled, looking at each measure individually.

Table 6.30: Summary of the influence of students' views of school on social-behavioural progress between KS2 and KS4: effect sizes (high vs low scores)

Students' views of school in KS3	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social behaviour
Emphasis on learning	0.28**	0.25**	-0.30**	-0.27**
Poor behavior climate	-0.26**	-0.23**	0.19*	NS
Headteacher qualities	NS	0.17*	#	-0.18*
School physical environment	NS	#	#	NS
Valuing pupils	0.38***	0.28***	-0.44***	-0.36***
Teacher discipline	NS	0.20*	#	NS
School learning resources	NS	#	NS	#
Teacher support	0.29**	0.30***	-0.30**	NS
Students' views of school in KS4				
Teacher professional focus	0.21*	0.29***	-0.27**	-0.26**
Positive relationships	0.41***	0.50***	-0.49***	-0.45***
Monitoring students	0.35***	0.29**	-0.28**	#
Formative feedback	0.33***	0.42***	-0.32***	-0.33***
Academic ethos	NS	#	NS	#

NS=non-significant; #p<0.10, *p<0.05, **p<0.01, ***p<0.001

N.B. views of school were tested individually, only significant p<0.05 level shown

As many of the measures were correlated to some extent, they were also tested in combination, to ascertain which domains were the most predictive of developmental gains. When tested in combination, positive relationships between staff and students was the best predictor of self-regulation (high - ES=0.38, p<0.001; medium - ES=0.34, p<0.001, compared to low). In addition, a poorer behaviour climate in KS3 also predicted

lower self-regulation scores (high - ES=-0.18, p<0.10; medium - non-significant, compared to low).

When tested in combination positive relationships between staff and students was also the best predictor of progress in pro-social behaviour (high - ES=0.40, p<0.001; medium - ES=0.34, p<0.001, compared to low). Formative feedback was also predictive (high - ES=0.26, p<0.05, - non-significant, compared to low).

Similarly, modelling the combined effects of students' views of school showed that positive relationships between staff and students was the best predictor of decreases in hyperactivity (high - ES=-0.46, p<0.001; medium - ES=-0.38, p<0.001, compared to low). In addition, an emphasis on learning was also associated with decreases in hyperactivity scores (high - ES=-0.25, p<0.01; medium - ES=-0.20, p<0.01, compared to low).

Lastly, modelling the combined effects of students' experiences of school measured by self-report questionnaires indicated that attending a secondary school perceived to have positive relationships between staff and students was the best predictor of decreases in anti-social behaviour (high - ES=-0.37, p<0.001; medium - ES=-0.34, p<0.001, compared to low). Formative feedback was also predictive of decreases in anti-social behaviour (high - ES=-0.18, p<0.10; medium - ES=-0.15, p<0.10).

Table 6.31: Summary of the combined influence of students' views of school on social-behavioural progress between KS2 and KS4: effect sizes (high vs low scores)

	Self-regulation	Pro-social behaviour	Hyperactivity	Anti-social behaviour
Students' views of school in KS3				
Emphasis on learning			-0.25**	
Poor behavior climate	-0.18#			
Students' views of school in KS4				
Positive relationships	0.38***	0.40***	-0.46***	-0.37***
Formative feedback		0.26**		-0.18#

#p<0.10, *p<0.05, **p<0.01, ***p<0.001

N.B. views of school were tested in combination

Summary and conclusions

The current findings about students' social-behaviour at age 16 within this report can be compared with earlier points in time when equivalent analyses was conducted for this sample when they were in pre-school and primary (KS1 & KS2) and lower secondary school (KS3). The present analyses suggest that although Year 11 students were generally rated fairly positively by their teachers in terms of social-behaviour, when compared to the primary school analysis, the proportions identified as showing negative behaviour have increased.

The continued analysis of the EPPSE sample up to age 16 provides new evidence (as well as extending previous findings) about the continuing influence of individual, family and home learning environment (HLE) characteristics. This report indicates that teacher ratings of Year 11 students' behaviour in secondary school are strongly associated with students' own reports of their experiences of secondary school. The analyses identify which individual student, family and HLE characteristics continue to predict EPPSE students' social behaviour at the end of KS4 and also the developmental change in behaviour from Year 6 to Year 11 across five years in secondary school.

The latest findings point to the influence of different background characteristics such as gender, family socio-economic status (SES) or family income on social-behavioural outcomes. In addition, EPPSE has additional data on the early years Home Learning Environment (HLE) and the HLE experienced at older ages (KS1, KS2 and KS3), as well parental qualifications. This enables a more detailed approach to exploring the influence of parents and the home on students' social-behavioural outcomes and development. Our findings note that various measures of the HLE and parents' qualifications continue to shape student's social-behavioural development as well as their academic progress across KS2-KS4.

As with the analysis strategy used in previous years multilevel statistical models were created to ascertain which characteristics were the best predictors of social-behavioural outcomes at age 16. The EPPSE study used a mixed method design. Although this report is based on quantitative analysis of large datasets, elsewhere EPPSE has reported findings from qualitative case studies of individual children and families that are more educationally successful in overcoming disadvantage (see Siraj-Blatchford et al., 2011). These qualitative findings enabled us to develop a broader understanding of the way disadvantage and other experiences shape children's educational outcomes and experiences as they move through different phases of education and into adolescence. These case studies show that certain behavioural traits can be important in supporting better educational outcomes for vulnerable groups of disadvantaged students, and indicate that self-regulation and a positive early years HLE can help to protect students from the adverse impact of social disadvantage across different phases of education.

This report shows the role of neighbourhood, pre-schools, primary schools and secondary schools in predicting Year 11 students' social-behavioural outcomes after controlling for the impact of individual student, family, HLE and neighbourhood characteristics. It details the continued influence of pre-school, primary school and

secondary school indicators as predictors of students' social-behavioural outcomes and tests a range of measures related to students' secondary school experiences.

Summary of Main Findings

Social-behavioural measures in Year 11

Measures of social behaviour were derived from teacher ratings of individual students. The profile was based on the Goodman (1997) Strengths & Difficulties Questionnaire with additional items added to extend the range of social behaviours. Four underlying dimensions of social behaviour were identified: two positive social behaviours (self-regulation and pro-social behaviour) and two negative behaviours (hyperactivity and anti-social behaviour). These provide a social-behavioural profile for each student at age 16. Earlier analyses have identified these dimensions of behaviour for this sample at younger ages. In order to investigate social-behavioural development/change over the five years of secondary education, baseline measures of these four behaviours, based on teacher ratings collected at the end of primary schooling in Year 6, were also created and included in the analyses.

EPPSE investigated the influence of a wide range of demographic and socio-economic measures derived from parental interviews and questionnaires as predictors of students' behaviour at age 16. These include individual characteristics, such as gender, age, ethnicity, early childhood behavioural history, and family characteristics, including family size (number of siblings), parents' marital status, family earned income, family highest socio-economic status (SES), as well as the highest level of parents' qualifications. EPPSE also investigated influences specific to the educational system in England, such as Special Education Needs (SEN) status, and Free School Meals (FSM) eligibility. The following summarises the key findings, after allowing for the influence of other background influences.

Variations in social-behavioural outcomes in Year 11 for different student groups

Girls show better social-behavioural profiles than boys at age 16 in all four outcomes (e.g., ES=0.43 for self-regulation; ES=0.59 for pro-social behaviour; ES=-0.47 for hyperactivity; ES=-0.39 for anti-social behaviour). Family Socio-economic status (SES) and parents' highest qualification levels are also strong predictors (e.g., ES=0.44 for self-regulation; ES=0.33 for pro-social behaviour; ES=-0.33 for hyperactivity; ES=-0.32 for anti-social behaviour).

Socio-Economic Status (SES) and family poverty also proved to be predictors of social-behavioural outcomes in Year 11. For example, compared to the highest SES group (professional non-manual), students with unskilled parents had poorer social-behavioural ratings (ES=-0.61 for self-regulation; ES=-0.51 for pro-social behaviour; ES=0.56 for hyperactivity; ES=0.54 for anti-social behaviour). Students eligible for free school meals

(FSM) also displayed poorer outcomes in Year 11 (ES=-0.33 for self-regulation; ES=-0.30 for pro-social behaviour; ES=0.39 for hyperactivity; ES=0.44 for anti-social behaviour: compared to the 'professional non-manual' group).

There are weaker effects linked to parents' marital status, although there is a tendency for poorer self-regulation and pro-social behaviour and increased hyperactivity and anti-social behaviour for those from single parent families (ES=-0.25 for self-regulation; ES=-0.28 for pro-social behaviour; ES=0.24 for hyperactivity; ES=0.21 for anti-social behaviour for students with single parents versus married parents).

Coming from a large family (3 or more siblings in the early years, compared to singletons) was predictive of lower self-regulation (ES=-0.22) and higher hyperactivity (ES=0.18).

The home learning environment (HLE) for the early years and later HLE (KS3 enrichment) continues to predict students' social-behavioural outcomes up to age 16, taking into account other influences. Those students who had experienced a more positive HLE in the early years were rated more favourably by teachers in terms of various social-behavioural outcomes in Year 11 (ES=0.29 for the high versus low HLE groups for self-regulation; ES=0.21 for pro-social behaviour; ES=-0.23 for hyperactivity). Higher levels of 'academic enrichment' activities (educational related activities such as reading for pleasure, educational outings) reported by students and their parents in KS3 also predicted better social-behavioural outcomes (ES=0.28 for the high versus low enrichment groups for self-regulation; ES=0.17 for pro-social behaviour; ES=-0.25 for hyperactivity; ES=-0.18 for anti-social behaviour).

Students with a record of Special Educational Needs (SEN) in secondary school showed significantly poorer behavioural outcomes as would be anticipated given the known link with behaviour and SEN, the two probably reflecting a reciprocal relationship. The strength of relationships are in line with the SEN research literature and findings for this group at younger ages (Anders et al., 2010; Taggart et al., 2006; Sammons et al., 2003; Sammons et al., 2004a; Sammons et al., 2008b). Similarly, students who had been identified by their parents as having behaviour problems (two or more) in the early years were more likely to continue to display poorer social-behavioural outcomes in Year 11 (ES=-0.44 for self-regulation; ES=-0.33 – for pro-social; ES=0.38 for hyperactivity) than those with no problems reported.

The student's age within the year group remained a significant predictor though effects were fairly weak. Even in Year 11 summer born (youngest) compared to autumn born students (oldest) showed poorer outcomes: (ES=-0.17 for self-regulation; ES=-0.12 for pro-social behaviour; ES=0.17 for hyperactivity). These effects, though statistically significant, were smaller than those found at younger ages.

Neighbourhood influences

Various measures of neighbourhood disadvantage were also tested to see if they predicted students' social-behavioural outcomes at age 16, while controlling for the effects of individual, family, HLE and school composition measures. There was evidence that the level of overall disadvantage in the neighbourhood, measured by the Income Deprivation Affecting Children Index (IDACI) scores predicted poorer social-behavioural outcomes for the EPPSE sample in KS4, taking into account the influences of other significant predictors described above. Low levels of neighbourhood deprivation compared to high deprivation predicted higher scores for self-regulation (ES=0.22) and pro-social behaviour (ES=0.25) and lower scores for hyperactivity (ES=-0.19).

Living in a neighbourhood with a higher proportion of White British residents was also weakly associated with lower pro-social behaviour (ES=-0.20), higher hyperactivity (ES=0.15) and greater anti-social behaviour (ES=0.18).

These results indicate that 'place' poverty, as well as that related to the individual and their family can also shape social-behavioural outcomes for adolescents. In primary school the neighbourhood effects were not statistically significant, but they became significant by KS3 and their influence is also evident in KS4.

Educational experiences from pre-school to secondary school

EPPSE investigated the influences of educational environments across different phases of education in shaping students' social-behavioural outcomes at age 16.

Pre-school influences

In order to assess whether the impact of early educational settings on social behaviour continued through to the end of KS4 various measures related to pre-school were tested: exposure (i.e., attended pre-school or not), pre-school quality and pre-school effectiveness.

The results indicate that just attending any pre-school centre did not predict social-behavioural outcomes in Year 11, which is in contrast to findings for GCSE academic outcomes for the EPPSE sample where positive effects remain (see Sammons et al., 2014a). In addition, the influence of pre-school effectiveness measures was no longer visible at age 16, in line with findings when the students were 14. There was some evidence that these measures and pre-school effectiveness were important when the EPPSE sample were in primary school, but these effects disappear by Year 11. In contrast, the quality of the pre-school setting as measured by the Early Childhood Environment (ECERS) observational scales continued to be a statistically significant predictor for self-regulation, pro-social behaviour and hyperactivity at the end of Key Stage 4, although the effects were weak.

Overall, students who had attended higher quality pre-schools still showed significantly better social-behavioural outcomes (for self-regulation, pro-social behaviour,

hyperactivity) at age 16 than those who had experienced only low quality pre-school controlling for other influences. These relatively small effects were consistent in predicting better outcomes, for 'self-regulation (ES=-0.14, high versus low), pro-social behaviour (ES=0.16, high versus low quality) and hyperactivity (ES=-0.20).

Primary school influence

There were no statistically significant trends in the effects of the academic effectiveness of the primary school an EPPSE student had attended in terms of predicting better later social-behavioural outcomes at the end of KS3, and this was largely mirrored in KS4. Again, this is in contrast to findings for academic attainment where longer term positive benefits from attending a more academically effective primary school that remain statistically significant in predicting academic results in Year 9 and for overall GCSE outcomes in Year 11 are identified (Sammons et al., 2011a; Sammons et al., 2014a).

Secondary school influences

Two administrative indicators of school effectiveness and quality were available: i) the DfE's Contextual Value Added (CVA) measures, calculated to measure secondary school effectiveness in promoting students' academic progress from KS2 to KS4 and ii) the Office for Standards in Education (Ofsted) inspection grades for schools.

EPPSE tested whether students who attended more effective or higher quality secondary schools (as defined by these indicators) showed better social-behavioural outcomes.

The four year average CVA score for secondary schools did not predict significant differences in students' social-behavioural outcomes in KS3 or in KS4, when account was taken of the influence of individual student, family, HLE, school composition and neighbourhood characteristics, although there was some suggestion of weak positive effects for pro-social behaviour that verged on being significant.

Similarly, the overall Ofsted inspection judgments of the secondary school did not predict better social-behavioural outcomes for EPPSE students. Again these results are in contrast to findings for the academic attainments of the EPPSE students in Year 11 measured by GCSE results, where these official indicators predict better outcomes.

School level social composition was measured by the percentage of students' eligible for free school meals (% FSM) and the percentage of students with special educational needs (SEN). Both of these aggregate measures of school intake were found to be significant predictors of social-behavioural outcomes at KS4. Attending a secondary school with a higher proportion of SEN students had a weak but negative impact on EPPSE students' own social-behavioural outcomes for self-regulation, pro-social behaviour and anti-social behaviour. Attending a secondary school with a more disadvantaged student intake (% FSM) also had a weak but positive effect on EPPSE students' own social-behavioural outcomes for self-regulation and pro-social behaviour, once other characteristics had been accounted for. The later finding is in contrast to those for GCSE outcomes, where a disadvantaged school context predicts poorer attainment. It may be that high disadvantage schools place a greater emphasis on

promoting positive social behaviour (as suggested by the literature on school effectiveness) to support learning.

Students' experiences and views of secondary school

Teaching and school processes in KS3 and KS4

Another perspective on secondary school characteristics was provided by data on students' views about their secondary school education in KS3 and KS4. These were obtained from self-report questionnaires in Year 9 and again in Year 11. Various factors were derived that related to features of their school experiences (Sammons et al., 2011b; Sammons et al., 2014b). Those that showed the strongest associations with social-behavioural outcomes were related to how well staff and students 'get along' and how valued students felt (positive relationships in Year 11; Valuing pupils in Year 9), the behavioural climate and the emphasis given to learning within the classroom (Year 9).

Where students reported that their schools laid a greater 'emphasis on learning' in KS3, this predicted better self-regulation, pro-social behaviour and reduced negative behaviour (hyperactivity and anti-social behaviour) in KS4.

A 'negative behavioural climate' in the secondary school in KS3, also predicted poorer later social-behavioural outcomes at age 16. A more negative climate predicted poorer self-regulation and pro-social behaviour and increased levels of hyperactivity and anti-social behaviour.
Similarly, the factor 'valuing pupils' was found to predict better outcomes for all four social-behavioural measures, as was the similar factor based on data collected in Year 11 that identified 'positive relationships'. These factors capture aspects of the emotional climate of the school, such as perceptions of relationships with teachers in terms of friendliness and the extent to which students feel valued and involved.

The levels of 'teacher support', 'teacher professional focus' and use of 'formative feedback' reported were also positive predictors of better social-behavioural outcomes, but to a lesser extent. Similarly the factors 'head teacher qualities' and 'teacher discipline' showed weak, but significant positive effects in predicting most social-behavioural outcomes in Year 11.

The 'physical environment of the school' (attractive buildings, classroom decorations, and standards of cleanliness) and the 'school learning resources', as rated by students in KS3, showed only very weak or non-significant associations with social-behavioural measures. This was also the case for the factor measuring the academic ethos of the school.

As these aspects of student experience are to some extent inter-related they were also tested in combination. The measure 'positive relationships' was found to be the strongest predictor for all four social-behavioural outcomes (self-regulation - ES=0.42; pro-social behaviour - ES=0.42; hyperactivity - ES=-0.49; anti-social behaviour - ES=-0.43, high versus low). However, the KS3 behaviour climate was still important as an additional predictor for self-regulation (ES=-0.36, high versus low), pro-social behaviour (ES=-0.21,

high versus low) and levels of hyperactivity (ES=0.20, high versus low). The measure of 'emphasis on learning' also predicted pro-social behaviour (ES=0.30, high versus low), levels of hyperactivity (ES=-0.30, high versus low) and lower levels of anti-social behaviour (ES=-0.38, high versus low). Lastly, 'formative feedback' was an additional predictor of better pro-social behaviour outcomes (ES=0.29, high versus low), when tested in combination.

Developmental progress across five years of secondary schooling from KS2 to KS4

In these analyses the student's prior social behaviour measured in Year 6 of primary school was included as a baseline to model developmental change across the five years of secondary education, while testing whether the student, family, HLE and neighbourhood influences discussed above also predicted developmental change.

Individual and family characteristics

A significant gender gap was identified, with girls showing more change/progress in the positive social-behavioural outcomes (ES=0.40 - pro-social behaviour; ES=0.30 - self-regulation), and also greater reductions in the negative outcomes (ES=-0.24 for both hyperactivity and anti-social behaviour). The occurrence of multiple behavioural problems in early childhood was also a significant predictor of students' developmental progress in self-regulation and hyperactivity between KS2 and KS4 (ES=-0.44 - for self-regulation). Similarly, the student's age (relative age position within their academic cohort) predicted social-behavioural changes for students during KS3 and KS4. Younger students born later in the year (summer born) showed less developmental progress than older students (autumn born) in self-regulation (ES=-0.11) and pro-social behaviour (ES=0.14), although the size of the effects were small.

Coming from a large family (three or more siblings) was associated with less progress in self-regulation (ES=-0.24 compared to singletons) and increases in hyperactivity (ES=0.22) between KS2 and KS4.

A small equity gap associated with family poverty (eligibility for FSM) was found for changes in self-regulation (ES=-0.17), pro-social behaviour (ES=-0.20), hyperactivity (ES=0.28) and a somewhat stronger effect for anti-social behaviour (ES=0.33) placing students not living in poverty at an advantage. The gaps were larger for the measure of family socio-economic status. A moderate equity gap associated with SES was found for changes in self-regulation (ES=-0.44), pro-social behaviour (ES=-0.43); hyperactivity (ES=0.57); and anti-social behaviour (ES=0.52) for students with 'unskilled' parents compared to those with 'professional non-manual' parents.

A consistent pattern of differences in developmental progress, related to the level of parent's educational qualifications, emerged for self-regulation (ES=0.28 for degree versus no qualifications), pro-social behaviour (ES=0.37), and anti-social behaviour (ES=0.23), with students of mothers holding a degree or equivalent, showing significant improvements in the two positive social-behavioural outcomes, and significant reductions

in anti-social behaviour. Smaller reductions in 'hyperactivity were also found, but those just failed to reach significance (ES=-0.19 for degree), compared to students of parents with no qualifications.

The marital status of parents in the early years, when children were first recruited to the study, was a significant predictor of changes in self-regulation during secondary education (ES=-0.25 - single parent compared to married) and pro-social behaviour (ES=-0.19 - single parent compared to married). Single parent status also predicted increases in hyperactivity (ES=0.24 - single parent versus married) and anti-social behaviour (ES=0.15). Students in lone parent families showed small but statistically significant increases in both negative behaviours and decreases in both positive behaviours. In addition, students of parents who were living with their partner but unmarried in the early years were found to show small decreases in self-regulation (ES=-0.18) and pro-social behaviour (ES=-0.14) and an increase in hyperactivity (ES=0.15).

Home Learning Environment (HLE)

The quality of the early years HLE was not found to predict better developmental progress between KS2 and KS4, once later HLE activities were taken into account. This is in contrast to findings on GCSE outcomes for the EPPSE sample in Year 11. However, academic enrichment activities in KS3 predicted better developmental progress in social-behavioural outcomes between KS2 and KS4. A high quality HLE (in terms of academic enrichment) showed a significant positive effect on improvements in self-regulation (ES=0.29 versus low quality) and pro-social behaviour (ES=0.21) from Year 6 to Year 11, and significant reductions in hyperactivity (ES=-0.33) and anti-social behaviour (ES=-0.22).

Neighbourhood

There was some evidence that living in an area of lower deprivation (IDACI) predicted more favourable developmental progress in self-regulation (ES=0.17 compared to high deprivation areas) and pro-social behaviour (ES=0.21) between KS2-KS4. Students from areas with higher proportions of White British residents also showed less favourable developmental progress in pro-social behaviour between KS2 and KS4 (ES=-0.18).

Secondary school influences

Several major features of teaching and school processes in secondary schools were found to influence students' social-behavioural developmental progress between KS2 and KS4. Although the academic effectiveness and quality of the secondary school were not found to predict developmental progress, student's own reports of schooling were significant predictors of their own developmental progress between KS2 and KS4.

Individually, many of the experience of school factors predicted developmental progress, in particular 'positive relationships', 'monitoring students', 'formative feedback', 'emphasis on learning' and 'valuing pupils'.

The most important feature in predicting progress in all four social-behavioural measures, when tested in combination was ‘positive relationships’ (ES=0.38 - for self-regulation; high versus low; ES=0.40 - for pro-social behaviour; ES=-0.46 - for hyperactivity; ES=-0.37 - for anti-social behaviour). ‘Positive relationships’ is concerned with the culture of valuing students, typified by the extent to which teachers and the students get on well, offer them friendly and respectful treatment, and the extent that teachers show an interest in students.

In addition, attending a secondary school rated more favourably for the factor ‘formative feedback’ predicted better developmental progress in pro-social behaviour (ES=0.26 high versus low). Moreover, a more favourable rating for the secondary school’s ‘emphasis on learning’ predicted decreases in hyperactivity between KS2 and KS4 (ES=-0.25).

Conclusions

The EPPSE project is unique in providing a broad focus on students’ educational outcomes (academic, social-behavioural and dispositions) from pre-school age 3 plus to the end of compulsory schooling. It has been able to investigate students’ outcomes at different ages and across different phases of education: pre-school, primary school and secondary school. In addition to measuring students’ outcomes and developmental progress over various time points, the research has collected rich data on students’ self-reports of their experiences and views of school. This report provides a detailed analysis of social-behavioural outcomes in Year 11 at the end of compulsory secondary schooling in England. It also explores developmental progress in social behaviour from age 11 to 16. Elsewhere in companion reports we present the findings on EPPSE students’ academic outcomes measured by GCSE results and their dispositions and views of school in similar detail (Sammons et al., 2014a; 2014b; 2014c).

This summary outlines the key findings related to four dimensions of social behaviour: two positive social behaviours (self-regulation and pro-social behaviour) and two negative behaviours (hyperactivity and anti-social behaviour) that provide a social-behavioural profile for each student at age 16.

The research adds to the body of evidence provided by similar analyses for the EPPSE sample at younger ages (school entry, KS1, KS2 and KS3). The findings extend and support previous findings that investigate the role of different sources of influence (proximal to distal) that shape social behaviour over time. The approach has links to the ecological model of human development proposed by Bronfenbrenner (1994). We explore the way individual, family, home learning environment (HLE), neighbourhood pre-school, and school influences shape children’s development from early childhood to adolescence.

There is clear evidence that various individual, family and HLE characteristics continue to shape students' social behaviour in secondary school up to the end of KS4. As at younger ages, we have identified significant differences in outcomes for different groups of students. Although most students are rated fairly favourable in terms of their social behaviour in Year 11, for a minority poor behaviour is evident. Certain influences increase the risk of poor behavioural outcomes. Just as an equity gap can be identified in terms of influences that promote or hinder learning and academic attainment, similar influences shape social-behavioural adjustment. Some influences reduce the likelihood of positive social-behavioural outcomes, others promote this. The same is found for the two measures of negative behaviour.

There are strong gender effects, as at younger ages. Girls show better outcomes as rated by teachers compared to boys. This gap widens over time in terms of developmental progress from age 11 to 16. However it is interesting that elsewhere we show that girls in the EPPSE have poorer mental health (according to the self-report Warwick – Edinburgh mental well-being scale**,** Stewart-Brown & Janmohamed, 2008) but this is not picked up in teacher assessments (see accompanying report Sammons et al., 2014c).

The experience of various indicators of disadvantage in the early years increases the risk of poorer social-behavioural development up to age 16 years, as well as predicting poorer attainment. The two are likely to be mutually reinforcing. Thus low family SES, eligibility for FSM status, single parent status and larger family size all predict poorer outcomes. Although smaller in size neighbourhood disadvantage measures and school context are also significant predictors of outcomes. Contextual effects linked to 'place poverty' and school composition also shape social behaviour in adolescence.

By contrast higher parental qualification levels and positive parenting experiences in the early years, measured by the early years HLE, and HLE measured at later ages (especially enrichment learning experiences in KS3) predict better longer term outcomes. Although not as strong as evidence found at school entry and in primary school, pre-school experiences continue to shape social-behavioural outcomes into secondary school. Attending any pre-school did not show any continued effects on social behaviour up to age 16. However, there were some indications of small positive effects for those students who had attended high quality pre-school provision.

The measure of primary school academic effectiveness predicted better attainment in primary school and later in Year 9 and Year 11 but not better (or worse) social behaviour. Similar results are found for the academic effectiveness of the secondary school, important for academic attainment and progress but not a predictor of social-behavioural outcomes for the EPPSE sample. In KS3, attending a poor quality secondary school as measured by Ofsted judgments predicted poorer behavioural outcomes for those unfortunate enough to attend a school rated as inadequate, even controlling for the influence of individual, family and HLE characteristics. But by age 16 this effect was not statistically significant. This may reflect changes in schools judged to be inadequate or

satisfactory over the time of the research, given the strong pressure to improve inherent in the accountability system for schools in England.

The EPPSE research points to the importance of the 'student voice'. Self-report surveys provided measures of students' experiences and views of school in Year 9 and Year 11. The various factors derived from these show variation in experiences. These measures are moderate to strong predictors of both academic outcomes at GCSE and also social behaviour as rated by teachers.

The 'quality of teaching', a school's 'behavioural climate', the 'emphasis on learning', positive relationships with staff, and feeling 'valued' were found to be consistent predictors of better social-behavioural as well as academic outcomes. Regarding the measures of secondary school experience factors, it is interesting to note that the latest report on PISA 2012 results shows that English students generally have more favourable views of their schools (in terms of positive climate for learning) and teachers (and their relationships with teachers) than their OECD counterparts (Wheater et al., 2013). The EPPSE analyses point to the importance of the students' perspectives.

The findings in KS4 are in line with those found in KS3. They highlight important areas that could be addressed in school improvement policies intended to promote better outcomes for secondary school students. They also point to the potential role of using survey data and other ways to tap into the student 'voice' in assessing the quality of their educational experiences. The aspects about secondary school experience identified here show the importance to school leaders and teaching staff of focusing on enhancing the quality of teaching and learning, student support, improving the behavioural climate of the school, ensuring students feel valued, and promoting a high quality physical environment and learning resources. These aspects should be viewed as key features for school self-evaluation and planning for improvement as well as for external evaluation. There are also clear implications for practitioners about the role of students' secondary school experiences that can support school improvement strategies in KS3 and KS4.

Overall the results of the latest analyses of social-behavioural outcomes and developmental progress/change during the five years of secondary education confirm and extend earlier findings. Policy moves are increasing interest on progress based on Value Added progression in judging secondary school performance, and schools are now required to look at developmental change. The life chances of some children are shaped by important individual, family, home and learning experiences. These early effects emerge at a young age and their influences continue to shape educational outcomes for students throughout their educational careers. However, some influences can help to ameliorate the effects of disadvantage. Pre-school effects remain evident, while secondary school experiences are also relevant. There are important and probably reciprocal associations between academic and social-behavioural development. Disadvantage remains a complex and multifaceted concept. The longitudinal EPPSE research indicates that it is by no means captured by one simple indicator such as FSM status of a pupil. The concept of multiple disadvantage is important and the challenges facing schools in promoting better outcomes for students from disadvantaged homes and

contexts remain strongly evident. Educational influences (including pre-school) have an important part to play in supporting those ‘at risk’ and can promote better outcomes. But the EPPSE data shows that equity gaps emerge early for all outcomes (cognitive/academic and social-behavioural) and remain strongly evident across different phases of education.

References

Allen, G. (2011). *Early Intervention: The Next Steps - An Independent Report to Her Majesty's Government*. London: HM Government http://www.dwp.gov.uk/docs/early-intervention-next-steps.pdf

Anders, Y., Sammons, P., Taggart, B., Sylva, K., Melhuish, E. and Siraj-Blatchford, I. (2010). 'The influence of child, family, home factors and pre-school education on the identification of special educational needs at age 10'. *British Educational Research Journal, 36*(3), 421–441.

Bronfenbrenner, U. (1994). Ecological models of human development: In International Encyclopedia of Education, Vol 3, 2nd Edition. Oxford: Elsevier.

Eisenberg, N., Carlo, G. Murphy, B. C., & van Court, P. (1995). 'Prosocial Development in Late Adolescence: A Longitudinal Study'. *Child Development*, Vol. 66, No. 4, pp. 1179-1197.

Field, F. (2010). *The Foundation Years: Preventing Poor Children Becoming Poor Adults - The report of the Independent Review on Poverty and Life Chances*. London: HM Government: http://www.frankfield.com/campaigns/poverty-and-life-changes.aspx

Goodman, R. (1997). 'The Strengths & Difficulties Questionnaire: A Research Note'. *Journal of Child Psychology & Psychiatry,* 38 (5)*,* 581-586.

Hall, J. Sylva, K. Melhuish, E. Sammons, P. Siraj-Blatchford, I. and Taggart, B. (2009). The role of pre-school quality in promoting resilience in the cognitive development of young children. *Oxford Review of Education*, 35(3), 331-352.

Hall, J. Sylva, K. Melhuish, E. Sammons, P. Siraj-Blatchford, I. and Taggart, B (2013) Can pre-school protect young children's cognitive and social development?, *School effectiveness and School Improvement*, Vol 24 (2), 155-176.

HM Treasury (2004) Choice for parents, the best start for children: a ten year strategy for childcare. HM government. HMSO.

Kerr, D. and Michalski, J. H. (2007). 'Family structure and children's hyperactivity problems: A longitudinal analysis'. *Canadian Journal of Sociology, 32*, 85-106.

Knapp, T. R. (1990). 'Treating Ordinal Scales as Interval Scales: An Attempt To Resolve the Controversy'. 39 (2).

Knapp, T. R. (1993). 'Treating ordinal scales as ordinal scales'. *Nursing Research,* 42*,* 184-186.

Labovitz, S. (1967). 'Some observations on measurement and statistics'. *Social Forces,* 46 (2)*,* 151-160.

Marcus-Roberts, H. M. and Roberts, F. S. (1987). 'Meaningless Statistics'. Journal of Educational Statistics is currently published by American Educational Research Association, 12 (4), 383-394.

Melhuish, E., Romaniuk, H., Sammons, P., Sylva, K., Siraj-Blatchford, I. and Taggart, B. (2006), *Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): The Effectiveness of Primary schools in England in Key Stage 2 for 2002, 2003 and 2004. Full Report*. London: Institute of Education, University of London. http://eppe.ioe.ac.uk/

Noble, M., McLennan, D., Wilkinson, K., Whitworth, A., Exley, S., Barnes, H. and Dibben, C. (2008). The English Indices of Deprivation 2007. London: Department for Communities and Local Government.

Noble, M., Wright, G., Dibben, C., Smith, G. A. N., McLennan, D., Anttila, C., Barnes, H., Mokhtar, C., Noble, S., Avenell, D., Gardner, J., Covizzi, I. and Lloyd, M. (2004). The English Indices of Deprivation 2004. London: Office of the Deputy Prime Minister.

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2002). *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8a - Measuring the Impact of Pre-School on Children's Cognitive Progress over the Pre-School Period*. London: DfES / Institute of Education, University of London.

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2003). *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8b - Measuring the Impact of Pre-School on Children's Social/Behavioural Development over the Pre-School Period*. London: DfES / Institute of Education, University of London.

Sammons, P., Smees, R., Taggart, B., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I. & Elliot, K. (2004a). *The Early Years Transitions and Special Educational Needs (EYTSEN) Project: Technical paper 2 - Special Educational Needs in the Early Primary Years: Primary School Entry Up to the End of Year 1.* Report for DfES / Institute of Education, University of London (London).

Sammons, P., Sylva, K., Melhuish, E.C., Siraj-Blatchford, I., Taggart, B., Elliot, K. and Marsh A. (2004b). *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 11 - The Continuing Effects of Pre-school Education at Age 7 Years.* London: DfES / Institute of Education, University of London.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B. and Barreau, S. (2007a), Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Development and Progress in Key Stage 2: Social/behavioural Outcomes in Year 5. Research Report no. DCSF-RR007. Nottingham: DfES Publications

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. and Grabbe, Y. (2007b). Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Attainment and Progress in Key Stage 2: Cognitive Outcomes in

Year 5. Full Report. London: Institute of Education, University of London. http://www.ioe.ac.uk/schools/ecpe/eppe/eppe3-11/eppe3-11pubs.htm

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B. and Hunt, S. (2008a). Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Attainment and Progress in Key Stage 2: Cognitive Outcomes in Year 6. Research Report No. DCSF-RR048. Nottingham: DCSF Publications.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B. and Jelicic, H. (2008b). Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Development and Progress in Key Stage 2: Social/behavioural outcomes in Year 6. Research Report No. DCSF-RR049. Nottingham: DCSF Publications.

Sammons, P.**,** Anders, Y., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., & Barreau, S. (2008c). Children's cognitive attainment and progress in English primary schools during Key Stage 2: investigating the potential continuing influences of pre-school education. *Zeitschrift für Erziehungswissenschaft* [Special Issue 11/2008], 179-198.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., Toth, K., Draghici, D., and Smees, R. (2011a) *Influences on students' attainment and progress in Key Stage 3: Academic outcomes in English, Maths and Science in Year 9.* London: Institute of Education, University of London / Department for Education.

Sammons, P., Sylva, K., Melhuish, E.C., Siraj-Blatchford, I., Taggart, B., Smees, R., Draghici, D. and Toth, K. (2011b). Effective Pre-school, Primary and Secondary Education 3-14 Project (EPPSE 3-14): *Students' Reports of Their Experiences of School in Year 9*. London: Institute of Education, University of London / DFE.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., Toth, K., Draghici, D., and Smees, R. (2011c) *Influences on Students' Dispositions in Key Stage 3: Exploring Enjoyment of School, Popularity, Anxiety, Citizenship Values and Academic Self-Concept in Year 9.* London: Institute of Education, University of London / Department for Education.

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., Draghici, D, Smees, R. and Toth, K., (2011d) *Influences on students' Development in Key Stage 3: Social-behavioural Outcomes in Year 9.* London: Institute of Education, University of London / Department for Education.

Sammons, P., Anders, Y., Sylva, K., Melhuish, E.C., Siraj-Blatchford, I., and Taggart, B. (2013) Protecting the development of 5-11 year olds from the impacts of early disadvantage: the role of pre-school*, School effectiveness and School Improvement*, Vol 24 (2), 251-268.

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Toth, K. and Smees, R. (2014a). Effective Pre-School, Primary and Secondary Education Project (EPPSE 3-16): Influences on Students' GCSE Attainment and Progress at age 16: DfE RR 352

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Smees, R. and Toth, K. (2014b). Effective Pre-school, Primary and Secondary Education 3-16 Project (EPPSE 3-16): Students' views of school in Key Stage 4 age 16 London: Institute of Education, University of London / Department for Education.

Sammons, P., Sylva, K., Melhuish, E., Siraj, I., Taggart, B., Smees, R. and Toth, K. (2014c). Effective Pre-school, Primary and Secondary Education 3-14 Project (EPPSE 3-16): Influences on students' dispositions and well-being in Key Stage 4 age 16. London: Institute of Education, University of London / Department for Education.

Schmitz, M. F. (2003). 'Influences of race and family environment on child hyperactivity and antisocial behavior'. *Journal of Marriage and Family,* 65*,* 835– 849.

Siraj-Blatchford, I., Taggart, B., Sylva, K., Sammons, P. and Melhuish, E. (2008). 'Towards the transformation of practice in Early Childhood Education: The Effective Provision of Pre-school Education (EPPE) project'. Cambridge Journal of Education, 38 (1), 23-36.

Siraj-Blatchford, I., Mayo, A., Melhuish, E., Taggart, B., Sammons, P. and Sylva, K. (2011). *Performing against the odds: developmental trajectories of children in the EPPSE 3-16 study. DfE Research Report DFE-RR128*. Department for Education: https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-RR128

Stewart-Brown, S., and Janmohamed, K. (2008). *Warwick-Edinburgh Mental Well-being Scale (WEMWBS) User Guide Version 1.* Warwick and Edinburgh: University of Warwick and NHS Health Scotland.

Sylva, K., Sammons, P., Melhuish, E. C., Siraj-Blatchford, I. and Taggart, B. (1999). The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 1 - An Introduction to The Effective Provision of Pre-School Education (EPPE) Project. London: DfEE / Institute of Education, University of London.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (Eds) (2010), Early Childhood Matters: Evidence from the Effective Pre-school and Primary Education project. London: Routeledge.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2014) The Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-16): Students' educational and developmental outcomes at age 16. DfE Publications. RR 354

Taggart, B., Sammons, P., Smees, R., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Elliot, K. and Lunt, I. (2006). 'Early Identification of Special Needs and the Definition of 'At Risk':

The Early Years Transition and Special Education Needs (EYTSEN) Project'. British Journal of Special Education, 33 (1), 40-45.

Taggart, B., Siraj-Blatchford, I., Sylva, K., Melhuish, E. and Sammons, P. (2008). 'Influencing Policy & Practice through Research on Early Childhood Education'. International Journal of Early Childhood Education, 14 (2), 7-21.

Taggart, B, Sammons, P., Siraj, I., Sylva,K., Melhuish, E., Toth. K., Smees, R. and. Hollingworth. K. (2014) The Effective Pre-school, Primary and Secondary Education Project (EPPSE 3-16): Students' post 16 destinations. Institute of Education, University of London/ DfE www.ioe.ac.uk/eppse

The Equalities Review (2007). Fairness and Freedom: The Final Report of the Equalities Review. http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/equalitiesreview/

Wheater, R., Ager, R., Burger, B., Sizmur, J. (2013). Achievement of 15-Year-Olds in England: PISA 2012 National Report (OECD Programme for International Student Assessment). National Foundation for Educational Research.

Appendix 1: Methodology and sampling: Justification of treating variables as continuous variables and the use of parametric tests

The items in the Pupil Profile in Year 11 were treated as interval level data. It has been argued that such items can only be treated as ordinal data, disputing that survey respondents treat all pairs of adjacent levels as equidistant. The wording of the items in the Pupil Profile, as well as being accompanied by a numerically linear scale (1, 2 & 3), however, suggests symmetry of response levels. Therefore, many surveys that use Likert-scale type scales such as those used within the EPPSE research fall between interval and ordinal level measurements. The EPPSE Pupil Profile in Year 11 is accompanied by a visual analogue scale, where equal spacing of response levels is clearly indicated for every item and so it is more appropriate to treat the data as interval rather than ordinal. There is a continuous debate about treating ordinal data as interval. Many social, psychological and educational researchers have demonstrated that conducting analyses in this manner is not only legitimate but also provides useful results (e.g., Labovitz, 1967; Marcus-Roberts & Roberts, 1987; Knapp, 1990; 1993). In addition given that EPPSE uses constructs and thus sums the responses from various items to produce a scale (and standardises responses) also supports the use of parametric tests.

Prior to the commencement of any analyses an imputation method using mean of items was used to ensure we were able to maximise the data we had. We used the structures already in place for deriving constructs from the EPPSE 3-14 analyses to guide which items formed one of our four key constructs. So long as students answered a minimum of three items within each social-behavioural construct, the mean of those items (3+) was taken to create a score for the item(s) which contained a missing value. Having undergone this process we then proceeded with establishing the four constructs within the EPPSE Year 11 sample using EFA and CFA.

Appendix 2: The strength of the relationships between individual items

Self-regulation

A correlation analysis was conducted in order to ascertain the strengths of the relationships between individual items that contributed to the self-regulation factor in Year 11 (see 77Table A2.1).

Table A2.1: Inter-item correlations of self-regulation items

	Likes to work things out for self; seeks help rarely	Does not need much help with tasks	Persists in the face of difficult tasks	Can move on to a new activity after finishing a task	Is open and direct about what s/he wants	Is confident with others	Shows leadership in group work	Can take responsibility for a task
Likes to work things out for self; seeks help rarely	1							
Does not need much help with tasks	0.52** N=2414	1						
Persists in the face of difficult tasks	0.50** N=2413	0.56** N=2413	1					
Can move on to a new activity after finishing a task	0.45** N=2413	0.54** N=2413	0.71** N=2413	1				
Is open and direct about what s/he wants	0.29** N=2413	0.37** N=2413	0.45** N=2413	0.48** N=2413	1			
Is confident with others	0.29** N=2413	0.39** N=2413	0.45** N=2413	0.46** N=2413	0.64** N=2415	1		
Shows leadership in group work	0.35** N=2414	0.43** N=2413	0.52** N=2413	0.48** N=2413	0.54** N=2413	0.62** N=2413	1	
Can take responsibility for a task	0.42** N=2413	0.51** N=2413	0.62** N=2413	0.63** N=2413	0.49** N=2414	0.51** N=2414	0.60** N=2413	1

** p<0.001

The regression weights in

Figure 2.1: Year 11 Confirmatory Factor Analysis of social-behaviours (standardised loadings do not assess the relationship between items within latent constructs and so these further analyses help to give an indication about how self-regulation items relate to one another. The relationships varied from moderate to strong; the strongest association is between the items 'Can move on to a new activity after finishing a task' and 'Persists in the face of difficult tasks' (r=0.71). The second strongest association is between the items 'Is open and direct about what she/he wants' and 'Is confident with others' (r=0.64), indicating that students who are more confident are also likely to be open about how they interact with others. The weakest associations are between the items 'Likes to work things out for self' and 'Is open and direct about what s/he wants' (r=0.29); 'is confident with others' (r=0.29).

Table A2.2 shows the summary statistics for the individual self-regulation items. On average scores show teachers rated the majority of students favourably for self-regulation. The item with the highest mean score was 'Can move on to a new activity after finishing a task' (2.39) followed by 'Is confident with others' (2.37).

Table A2.2: Descriptive statistics for self-regulation items

Self-regulation items	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Value	SE	Value	SE
Likes to work things out for self; seeks help rarely	2416	1	3	2.0	0.7	-0.1	0.1	-0.8	0.1
Does not need much help with tasks	2414	1	3	2.1	0.7	-0.1	0.1	-1.1	0.1
Persists in the face of difficult tasks	2413	1	3	2.2	0.7	-0.3	0.1	-1.0	0.1
Can move on to a new activity after finishing a task	2413	1	3	2.4	0.7	-0.6	0.1	-0.6	0.1
Is open and direct about what she/he wants	2416	1	3	2.3	0.7	-0.5	0.1	-0.8	0.1
Is confident with others	2417	1	3	2.4	0.7	-0.6	0.1	-0.7	0.1
Shows leadership in group work	2414	1	3	2.0	0.7	0.0	0.1	-1.2	0.1
Can take responsibility for a task	2415	1	3	2.4	0.7	-0.6	0.1	-0.7	0.1

Pro-social behaviour

79Table A2.3 shows the correlations amongst the pro-social behaviour items in Year 11. The relationships varied from moderate to strong; the strongest association is between the items 'Is sympathetic to others if they are upset' and 'Offers to help others having a difficulty with a task' (r=0.68). The item 'Apologies spontaneously' was weakly correlated with the remaining pro-social behaviour items; the weakest association was between the items 'Considerate of other people's feelings' (r=0.28) and 'Shares readily with other children' (r=0.28).

Table A2.3: Inter-item correlations of pro-social behaviour items

	Considerate of other people's feelings	Shares readily with others	Helpful if someone is hurt, upset or feeling ill	Kind to younger children	Often volunteers to help others	Offers to help others having difficulties with a task	Is sympathetic to others if they are upset	Apologises spontaneously
Considerate of other people's feelings	1							
Shares readily with others	0.56** N=2419	1						
Helpful if someone is hurt, upset or feeling ill	0.61** N=2420	0.57** N=2418	1					
Kind to younger children	0.62** N=2418	0.53** N=2418	0.66** N=2418	1				
Often volunteers to help others	0.55** N=2418	0.50** N=2418	0.57** N=2418	0.59** N=2418	1			
Offers to help others having difficulties with a task	0.55** N=2418	0.52** N=2418	0.57** N=2418	0.54** N=2418	0.66** N=2418	1		
Is sympathetic to others if they are upset	0.64** N=2418	0.54** N=2418	0.66** N=2418	0.63** N=2418	0.61** N=2418	0.68** N=2418	1	
Apologises spontaneously	0.28** N=2419	0.28** N=2418	0.32** N=2418	0.29** N=2418	0.31** N=2418	0.31** N=2418	0.33** N=2418	1

** p<0.001

80Table A2.4 shows the summary statistics for all of the items that make up the pro-social behaviour construct. On average teachers rated the majority of students as displaying pro-social behaviour. The item with the highest mean score was 'Considerate of other people's' (2.56) followed by 'Kind to younger children' (2.48).

80Table A2.4: Descriptive statistics for pro-social behaviour items

Pro-social behaviour items	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Value	SE	Value	SE
Considerate of other people's feelings	2423	1	3	2.6	0.6	-0.9	0.1	-0.1	0.1
Shares readily with others	2419	1	3	2.4	0.7	-0.7	0.1	-0.5	0.1
Helpful if someone is hurt, upset or feeling ill	2420	1	3	2.5	0.6	-0.7	0.1	-0.5	0.1
Kind to younger children	2418	1	3	2.5	0.6	-0.8	0.1	-0.4	0.1
Often volunteers to help others	2418	1	3	2.1	0.7	-0.2	0.1	-1.1	0.1
Offers to help others having difficulties with a task	2418	1	3	2.2	0.7	-0.3	0.1	-1.0	0.1
Is sympathetic to others if they are upset	2418	1	3	2.4	0.6	-0.6	0.1	-0.6	0.1
Apologises spontaneously	2419	1	3	1.9	0.8	0.1	0.1	-1.6	0.1

Hyperactivity

81Table A2.5 shows the correlations amongst the hyperactivity items in Year 11. The relationships varied from moderate to strong; the strongest association is between the items 'Is restless, overactive, cannot stay still for long' and 'Constantly fidgeting or squirming' (r=0.68). The item 'Thinks things out before acting' was weakly correlated with 'Constantly fidgeting or squirming' (r=0.38).

Table A2.5: Inter-item correlations of hyperactivity items

	Restless, overactive, cannot stay still for long	Constantly fidgeting or squirming	Is easily distracted, concentration wanders	Thinks things out before acting	Sees tasks through to the end, good attention span	Quickly loses interest in what she/he is doing	Gets over excited	Is easily frustrated	Fails to pay attention	Makes careless mistakes
Restless, overactive, cannot stay still for long	1									
Constantly fidgeting or squirming	0.68** N=2422	1								
Is easily distracted, concentration wanders	0.59** N=2421	0.54** N=2421	1							
Thinks things out before acting	-0.46** N=2421	-0.38** N=2421	-0.57** N=2421	1						
Sees tasks through to the end, good attention span	-0.50** N=2421	-0.42** N=2421	-0.67** N=2421	0.64** N=2421	1					
Quickly loses interest in what she/he is doing	0.51** N=2421	0.46** N=2421	0.67** N=2421	-0.52** N=2421	-0.65** N=2421	1				
Gets over excited	0.53** N=2421	0.44** N=2421	0.47** N=2421	-0.38** N=2421	-0.37** N=2421	0.39** N=2421	1			
Is easily frustrated	0.53** N=2421	0.42** N=2421	0.54** N=2421	-0.47** N=2421	-0.50** N=2421	0.50** N=2421	0.51** N=2421	1		
Fails to pay attention	0.56** N=2421	0.48** N=2421	0.71** N=2421	-0.54** N=2421	-0.65** N=2421	0.67** N=2421	0.42** N=2421	0.56** N=2421	1	
Makes careless mistakes	0.46** N=2421	0.39** N=2421	0.63** N=2421	-0.49** N=2421	-0.58** N=2421	0.60** N=2421	0.39** N=2421	0.50** N=2421	0.65** N=2421	1

** p<0.001

Table A2.6 displays the summary statistics for all of the items that create the hyperactivity construct. On average teachers rated the majority of students as unlikely to display high levels of hyperactive behaviour. The item with the lowest mean score (indicating lower levels of hyperactivity) was 'Constantly fidgeting or squirming' (1.20).

Table A2.6: Descriptive statistics for hyperactivity items

Hyperactivity items	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Value	SE	Value	SE
Restless, overactive, cannot stay still for long	2423	1	3	1.3	0.6	1.7	0.1	1.8	0.1
Constantly fidgeting or squirming	2422	1	3	1.2	0.5	2.4	0.1	5.0	0.1
Is easily distracted, concentration wanders	2421	1	3	1.6	0.7	0.9	0.1	-0.5	0.1
Thinks things out before acting	2421	1	3	1.8	0.7	0.4	0.1	-0.9	0.1
Sees tasks through to the end, good attention span (reversed)	2421	1	3	1.8	0.7	0.4	0.1	-1.1	0.1
Quickly loses interest in what she/he is doing (reversed)	2421	1	3	1.4	0.6	1.2	0.1	0.2	0.1
Gets over excited	2421	1	3	1.3	0.6	1.8	0.1	2.2	0.1
Is easily frustrated	2421	1	3	1.4	0.6	1.2	0.1	0.2	0.1
Fails to pay attention	2421	1	3	1.5	0.7	1.1	0.1	0.1	0.1
Makes careless mistakes	2421	1	3	1.5	0.7	0.8	0.1	-0.4	0.1

Anti-social behaviour

83Table A2.7 shows the correlations amongst the anti-social behaviour items in Year 11. The relationships were largely moderate in strength; the strongest association is between the items 'Has been in trouble with the law' and 'Steals from home, school or elsewhere' (r=0.56) and the items 'Often lies or cheats' with 'Steals from home, school or elsewhere' (r=0.56).

Table A2.7: Inter-item correlations of anti-social behaviour items

	Often argues with other children or bullies them	Often lies or cheats	Steals from home, school or elsewhere	Shows inappropriate sexual behaviour toward others	Has been in trouble with the law
Often argues with other children or bullies them	1				
Often lies or cheats	0.53** N=2418	1			
Steals from home, school or elsewhere	0.37** N=2412	0.56** N=2412	1		
Shows inappropriate sexual behaviour toward others	0.27** N=2412	0.28** N=2411	0.30** N=2412	1	
Has been in trouble with the law	0.43** N=2411	0.50** N=2411	0.56** N=2411	0.29** N=2411	1

** p<0.001

The summary statistics of the items that form the anti-social behaviour construct are displayed in 84Table A2.8. On average teachers rated Year 11 students as unlikely to display high levels of anti-social behaviour. The item ‘Often argues with other children or bullies them’ had the lowest mean score, indicating lower a level of anti-social behaviour (1.20).

Table A2.8: Descriptive statistics for anti-social behaviour items

Anti-social behaviour items	N	Min	Max	Mean	SD	Skewness		Kurtosis	
						Value	SE	Value	SE
Often argues with other children or bullies them	2422	1	3	1.2	0.5	2.5	0.1	5.1	0.1
Often lies or cheats	2419	1	3	1.2	0.5	2.6	0.1	6.1	0.1
Steals from home, school or elsewhere	2414	1	3	1.1	0.3	4.8	0.1	23.2	0.1
Shows inappropriate sexual behaviour toward others	2413	1	3	1.1	0.3	4.7	0.1	22.1	0.1
Has been in trouble with the law	2411	1	3	1.1	0.4	3.5	0.1	11.3	0.1

Appendix 3: The effect of school processes on social-behavioural outcomes

Table A3.12: The influence 'Emphasis on Learning' (in KS3) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.34	***	0.60	0.42
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.62		0.69	-0.05
Summer born	-2.08	**	0.72	-0.16
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.15	#	1.75	-0.25
Black Caribbean heritage	4.06	*	1.65	0.32
Black African heritage	0.58		2.24	0.05
Any other ethnic minority	-0.01		2.14	0.00
Indian heritage	3.80	*	2.01	0.30
Pakistani heritage	1.88		1.57	0.15
Bangladeshi heritage	5.39	#	2.86	0.42
Mixed race	-0.79		1.35	-0.06
Missing	1.09		9.80	0.09
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.37		0.77	0.03
3+ Siblings	-2.71	**	1.04	-0.21
Missing	-3.93		5.24	-0.31
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.81	#	1.00	-0.14
2+ Behavioural Problems	-5.51	**	2.12	-0.43
Missing	-4.40		8.97	-0.34
Parents' Highest SES age 3/5: Ref = Professional non-manual				
Other Professional, non-manual	-3.02	*	1.43	-0.24
Skilled, non-manual	-3.48	*	1.53	-0.27
Skilled manual	-5.17	**	1.68	-0.41
Semi-skilled	-4.64	**	1.72	-0.36
Unskilled	-7.50	**	2.40	-0.59
Not working/never worked	-2.28		2.43	-0.18
Missing	-5.16		4.81	-0.40
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.29	***	0.84	-0.34
Not known	-0.66		2.05	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.17		1.19	-0.01
16 academic	2.33	*	0.95	0.18
18 academic	2.46	#	1.34	0.19
Other professional/Miscellaneous	1.87		2.47	0.15
Degree or equivalent	5.77	***	1.34	0.45
Higher degree	5.60	**	1.86	0.44
Missing	4.76		3.68	0.37

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Marital Status of Parent: Ref=Married				
Single	-3.04	**	1.03	-0.24
Separated/Divorced	-0.59		0.98	-0.05
Living with partner	-2.60	**	0.85	-0.20
Widow/ widower /other [17]	5.86	*	2.86	0.46
Missing	3.49		8.60	0.27
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.87		1.13	0.07
Average 20-24	1.16		1.17	0.09
High 25-32	2.50	*	1.15	0.20
Very high 33-45	3.92	**	1.40	0.31
Missing	-0.25		2.20	-0.02
KS3 Academic enrichment: Ref=Low				
Medium	1.96	**	0.83	0.15
High	2.92	**	1.05	0.23
Missing	-4.01	***	1.76	-0.31
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.88	**	1.01	0.23
Medium deprivation	0.79		0.78	0.06
Missing	5.49		6.34	0.43
School composition: % FSM	0.06	*	0.03	0.14
School composition: % SEN	-0.58	*	0.29	-0.12
KS3 Emphasis on learning: Ref=Low				
Medium	2.91	**	0.91	0.23
High	5.51	***	1.18	0.43
Missing	3.39	#	1.83	0.27
Intercept	95.85	***	2.39	
Random effects parameters				
Variance (Level 2)	13.79		3.51	
Variance (Level 1)	162.91		5.44	
Total Variance	176.70			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16953.68			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

[17] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Table A3.2: The influence 'Poor behaviour climate' (in KS3) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.58	***	0.60	0.44
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.72		0.69	-0.06
Summer born	-2.18	**	0.72	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-2.96	#	1.76	-0.23
Black Caribbean heritage	4.25	*	1.65	0.33
Black African heritage	1.43		2.24	0.11
Any other ethnic minority	0.12		2.15	0.01
Indian heritage	3.81	#	2.01	0.30
Pakistani heritage	2.03		1.57	0.16
Bangladeshi heritage	5.29	#	2.86	0.41
Mixed race	-0.66		1.35	-0.05
Missing	1.36		9.79	0.11
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.41		0.77	0.03
3+ Siblings	-2.63	*	1.05	-0.21
Missing	-3.49		5.23	-0.27
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.61		1.01	-0.13
2+ Behavioural Problems	-5.72	**	2.12	-0.45
Missing	-4.41		8.97	-0.35
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.18	*	1.43	-0.25
Skilled, Non-Manual	-3.47	*	1.52	-0.27
Skilled Manual	-5.28	**	1.67	-0.41
Semi-Skilled	-4.50	**	1.72	-0.35
Unskilled	-7.52	**	2.40	-0.59
Not working/never worked	-2.33		2.43	-0.18
Missing	-5.70		4.82	-0.40
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.20	***	0.84	-0.33
Not known	-0.68		2.05	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.14		1.19	-0.01
16 academic	2.35	*	0.95	0.18
18 academic	2.58	*	1.29	0.20
Other professional/Miscellaneous	1.98		2.46	0.16
Degree or equivalent	5.50	***	1.34	0.43
Higher degree	5.60	**	1.86	0.44
Missing	5.03		3.68	0.39
Marital Status of Parent: Ref=Married				
Single	-3.14	**	1.02	-0.25
Separated/Divorced	-0.70		0.98	-0.05
Living with partner	-2.57	**	0.85	-0.20

Fixed effects parameters	Estimate	Sig.	Std. Error	Effect Size
Widow/ widower /other [18]	6.23	*	2.87	0.49
Missing	3.35		8.60	0.26

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.61		1.13	0.05
Average 20-24	0.93		1.16	0.07
High 25-32	2.28	*	1.15	0.18
Very high 33-45	3.59	*	1.40	0.28
Missing	-0.48		2.20	-0.04
KS3 Academic enrichment: Ref=Low				
Medium	2.09	**	0.83	0.16
High	3.02	**	1.05	0.24
Missing	-2.91	#	1.76	-0.23
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.78	**	1.01	0.22
Medium deprivation	0.91		0.78	0.07
Missing	5.16		6.34	0.40
School composition: % FSM	0.07	*	0.03	0.17
School composition: % SEN	-0.57	#	0.29	-0.11
KS3 Poor behaviour climate: Ref=Low				
Medium	-3.34	**	1.02	-0.26
High	-5.61	***	1.23	-0.44
Missing	-3.88	*	1.90	-0.30
Intercept	102.00	***	2.43	
Random effects parameters				
Variance (Level 2)	14.75		3.61	
Variance (Level 1)	162.45		5.43	
Total Variance	167.20			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16944.74			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

[18] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Table A3.3: The influence 'School environment' (in KS3) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.53	***	0.60	0.43
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.74		0.69	-0.06
Summer born	-2.18	**	0.73	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.27	#	1.76	-0.26
Black Caribbean heritage	4.24	*	1.66	0.33
Black African heritage	1.22		2.25	0.10
Any other ethnic minority	0.30		2.15	0.02
Indian heritage	4.17	#	2.02	0.33
Pakistani heritage	1.94		1.35	0.15
Bangladeshi heritage	5.37	#	2.87	0.42
Mixed race	-0.72		1.35	-0.06
Missing	1.46		9.84	0.11
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.39		0.77	0.03
3+ Siblings	-2.78	*	1.05	-0.22
Missing	-3.05		5.27	-0.24
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.82	#	1.01	-0.14
2+ Behavioural Problems	-5.72	**	2.13	-0.45
Missing	-4.41		9.01	-0.34
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.25	*	1.43	-0.25
Skilled, Non-Manual	-3.65	*	1.53	-0.29
Skilled Manual	-5.51	**	1.68	-0.43
Semi-Skilled	-4.81	**	1.73	-0.38
Unskilled	-7.78	**	2.42	-0.61
Not working/never worked	-2.66		2.44	-0.21
Missing	-5.78		4.84	-0.45
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.29	***	0.85	-0.34
Not known	-0.58		2.05	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.20		1.19	-0.02
16 academic	2.30	*	0.96	0.18
18 academic	2.45	#	1.30	0.19
Other professional/Miscellaneous	2.16		2.48	0.17
Degree or equivalent	5.70	***	1.34	0.45
Higher degree	5.45	**	1.87	0.43
Missing	5.06		3.70	0.40
Marital Status of Parent: Ref=Married				
Single	-3.08	**	1.03	-0.24
Separated/Divorced	-0.69		0.98	-0.05
Living with partner	-2.56	**	0.86	-0.20
Widow/ widower /other [19]	5.86	*	2.87	0.46
Missing	2.65		8.64	0.21

[19] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.71		1.14	0.06
Average 20-24	0.97		1.17	0.08
High 25-32	2.37	*	1.16	0.19
Very high 33-45	3.78	**	1.41	0.30
Missing	-0.48		2.21	-0.04
KS3 Academic enrichment: Ref=Low				
Medium	2.12	*	0.84	0.17
High	3.28	**	1.06	0.26
Missing	-3.62	*	1.76	-0.28
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.82	**	1.01	0.22
Medium deprivation	0.83		0.79	0.06
Missing	5.49		6.37	0.43
School composition: % FSM	0.06	*	0.03	0.14
School composition: % SEN	-0.57	#	0.29	-0.12
KS3 School environment: Ref=Low				
Medium	0.97		0.90	0.08
High	2.08	#	1.22	0.16
Missing	1.33		1.80	0.10
Intercept	97.85	***	2.36	
Random effects parameters				
Variance (Level 2)	14.74		3.63	
Variance (Level 1)	163.93		5.48	
Total Variance	168.67			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16972.68			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.4: The influence 'Valuing students' (in KS3) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.45	***	0.60	0.43
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.75		0.69	-0.06
Summer born	-2.15	**	0.72	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-2.99	#	1.75	-0.23
Black Caribbean heritage	4.60	**	1.65	0.36
Black African heritage	1.38		2.24	0.11
Any other ethnic minority	0.72		2.14	0.06
Indian heritage	4.24	*	2.01	0.33
Pakistani heritage	1.78		1.57	0.14
Bangladeshi heritage	5.38	#	2.86	0.42
Mixed race	-0.55		1.35	-0.04
Missing	0.70		9.79	0.05
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.49		0.77	0.04
3+ Siblings	-2.58	*	1.00	-0.20
Missing	-2.39		5.22	-0.19
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.82	#	1.00	-0.14
2+ Behavioural Problems	-5.62	**	2.12	-0.44
Missing	-4.73		8.96	-0.37
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-2.97	*	1.43	-0.23
Skilled, Non-Manual	-3.38	*	1.52	-0.27
Skilled Manual	-5.19	**	1.67	-0.41
Semi-Skilled	-4.73	**	1.72	-0.37
Unskilled	-7.67	**	2.39	-0.60
Not working/never worked	-2.15		2.43	-0.17
Missing	-5.45		4.81	-0.43
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.26	***	0.84	-0.33
Not known	-0.67		2.05	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.21		1.19	-0.02
16 academic	2.36	*	0.95	0.19
18 academic	2.49	#	1.29	0.20
Other professional/Miscellaneous	2.22		2.46	0.17
Degree or equivalent	5.76	***	1.34	0.45
Higher degree	5.52	**	1.86	0.43
Missing	5.66		3.68	0.44
Marital Status of Parent: Ref=Married				
Single	-2.96	**	1.03	-0.23
Separated/Divorced	-0.70		0.98	-0.05
Living with partner	-2.50	**	0.85	-0.20
Widow/ widower /other [20]	6.28	*	2.86	0.49
Missing	1.90		8.60	0.15

[20] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.84		1.13	0.07
Average 20-24	1.01		1.16	0.08
High 25-32	2.42	*	1.15	0.19
Very high 33-45	3.81	**	1.40	0.30
Missing	-0.49		2.20	-0.04
KS3 Academic enrichment: Ref=Low				
Medium	1.93	*	0.83	0.15
High	2.90	**	1.05	0.23
Missing	-3.28	#	1.77	-0.26
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.74	**	1.01	0.22
Medium deprivation	0.71		0.78	0.06
Missing	6.37		6.34	0.50
School composition: % FSM	0.06	#	0.03	0.15
School composition: % SEN	-0.61	*	0.29	-0.12
KS3 valuing students: Ref=Low				
Medium	3.18	**	0.92	0.25
High	5.49	***	1.16	0.43
Missing	2.81		1.80	0.22
Intercept	95.60	***	2.39	
Random effects parameters				
Variance (Level 2)	14.65		3.61	
Variance (Level 1)	162.36		5.43	
Total Variance	177.01			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16953.04			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.5: The influence 'Teacher Discipline' (in KS3) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.48	***	0.60	0.43
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.69		0.69	-0.05
Summer born	-2.16	**	0.73	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.11	#	1.76	-0.24
Black Caribbean heritage	4.27	*	1.66	0.33
Black African heritage	1.20		2.25	0.09
Any other ethnic minority	0.31		2.15	0.02
Indian heritage	4.11	*	2.02	0.32
Pakistani heritage	2.05		1.58	0.16
Bangladeshi heritage	5.44	#	2.87	0.43
Mixed race	-0.77		1.35	-0.06
Missing	1.81		9.83	0.14
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.38		0.77	0.03
3+ Siblings	-2.80	**	1.05	-0.22
Missing	-2.66		5.24	-0.21
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.85	#	1.01	-0.14
2+ Behavioural Problems	-5.73	**	2.13	-0.45
Missing	-4.90		9.01	-0.38
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.10	*	1.43	-0.24
Skilled, Non-Manual	-3.56	*	1.53	-0.28
Skilled Manual	-5.47	**	1.68	-0.43
Semi-Skilled	-4.75	**	1.72	-0.37
Unskilled	-7.79	**	2.41	-0.61
Not working/never worked	-2.55		2.44	-0.20
Missing	-5.65		4.83	-0.44
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.36	***	0.85	-0.34
Not known	-0.65		2.06	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.17		1.19	-0.01
16 academic	2.30	*	0.96	0.18
18 academic	2.41	#	1.30	0.19
Other professional/Miscellaneous	2.02		2.48	0.16
Degree or equivalent	5.72	***	1.34	0.45
Higher degree	5.36	**	1.87	0.42
Missing	4.88		3.70	0.38
Marital Status of Parent: Ref=Married				
Single	-3.07	**	1.03	-0.24
Separated/Divorced	-0.66		0.98	-0.05
Living with partner	-2.47	**	0.86	-0.19
Widow/ widower /other [21]	6.11	*	2.88	0.48
Missing	2.73		8.64	0.21

[21] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.65		1.14	0.05
Average 20-24	0.98		1.17	0.08
High 25-32	2.35	*	1.16	0.18
Very high 33-45	3.79	**	1.41	0.30
Missing	-0.48		2.21	-0.04
KS3 Academic enrichment: Ref=Low				
Medium	2.15	*	0.84	0.17
High	3.38	**	1.05	0.26
Missing	-3.43	*	1.55	-0.27
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.83	**	1.01	0.22
Medium deprivation	0.89		0.79	0.07
Missing	4.90		6.36	0.38
School composition: % FSM	0.06	*	0.03	0.14
School composition: % SEN	-0.59	*	0.29	-0.12
KS3 Teacher Discipline: Ref=Low				
Medium	1.16		0.95	0.09
High	2.52	*	1.18	0.20
Missing	1.41		1.62	0.11
Intercept	97.47	***	2.39	
Random effects parameters				
Variance (Level 2)	14.51		3.61	
Variance (Level 1)	163.93		5.48	
Total Variance	178.44			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16971.42			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.6: The influence 'Teacher support' (in KS3) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.55	***	0.60	0.43
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.73		0.69	-0.06
Summer born	-2.15	**	0.73	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.32	#	1.76	-0.26
Black Caribbean heritage	4.26	**	1.66	0.33
Black African heritage	0.97		2.25	0.08
Any other ethnic minority	0.22		2.15	0.02
Indian heritage	4.11	*	2.01	0.32
Pakistani heritage	1.75		1.58	0.14
Bangladeshi heritage	5.37	#	2.86	0.42
Mixed race	-0.70		1.35	-0.05
Missing	1.02		9.82	0.08
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.43		0.77	0.03
3+ Siblings	-2.72	**	1.05	-0.21
Missing	-2.54		5.23	-0.20
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.74	#	1.01	-0.14
2+ Behavioural Problems	-5.76	**	2.13	-0.45
Missing	-5.26		8.99	-0.41
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-2.98	*	1.43	-0.23
Skilled, Non-Manual	-3.37	*	1.53	-0.26
Skilled Manual	-5.21	**	1.68	-0.41
Semi-Skilled	-4.52	**	1.72	-0.37
Unskilled	-7.56	**	2.40	-0.61
Not working/never worked	-2.39		2.44	-0.20
Missing	-5.59		4.82	-0.44
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.33	***	0.84	-0.34
Not known	-0.60		2.05	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.14		1.19	-0.01
16 academic	2.33	*	0.96	0.18
18 academic	2.55	*	1.30	0.20
Other professional/Miscellaneous	2.23		2.47	0.17
Degree or equivalent	5.99	***	1.34	0.47
Higher degree	5.47	**	1.86	0.43
Missing	5.36		3.69	0.42
Marital Status of Parent: Ref=Married				
Single	-3.01	**	1.03	-0.24
Separated/Divorced	-0.57		0.98	-0.04
Living with partner	-2.45	**	0.85	-0.19
Widow/ widower /other [22]	6.37	*	2.88	0.50
Missing	2.93		8.62	0.23

[22] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.68		1.13	0.05
Average 20-24	0.94		1.17	0.07
High 25-32	2.36	*	1.15	0.18
Very high 33-45	3.74	**	1.41	0.29
Missing	-0.36		2.21	-0.03
KS3 Academic enrichment: Ref=Low				
Medium	1.89	*	0.84	0.15
High	3.09	**	1.05	0.24
Missing	-3.65	*	1.58	-0.29
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.81	**	1.01	0.22
Medium deprivation	0.85		0.78	0.07
Missing	5.87		6.35	0.46
School composition: % FSM	0.06	*	0.03	0.14
School composition: % SEN	-0.61	*	0.29	-0.12
KS3 Teacher support: Ref=Low				
Medium	2.23	*	0.92	0.17
High	4.10	***	1.17	0.32
Missing	2.39		1.62	0.19
Intercept	96.42	***	2.40	
Random effects parameters				
Variance (Level 2)	14.39		3.59	
Variance (Level 1)	163.35		5.46	
Total Variance	177.74			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16963.44			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.8: The influence 'Teacher professional focus' (in KS4) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.11	***	0.60	0.40
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.67		0.69	-0.05
Summer born	-2.19	**	0.72	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.19	#	1.74	-0.25
Black Caribbean heritage	4.37	**	1.64	0.35
Black African heritage	1.49		2.23	0.12
Any other ethnic minority	0.45		2.13	0.04
Indian heritage	3.84	#	2.00	0.30
Pakistani heritage	2.01		1.57	0.14
Bangladeshi heritage	5.19	#	2.84	0.41
Mixed race	-1.15		1.34	-0.09
Missing	1.20		9.73	0.09
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.48		0.76	0.04
3+ Siblings	-2.61	*	1.04	-0.21
Missing	-1.21		5.20	-0.10
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.73	#	1.00	-0.14
2+ Behavioural Problems	-5.21	*	2.11	-0.41
Missing	-4.37		8.92	-0.35
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.05	*	1.42	-0.24
Skilled, Non-Manual	-3.69	*	1.52	-0.29
Skilled Manual	-5.51	**	1.66	-0.44
Semi-Skilled	-4.95	**	1.71	-0.39
Unskilled	-8.02	**	2.38	-0.63
Not working/never worked	-3.43		2.42	-0.27
Missing	-5.12		4.79	-0.40
Free School Meals (FSM) status: Ref=No FSM				
Eligible for FSM	-4.08	***	0.84	-0.32
Not known	-0.27		2.03	-0.02
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.39		1.18	-0.03
16 academic	2.18	*	0.95	0.17
18 academic	2.05	#	1.28	0.16
Other professional/Miscellaneous	1.71		2.45	0.14
Degree or equivalent	5.33	***	1.33	0.42
Higher degree	4.76	*	1.85	0.38
Missing	3.91		3.66	0.31
Marital Status of Parent: Ref=Married				
Single	-2.65	**	1.02	-0.21
Separated/Divorced	-0.43		0.97	-0.03
Living with partner	-2.30	**	0.85	-0.18
Widow/ widower /other [23]	6.28	*	2.84	0.50
Missing	1.63		8.55	0.13

[23] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.89		1.12	0.07
Average 20-24	1.11		1.16	0.09
High 25-32	2.30	*	1.15	0.18
Very high 33-45	3.62	*	1.40	0.29
Missing	-0.31		2.19	-0.02
KS3 Academic enrichment: Ref=Low				
Medium	1.97	*	0.83	0.16
High	3.04	**	1.04	0.24
Missing	-1.97	*	0.84	-0.16
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.63	**	1.00	0.21
Medium deprivation	0.58		0.78	0.05
Missing	4.64		6.29	0.37
School composition: % FSM	0.07	*	0.03	0.17
School composition: % SEN	-0.53	#	0.29	-0.11
KS4 Teacher professional focus: Ref=Low				
Medium	1.29	*	0.94	0.10
High	2.69	***	1.16	0.21
Missing	-2.82	**	0.97	-0.22
Intercept	98.96	***	2.39	
Random effects parameters				
Variance (Level 2)	15.26		3.67	
Variance (Level 1)	160.22		5.37	
Total Variance	175.48			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16932.72			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.9: The influence 'Positive relationships' (in KS4) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.28	***	0.60	0.42
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.67		0.69	-0.05
Summer born	-2.21	**	0.72	-0.18
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.01	#	1.73	-0.24
Black Caribbean heritage	4.37	**	1.63	0.35
Black African heritage	1.53		2.22	0.12
Any other ethnic minority	0.59		2.12	0.05
Indian heritage	3.97	*	1.99	0.32
Pakistani heritage	1.70		1.56	0.14
Bangladeshi heritage	4.68	#	2.83	0.37
Mixed race	-0.85		1.33	-0.07
Missing	0.70		9.65	0.06
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.43		0.76	0.03
3+ Siblings	-2.57	*	1.03	-0.20
Missing	-1.71		5.16	-0.14
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.59		1.03	-0.13
2+ Behavioural Problems	-5.45	*	2.10	-0.43
Missing	-4.13		8.86	-0.33
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-2.80	*	1.41	-0.22
Skilled, Non-Manual	-3.54	*	1.50	-0.28
Skilled Manual	-4.98	**	1.65	-0.40
Semi-Skilled	-4.62	**	1.70	-0.37
Unskilled	-7.99	**	2.36	-0.64
Not working/never worked	-2.95		2.40	-0.24
Missing	-4.81		4.75	-0.38
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.97	***	0.83	-0.32
Not known	-0.33		2.02	-0.03
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.41		1.17	-0.03
16 academic	2.17	*	0.94	0.17
18 academic	2.17	#	1.28	0.17
Other professional/Miscellaneous	1.40		2.44	0.11
Degree or equivalent	5.17	***	1.32	0.41
Higher degree	4.63	*	1.84	0.37
Missing	4.37		3.64	0.35
Marital Status of Parent: Ref=Married				
Single	-2.54	*	1.01	-0.20
Separated/Divorced	-0.37		0.97	-0.03
Living with partner	-2.20	**	0.84	-0.18
Widow/ widower /other [24]	6.95	*	2.83	0.55
Missing	1.11		8.50	0.09

[24] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.98		1.12	0.08
Average 20-24	1.08		1.16	0.09
High 25-32	2.38	*	1.14	0.19
Very high 33-45	3.65	**	1.39	0.29
Missing	-0.05		2.17	0.00
KS3 Academic enrichment: Ref=Low				
Medium	1.74	*	0.82	0.14
High	2.95	**	1.03	0.24
Missing	-2.06	*	0.83	-0.16
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.52	**	1.00	0.20
Medium deprivation	0.62		0.77	0.05
Missing	5.01		6.24	0.40
School composition: % FSM	0.07	*	0.03	0.17
School composition: % SEN	-0.53	#	0.29	-0.11
KS4 Positive relationships: Ref=Low				
Medium	5.04	***	0.94	0.40
High	5.91	***	1.18	0.47
Missing	-0.02		0.96	0.00
Intercept	95.81	***	2.39	
Random effects parameters				
Variance (Level 2)	15.92		3.73	
Variance (Level 1)	157.58		5.29	
Total Variance	173.50			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16904.44			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.10: The influence 'Monitoring students' (in KS4) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.11	***	0.60	0.40
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.64		0.69	-0.05
Summer born	-2.16	**	0.72	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-3.10	#	1.74	-0.25
Black Caribbean heritage	4.12	*	1.64	0.33
Black African heritage	1.44		2.23	0.11
Any other ethnic minority	0.54		2.13	0.04
Indian heritage	3.77	#	2.00	0.30
Pakistani heritage	2.00		1.56	0.16
Bangladeshi heritage	5.36	#	2.84	0.42
Mixed race	-1.09		1.33	-0.09
Missing	1.78		9.71	0.14
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.38		0.76	0.03
3+ Siblings	-2.81	**	1.04	-0.22
Missing	-1.13		5.19	-0.09
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.88	#	1.04	-0.15
2+ Behavioural Problems	-5.27	*	2.11	-0.42
Missing	-4.42		8.90	-0.35
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-2.95	*	1.42	-0.23
Skilled, Non-Manual	-3.56	*	1.51	-0.28
Skilled Manual	-4.90	**	1.66	-0.39
Semi-Skilled	-5.37	**	1.71	-0.42
Unskilled	-8.18	**	2.38	-0.65
Not working/never worked	-3.33		2.41	-0.26
Missing	-5.07		4.78	-0.40
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-4.05	***	0.84	-0.32
Not known	-0.42		2.03	-0.03
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.39		1.18	-0.03
16 academic	2.15	*	0.95	0.17
18 academic	2.03	#	1.33	0.16
Other professional/Miscellaneous	1.72		2.45	0.14
Degree or equivalent	5.31	***	1.33	0.42
Higher degree	4.91	**	1.85	0.39
Missing	4.01		3.66	0.32
Marital Status of Parent: Ref=Married				
Single	-2.68	**	1.02	-0.21
Separated/Divorced	-0.40		0.97	-0.03
Living with partner	-2.26	**	0.85	-0.18
Widow/ widower /other [25]	6.59	*	2.84	0.52
Missing	1.59		8.54	0.13

[25] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.80		1.12	0.06
Average 20-24	0.97		1.16	0.08
High 25-32	2.18	#	1.14	0.17
Very high 33-45	3.62	**	1.40	0.29
Missing	-0.44		2.18	-0.03
KS3 Academic enrichment: Ref=Low				
Medium	2.02	*	0.82	0.16
High	3.04	**	1.04	0.24
Missing	-1.94	*	0.84	-0.15
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.61	**	1.00	0.21
Medium deprivation	0.59		0.78	0.05
Missing	3.43		6.29	0.27
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.53	#	0.29	-0.11
KS4 Monitoring students: Ref=Low				
Medium	1.69	***	0.95	0.13
High	3.82	***	1.16	0.30
Missing	-2.35		0.98	-0.19
Intercept	98.56	***	2.40	
Random effects parameters				
Variance (Level 2)	15.31		3.68	
Variance (Level 1)	159.69		5.35	
Total Variance	175.00			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16926.56			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.11: The influence 'Formative feedback' (in KS4) on self-regulation

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	5.16	***	0.60	0.41
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.73		0.69	-0.06
Summer born	-2.20	**	0.72	-0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	-2.95	#	1.74	-0.23
Black Caribbean heritage	4.13	*	1.64	0.33
Black African heritage	1.28		2.22	0.10
Any other ethnic minority	0.59		2.12	0.05
Indian heritage	3.94	*	1.99	0.31
Pakistani heritage	1.84		1.56	0.15
Bangladeshi heritage	5.21	#	2.83	0.41
Mixed race	-0.99		1.34	-0.08
Missing	1.02		9.70	0.08
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	0.35		0.76	0.03
3+ Siblings	-2.79	**	1.03	-0.22
Missing	-1.32		5.17	-0.10
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-1.85	#	0.99	-0.15
2+ Behavioural Problems	-5.36	*	2.10	-0.43
Missing	-5.41		8.89	-0.43
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	-2.96	*	1.41	-0.23
Skilled, Non-Manual	-3.71	*	1.51	-0.29
Skilled Manual	-5.45	**	1.66	-0.43
Semi-Skilled	-4.94	**	1.70	-0.39
Unskilled	-7.98	**	2.37	-0.63
Not working/never worked	-3.52		2.41	-0.28
Missing	-5.17		4.77	-0.41
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.98	***	0.83	-0.32
Not known	-0.44		2.03	-0.03
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.31		1.17	-0.02
16 academic	2.23	*	0.94	0.18
18 academic	1.98		1.28	0.16
Other professional/Miscellaneous	1.55		2.44	0.12
Degree or equivalent	5.22	***	1.32	0.41
Higher degree	4.95	**	1.84	0.39
Missing	3.92		3.65	0.31
Marital Status of Parent: Ref=Married				
Single	-2.75	**	1.02	-0.22
Separated/Divorced	-0.37		0.97	-0.03
Living with partner	-2.23	**	0.84	-0.18
Widow/ widower /other [26]	6.48	*	2.83	0.51
Missing	2.70		8.52	0.21

[26] Findings for the 'Widow/ widower /other' category are not reported as the number of students involved is very small (less than 20), so estimates are likely to be unreliable.

Self-regulation [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.76		1.12	0.06
Average 20-24	0.94		1.15	0.07
High 25-32	2.13	#	1.14	0.17
Very high 33-45	3.51	*	1.39	0.28
Missing	-0.44		2.18	-0.03
KS3 Academic enrichment: Ref=Low				
Medium	1.88	*	0.82	0.15
High	2.92	**	1.04	0.23
Missing	-2.02	*	0.82	-0.16
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.58	*	1.00	0.20
Medium deprivation	0.59		0.78	0.05
Missing	4.37		6.28	0.35
School composition: % FSM	0.07	*	0.03	0.17
School composition: % SEN	-0.54	#	0.29	-0.11
KS4 Formative feedback: Ref=Low				
Medium	3.78	***	0.94	0.30
High	4.78	***	1.18	0.38
Missing	-0.89		0.98	-0.07
Intercept	97.31	***	2.37	
Random effects parameters				
Variance (Level 2)	15.22		3.67	
Variance (Level 1)	159.07		5.33	
Total Variance	174.29			
Number of Level-1 Observations	2144			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16918.26			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.12: The influence 'Emphasis on leaning' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.41	***	0.60	0.59
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.11		0.69	0.01
Summer born	-1.47	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.44	**	1.00	-0.19
2+ Behavioural Problems	-3.99	*	2.06	-0.32
Missing	-9.52		8.45	-0.75
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.11	*	1.43	-0.25
Skilled, Non-Manual	-3.55	*	1.52	-0.28
Skilled Manual	-4.40	**	1.67	-0.35
Semi-Skilled	-3.28	#	1.71	-0.26
Unskilled	-6.23	**	2.40	-0.49
Not working/never worked	-1.84		2.40	-0.15
Missing	0.57		4.84	0.05
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.81	***	0.84	-0.30
Not known	-0.48		2.06	-0.04
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-1.00		1.16	-0.08
16 academic	2.70	**	0.94	0.21
18 academic	1.96		1.28	0.15
Other professional/Miscellaneous	-1.96		2.44	-0.15
Degree or equivalent	4.58	**	1.32	0.36
Higher degree	4.85	**	1.84	0.38
Missing	4.87		3.64	0.38
Marital Status of Parent: Ref=Married				
Single	-3.48	**	0.97	-0.28
Separated/Divorced	0.16		0.97	0.01
Living with partner	-2.39	**	0.84	-0.19
Widow/ widower /other	3.13		2.86	0.25
Missing	1.67		8.45	0.13
Early years Home Learning Environment				
Low 14-19	0.74		1.12	0.06
Average 20-24	0.91		1.15	0.07
High 25-32	3.02	*	1.14	0.24
Very high 33-45	2.89	#	1.39	0.23
Missing	-0.87		2.19	-0.07
KS3 Academic enrichment: Ref=Low				
Medium	1.27		0.83	0.10
High	1.49		1.05	0.12
Missing	-6.85	***	1.76	-0.54
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.12	**	1.02	0.25
Medium deprivation	1.57	*	0.78	0.12
Missing	-0.34		13.63	-0.03
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.69	*	0.31	-0.14
KS3 Emphasis on learning Ref=Low				
Medium	3.27	*	0.91	0.26
High	5.32	*	1.17	0.42
Missing	6.49		1.84	0.51
Intercept	94.12	***	2.25	
Random effects parameters				
Variance (Level 2)	20.61		4.08	
Variance (Level 1)	160.28		5.35	
Total Variance	180.89			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17039.84			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.13: The influence 'Poor behaviour climate' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.64	***	0.60	0.60
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.01		0.69	0.00
Summer born	-1.54	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.27	**	1.00	-0.18
2+ Behavioural Problems	-4.20	*	2.06	-0.33
Missing	-9.41		8.46	-0.74
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.27	*	1.43	-0.26
Skilled, Non-Manual	-3.54	*	1.52	-0.28
Skilled Manual	-4.54	**	1.67	-0.36
Semi-Skilled	-3.16	#	1.71	-0.25
Unskilled	-6.33	**	2.40	-0.50
Not working/never worked	-1.88		2.40	-0.15
Missing	0.01		4.83	0.00
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.73	***	0.84	-0.29
Not known	-0.42		2.06	-0.03
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.95		1.17	-0.07
16 academic	2.70	**	0.94	0.21
18 academic	2.08		1.28	0.16
Other professional/Miscellaneous	-1.81		2.45	-0.14
Degree or equivalent	4.41	**	1.32	0.35
Higher degree	4.44	*	1.84	0.35
Missing	5.22		3.64	0.41
Marital Status of Parent: Ref=Married				
Single	-3.57	***	0.97	-0.28
Separated/Divorced	0.07		0.97	0.01
Living with partner	-2.36	**	0.84	-0.19
Widow/ widower /other	3.28		2.87	0.26
Missing	1.61		8.48	0.13
Early years Home Learning Environment				
Low 14-19	0.55		1.13	0.04
Average 20-24	0.71		1.15	0.06
High 25-32	2.82	*	1.14	0.22
Very high 33-45	2.59	#	1.39	0.20
Missing	-1.08		2.20	-0.09
KS3 Academic enrichment: Ref=Low				
Medium	1.43	#	0.83	0.11
High	1.65		1.05	0.13
Missing	-5.77	**	1.76	-0.46
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.08	**	1.02	0.24
Medium deprivation	1.66	*	0.78	0.13
Missing	-3.04		13.63	-0.24
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.69	*	0.31	-0.14
KS3 Poor behaviour climate Ref=Low				
Medium	-2.48	*	1.02	-0.20
High	-4.77	***	1.22	-0.38
Missing	-0.19		1.90	-0.01
Intercept	99.77	***	2.31	
Random effects parameters				
Variance (Level 2)	21.24		4.14	
Variance (Level 1)	160.59		5.37	
Total Variance	180.83			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17045.56			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.14: The influence 'Headteacher qualities' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.58	***	0.60	0.60
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.02		0.69	0.00
Summer born	-1.53	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.54	*	1.00	-0.20
2+ Behavioural Problems	-4.22	*	2.07	-0.33
Missing	-9.00		8.47	-0.71
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.39	*	1.43	-0.27
Skilled, Non-Manual	-3.74	*	1.52	-0.30
Skilled Manual	-4.78	**	1.67	-0.38
Semi-Skilled	-3.57	#	1.71	-0.28
Unskilled	-6.79	**	2.40	-0.54
Not working/never worked	-2.13		2.40	-0.17
Missing	0.06		4.83	0.00
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.82	***	0.84	-0.30
Not known	-0.66		2.06	-0.05
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.99		1.17	-0.08
16 academic	2.64	**	0.94	0.21
18 academic	2.04		1.28	0.16
Other professional/Miscellaneous	-1.68		2.45	-0.13
Degree or equivalent	4.58	**	1.32	0.36
Higher degree	4.77	*	1.84	0.38
Missing	5.39		3.64	0.43
Marital Status of Parent: Ref=Married				
Single	-3.49	***	0.97	-0.28
Separated/Divorced	0.06		0.97	0.00
Living with partner	-2.34	**	0.84	-0.18
Widow/ widower /other	3.29		2.87	0.26
Missing	0.78		8.48	0.06
Early years Home Learning Environment				
Low 14-19	0.63		1.13	0.05
Average 20-24	0.74		1.16	0.06
High 25-32	2.93	*	1.14	0.23
Very high 33-45	2.83	*	1.39	0.22
Missing	-1.02		2.20	-0.08
KS3 Academic enrichment: Ref=Low				
Medium	1.37		0.83	0.11
High	1.83	#	1.05	0.14
Missing	-6.23	**	1.76	-0.49
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.96	**	1.03	0.23
Medium deprivation	1.60	*	0.78	0.13
Missing	1.86		13.70	0.15
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.05	#	0.03	0.12
School composition: % SEN	-0.72	*	0.31	-0.14
KS3 Headteacher qualities Ref=Low				
Medium	5.23	**	1.80	0.41
High	3.66	**	1.15	0.29
Missing	2.47	**	0.91	0.19
Intercept	95.17	***	2.22	
Random effects parameters				
Variance (Level 2)	22.04		4.14	
Variance (Level 1)	160.43		5.37	
Total Variance	182.47			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17048.62			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.15: The influence 'School environment' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.61	***	0.60	0.60
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.04		0.69	0.00
Summer born	-1.57	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.44	*	1.00	-0.19
2+ Behavioural Problems	-4.22	*	2.08	-0.33
Missing	-9.18		8.48	-0.72
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.41	*	1.43	-0.27
Skilled, Non-Manual	-3.78	*	1.52	-0.30
Skilled Manual	-4.82	**	1.67	-0.38
Semi-Skilled	-3.50	*	1.72	-0.28
Unskilled	-6.55	**	2.40	-0.52
Not working/never worked	-2.17		2.41	-0.17
Missing	-0.09		4.84	-0.01
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.82	***	0.84	-0.30
Not known	-0.42		2.07	-0.03
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.94		1.17	-0.07
16 academic	2.74	**	0.94	0.22
18 academic	2.02		1.28	0.16
Other professional/Miscellaneous	-1.61		2.45	-0.13
Degree or equivalent	4.61	***	1.32	0.36
Higher degree	4.73	*	1.84	0.37
Missing	5.24		3.65	0.41
Marital Status of Parent: Ref=Married				
Single	-3.46	***	0.98	-0.27
Separated/Divorced	0.09		0.97	0.01
Living with partner	-2.34	**	0.84	-0.18
Widow/ widower /other	3.09		2.87	0.24
Missing	0.78		8.49	0.06
Early years Home Learning Environment				
Low 14-19	0.61		1.13	0.05
Average 20-24	0.73		1.16	0.06
High 25-32	2.90	*	1.14	0.23
Very high 33-45	2.76	*	1.39	0.22
Missing	-1.17		2.20	-0.09
KS3 Academic enrichment: Ref=Low				
Medium	1.35		0.84	0.11
High	1.67		1.06	0.13
Missing	-6.54	***	1.76	-0.52
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.19	**	1.03	0.25
Medium deprivation	1.61	*	0.78	0.13
Missing	0.70		13.70	0.06
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	#	0.03	0.15
School composition: % SEN	-0.67	*	0.31	-0.13
KS3 School environment Ref=Low				
Medium	1.29	*	0.91	0.10
High	2.98	*	1.21	0.23
Missing	4.58		1.81	0.36
Intercept	96.05	***	2.22	
Random effects parameters				
Variance (Level 2)	21.61		4.20	
Variance (Level 1)	161.04		5.39	
Total Variance	182.65			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17053.36			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.16: The influence 'Valuing students' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.52	***	0.60	0.59
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.03		0.69	0.00
Summer born	-1.51	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.43	*	1.00	-0.19
2+ Behavioural Problems	-4.12	*	2.07	-0.33
Missing	-9.08		8.45	-0.72
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.08	*	1.43	-0.24
Skilled, Non-Manual	-3.47	*	1.52	-0.27
Skilled Manual	-4.47	**	1.67	-0.35
Semi-Skilled	-3.25	#	1.72	-0.26
Unskilled	-6.45	**	2.40	-0.51
Not working/never worked	-1.62		2.41	-0.13
Missing	0.40		4.84	0.03
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.76	***	0.84	-0.30
Not known	-0.53		2.06	-0.04
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.95		1.16	-0.08
16 academic	2.78	**	0.94	0.22
18 academic	2.05		1.28	0.16
Other professional/Miscellaneous	-1.50		2.44	-0.12
Degree or equivalent	4.65	***	1.32	0.37
Higher degree	4.85	**	1.84	0.38
Missing	5.80		3.64	0.46
Marital Status of Parent: Ref=Married				
Single	-3.35	***	0.98	-0.27
Separated/Divorced	0.05		0.97	0.00
Living with partner	-2.31	**	0.84	-0.18
Widow/ widower /other	3.51		2.86	0.28
Missing	0.56		8.45	0.04
Early years Home Learning Environment				
Low 14-19	0.76		1.13	0.06
Average 20-24	0.77		1.16	0.06
High 25-32	2.94	*	1.14	0.23
Very high 33-45	2.76	*	1.39	0.22
Missing	-1.13		2.19	-0.09
KS3 Academic enrichment: Ref=Low				
Medium	1.24		0.83	0.10
High	1.42		1.05	0.11
Missing	-6.31	***	1.77	-0.50
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.03	**	1.02	0.24
Medium deprivation	1.45	#	0.78	0.11
Missing	2.25		13.65	0.18
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.05	#	0.03	0.12
School composition: % SEN	-0.72	*	0.31	-0.14
KS3 Valuing students Ref=Low				
Medium	3.23	***	0.92	0.26
High	5.42	***	1.16	0.43
Missing	5.91	**	1.80	0.47
Intercept	96.05	***	2.22	
Random effects parameters				
Variance (Level 2)	21.29		4.15	
Variance (Level 1)	159.89		5.35	
Total Variance	181.18			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17037.20			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.17: The influence 'Teacher discipline' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.54	***	0.60	0.60
Term of birth within the academic year: Ref=Autumn term				
Spring born	-0.09		0.69	-0.01
Summer born	-1.53	*	0.73	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.52	*	1.00	-0.20
2+ Behavioural Problems	-4.16	*	2.08	-0.33
Missing	-9.42		8.49	-0.75
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.21	*	1.43	-0.25
Skilled, Non-Manual	-3.67	*	1.52	-0.29
Skilled Manual	-4.74	**	1.67	-0.38
Semi-Skilled	-3.41	#	1.72	-0.27
Unskilled	-6.52	**	2.40	-0.52
Not working/never worked	-2.10		2.41	-0.17
Missing	0.18		4.84	0.01
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.89	***	0.84	-0.31
Not known	-0.51		2.07	-0.04
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.89		1.17	-0.07
16 academic	2.72	**	0.94	0.22
18 academic	1.94		1.28	0.15
Other professional/Miscellaneous	-1.76		2.45	-0.14
Degree or equivalent	4.62	***	1.32	0.37
Higher degree	4.65	*	1.85	0.37
Missing	5.03		3.65	0.40
Marital Status of Parent: Ref=Married				
Single	-3.44	***	0.98	-0.27
Separated/Divorced	0.07		0.97	0.01
Living with partner	-2.28	**	0.85	-0.18
Widow/ widower /other	3.44		2.88	0.27
Missing	1.29		8.50	0.10
Early years Home Learning Environment				
Low 14-19	0.50		1.13	0.04
Average 20-24	0.74		1.16	0.06
High 25-32	2.85	*	1.15	0.23
Very high 33-45	2.70	#	1.39	0.21
Missing	-1.11		2.20	-0.09
KS3 Academic enrichment: Ref=Low				
Medium	1.45		0.83	0.11
High	1.89	#	1.05	0.15
Missing	-5.31	**	1.56	-0.42
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.15	**	1.03	0.25
Medium deprivation	1.64	*	0.78	0.13
Missing	-0.36		13.69	-0.03
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.05	#	0.03	0.12
School composition: % SEN	-0.70	*	0.31	-0.14
KS3 Teacher discipline Ref=Low				
Medium	3.19		0.95	0.25
High	2.85	*	1.18	0.23
Missing	0.92	*	1.62	0.07
Intercept	96.05	***	2.24	
Random effects parameters				
Variance (Level 2)	21.29		4.15	
Variance (Level 1)	159.89		5.35	
Total Variance	181.18			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17035.56			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.17: The influence 'Teacher support' (in KS3) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.62	***	0.60	0.60
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.00		0.69	0.00
Summer born	-1.53	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.39	*	1.00	-0.19
2+ Behavioural Problems	-4.20	*	2.07	-0.33
Missing	-9.88		8.46	-0.78
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.10	*	1.43	-0.24
Skilled, Non-Manual	-3.47	*	1.52	-0.27
Skilled Manual	-4.46	**	1.67	-0.35
Semi-Skilled	-3.17	#	1.71	-0.25
Unskilled	-6.27	**	2.40	-0.49
Not working/never worked	-1.98		2.40	-0.16
Missing	0.20		4.82	0.02
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.84	***	0.84	-0.30
Not known	-0.50		2.06	-0.04
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.87		1.17	-0.07
16 academic	2.75	**	0.94	0.22
18 academic	2.07		1.28	0.16
Other professional/Miscellaneous	-1.57		2.45	-0.12
Degree or equivalent	4.92	***	1.32	0.39
Higher degree	4.71	*	1.84	0.37
Missing	5.69		3.64	0.45
Marital Status of Parent: Ref=Married				
Single	-3.37	***	0.97	-0.27
Separated/Divorced	0.19		0.97	0.01
Living with partner	-2.23	**	0.84	-0.18
Widow/ widower /other	3.65		2.87	0.29
Missing	1.66		8.47	0.13
Early years Home Learning Environment				
Low 14-19	0.56		1.13	0.04
Average 20-24	0.72		1.15	0.06
High 25-32	2.91	*	1.14	0.23
Very high 33-45	2.72	#	1.39	0.21
Missing	-1.11		2.19	-0.09
KS3 Academic enrichment: Ref=Low				
Medium	1.07		0.84	0.08
High	1.51		1.05	0.12
Missing	-5.45	**	1.58	-0.43
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.15	**	1.02	0.25
Medium deprivation	1.61	*	0.78	0.13
Missing	1.86		13.67	0.15
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	#	0.03	0.15
School composition: % SEN	-0.73	**	0.31	-0.14
KS3 Teacher Support Ref=Low				
Medium	2.73	**	0.92	0.22
High	4.97	***	1.16	0.39
Missing	4.57	**	1.62	0.36
Intercept	94.49	***	2.26	
Random effects parameters				
Variance (Level 2)	20.90		4.12	
Variance (Level 1)	160.56		5.37	
Total Variance	181.46			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17043.36			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.18: The influence 'Teacher professional focus' (in KS4) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.20	***	0.60	0.61
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.08		0.69	0.00
Summer born	-1.56	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.37	**	0.99	-0.19
2+ Behavioural Problems	-3.68	*	2.06	-0.33
Missing	-8.29		8.41	-0.78
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.16	*	1.42	-0.25
Skilled, Non-Manual	-3.74	*	1.51	-0.28
Skilled Manual	-4.70	**	1.65	-0.35
Semi-Skilled	-3.52	*	1.70	-0.25
Unskilled	-6.65	**	2.38	-0.50
Not working/never worked	-2.73		2.39	-0.16
Missing	0.84		4.80	0.02
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.57	***	0.83	-0.31
Not known	-0.07		2.05	-0.04
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-1.13		1.16	-0.07
16 academic	2.53	**	0.93	0.22
18 academic	1.52		1.27	0.16
Other professional/Miscellaneous	-2.05		2.43	-0.12
Degree or equivalent	4.31	**	1.31	0.39
Higher degree	4.08	*	1.83	0.37
Missing	4.63		3.62	0.45
Marital Status of Parent: Ref=Married				
Single	-3.14	**	0.99	-0.27
Separated/Divorced	0.31		0.97	0.02
Living with partner	-2.17	**	0.85	-0.18
Widow/ widower /other	3.94		2.84	0.29
Missing	-0.25		8.57	0.13
Early years Home Learning Environment				
Low 14-19	0.81		1.12	0.04
Average 20-24	0.86		1.15	0.06
High 25-32	2.84	*	1.14	0.23
Very high 33-45	2.63	#	1.38	0.22
Missing	-0.77		2.18	-0.09
KS3 Academic enrichment: Ref=Low				
Medium	1.21		0.84	0.08
High	1.57		1.04	0.12
Missing	-2.31	**	0.84	-0.43
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.03	**	1.02	0.25
Medium deprivation	1.33	#	0.77	0.13
Missing	-2.45		13.58	0.15
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.66	*	0.31	-0.13
KS4 Teacher professional focus: Ref=Low				
Medium	2.23	*	0.94	0.22
High	4.07	**	1.16	0.39
Missing	-1.64		0.97	0.36
Intercept	95.56	***	2.25	
Random effects parameters				
Variance (Level 2)	21.24		4.15	
Variance (Level 1)	158.45		5.30	
Total Variance	179.69			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17021.10			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.19: The influence 'Positive relationships' (in KS4) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.18	***	0.60	0.58
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.12		0.69	0.01
Summer born	-1.52	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.58	*	0.99	-0.21
2+ Behavioural Problems	-3.74	*	2.06	
Missing	-8.25		8.41	-0.66
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.02	*	1.42	-0.24
Skilled, Non-Manual	-3.54	*	1.51	-0.28
Skilled Manual	-4.50	*	1.65	-0.36
Semi-Skilled	-3.43	#	1.70	-0.28
Unskilled	-6.74	**	2.38	-0.54
Not working/never worked	-2.13		2.39	-0.17
Missing	0.92		4.79	0.07
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.55	***	0.83	-0.29
Not known	-0.22		2.06	-0.02
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-1.11		1.16	-0.09
16 academic	2.52	*	0.93	
18 academic	1.49		1.27	0.12
Other professional/Miscellaneous	-2.03		2.43	-0.16
Degree or equivalent	4.28	**	1.31	0.34
Higher degree	4.31	*	1.83	0.35
Missing	4.73		3.62	0.38
Marital Status of Parent: Ref=Married				
Single	-3.10	**	0.97	-0.25
Separated/Divorced	0.31		0.97	0.02
Living with partner	-2.13	*	0.84	-0.17
Widow/ widower /other	4.10		2.84	0.33
Missing	0.25		8.34	0.02
Early years Home Learning Environment				
Low 14-19	0.68		1.12	0.05
Average 20-24	0.68		1.14	0.05
High 25-32	2.65	*	1.13	0.21
Very high 33-45	2.63	#	1.38	0.21
Missing	-0.98		2.18	-0.08
KS3 Academic enrichment: Ref=Low				
Medium	1.33		0.84	0.11
High	1.66		1.04	0.13
Missing	-2.25	**	0.84	-0.18
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.96	**	1.01	0.24
Medium deprivation	1.35	#	0.77	
Missing	-4.33		13.59	-0.35
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.67	*	0.31	-0.14
KS4 Positive relationships: Ref=Low				
Medium	6.12	***	0.93	0.49
High	7.42	***	1.17	0.60
Missing	-1.34		0.96	-0.11
Intercept	93.23	***	2.25	
Random effects parameters				
Variance (Level 2)	21.96		4.17	
Variance (Level 1)	154.99		5.29	
Total Variance	176.95			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16982.10			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.20: The influence 'Monitoring students' (in KS4) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.20	***	0.60	0.58
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.08		0.69	0.01
Summer born	-1.56	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.37	**	0.99	-0.21
2+ Behavioural Problems	-3.68	*	2.06	-0.30
Missing	-8.29		8.41	-0.66
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.16	*	1.42	-0.24
Skilled, Non-Manual	-3.74	*	1.51	-0.28
Skilled Manual	-4.70	**	1.65	-0.36
Semi-Skilled	-3.52	*	1.70	-0.28
Unskilled	-6.65	**	2.38	-0.54
Not working/never worked	-2.73		2.39	-0.17
Missing	0.84		4.80	0.07
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.57	***	0.83	-0.29
Not known	-0.07		2.05	-0.02
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-1.13		1.16	-0.09
16 academic	2.53	**	0.93	0.20
18 academic	1.52		1.27	0.12
Other professional/Miscellaneous	-2.05		2.43	-0.16
Degree or equivalent	4.31	**	1.31	0.34
Higher degree	4.08	*	1.83	0.35
Missing	4.63		3.62	0.38
Marital Status of Parent: Ref=Married				
Single	-3.14	**	0.99	-0.25
Separated/Divorced	0.31		0.97	0.02
Living with partner	-2.17	**	0.85	-0.17
Widow/ widower /other	3.94		2.84	0.33
Missing	-0.25		8.57	0.02
Early years Home Learning Environment				
Low 14-19	0.81		1.12	0.05
Average 20-24	0.86		1.15	0.05
High 25-32	2.84	*	1.14	0.21
Very high 33-45	2.63	#	1.38	0.21
Missing	-0.77		2.18	-0.08
KS3 Academic enrichment: Ref=Low				
Medium	1.21		0.84	0.11
High	1.57		1.04	0.13
Missing	-2.31	**	0.84	-0.18
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.03	**	1.02	0.24
Medium deprivation	1.33	#	0.77	0.11
Missing	-2.45		13.58	-0.35
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.66	*	0.31	-0.14
KS4 Monitoring students: Ref=Low				
Medium	2.34	*	0.95	0.49
High	4.37	**	1.17	0.60
Missing	-1.44		0.98	-0.11
Intercept	96.34	***	2.27	
Random effects parameters				
Variance (Level 2)	21.15		4.15	
Variance (Level 1)	158.29		5.30	
Total Variance	179.44			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	170218.38			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.21: The influence 'Formative feedback' (in KS4) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.60	***	0.60	0.61
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.03		0.68	0.00
Summer born	-1.56	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.53	**	0.98	-0.20
2+ Behavioural Problems	-3.85	*	2.04	-0.31
Missing	-9.62		8.34	-0.77
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.06	*	1.41	-0.24
Skilled, Non-Manual	-3.76	*	1.50	-0.30
Skilled Manual	-4.65	**	1.65	-0.37
Semi-Skilled	-3.52	*	1.69	-0.28
Unskilled	-6.61	**	2.37	-0.53
Not working/never worked	-2.90		2.38	-0.23
Missing	0.83		4.77	0.07
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.49	***	0.83	-0.28
Not known	-0.25		2.04	-0.02
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-1.04		1.15	-0.08
16 academic	2.59	**	0.93	0.21
18 academic	1.45		1.26	0.12
Other professional/Miscellaneous	-2.28		2.42	-0.18
Degree or equivalent	4.18	**	1.31	0.33
Higher degree	4.34	*	1.82	0.35
Missing	4.57		3.60	0.37
Marital Status of Parent: Ref=Married				
Single	-3.21	**	0.96	-0.26
Separated/Divorced	0.39		0.96	0.03
Living with partner	-2.08	**	0.83	-0.17
Widow/ widower /other	3.97		2.83	0.32
Missing	1.70		8.38	0.14
Early years Home Learning Environment				
Low 14-19	0.64		1.11	0.05
Average 20-24	0.68		1.14	0.05
High 25-32	2.61	*	1.13	0.21
Very high 33-45	2.54	#	1.37	0.20
Missing	-1.00		2.17	-0.08
KS3 Academic enrichment: Ref=Low				
Medium	1.13		0.82	0.09
High	1.44		1.03	0.12
Missing	-2.39	**	0.84	-0.19
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	2.93	**	1.01	0.23
Medium deprivation	1.34	#	0.77	0.11
Missing	-4.53		13.53	-0.36
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.67	*	0.31	-0.14
KS4 Formative feedback: Ref=Low				
Medium	4.76	*	0.94	0.38
High	6.59	**	1.18	0.53
Missing	0.51		0.97	0.04
Intercept	94.71	***	2.24	
Random effects parameters				
Variance (Level 2)	21.13		4.12	
Variance (Level 1)	156.74		5.25	
Total Variance	178.87			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	16998.88			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.22: The influence 'Monitoring students' (in KS4) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.20	***	0.60	0.57
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.08		0.69	0.01
Summer born	-1.56	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.37	**	0.99	-0.19
2+ Behavioural Problems	-3.68	*	2.06	-0.29
Missing	-8.29		8.41	-0.66
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.16	*	1.42	-0.25
Skilled, Non-Manual	-3.74	*	1.51	-0.30
Skilled Manual	-4.70	**	1.65	-0.37
Semi-Skilled	-3.52	*	1.70	-0.28
Unskilled	-6.65	**	2.38	-0.53
Not working/never worked	-2.73		2.39	-0.22
Missing	0.84		4.80	0.07
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.57	***	0.83	-0.28
Not known	-0.07		2.05	-0.01
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-1.13		1.16	-0.09
16 academic	2.53	**	0.93	0.20
18 academic	1.52		1.27	0.12
Other professional/Miscellaneous	-2.05		2.43	-0.16
Degree or equivalent	4.31	**	1.31	0.34
Higher degree	4.08	*	1.83	0.32
Missing	4.63		3.62	0.37
Marital Status of Parent: Ref=Married				
Single	-3.14	**	0.99	-0.25
Separated/Divorced	0.31		0.97	0.02
Living with partner	-2.17	**	0.85	-0.17
Widow/ widower /other	3.94		2.84	0.31
Missing	-0.25		8.57	-0.02
Early years Home Learning Environment				
Low 14-19	0.81		1.12	0.06
Average 20-24	0.86		1.15	0.07
High 25-32	2.84	*	1.14	0.23
Very high 33-45	2.63	#	1.38	0.21
Missing	-0.77		2.18	-0.06
KS3 Academic enrichment: Ref=Low				
Medium	1.21		0.84	0.10
High	1.57		1.04	0.12
Missing	-2.31	**	0.84	-0.18
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.03	**	1.02	0.24
Medium deprivation	1.33	#	0.77	0.11
Missing	-2.45		13.58	-0.19
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.06	*	0.03	0.15
School composition: % SEN	-0.66	*	0.31	-0.13
KS4 Monitoring students: Ref=Low				
Medium	2.34	*	0.95	0.19
High	4.37	**	1.17	0.35
Missing	-1.44		0.98	-0.11
Intercept	96.34	***	2.27	
Random effects parameters				
Variance (Level 2)	21.15		4.15	
Variance (Level 1)	158.29		5.30	
Total Variance	179.44			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	170218.38			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.23: The influence 'Academic ethos' (in KS4) on pro-social behaviour

Pro-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	7.14	***	0.60	0.57
Term of birth within the academic year: Ref=Autumn term				
Spring born	0.11		0.69	0.01
Summer born	-1.54	*	0.72	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	-2.60	**	0.99	-0.21
2+ Behavioural Problems	-3.84	*	2.06	-0.30
Missing	-8.37		8.43	-0.66
Parents' Highest SES age 3/5 Ref = Professional Non-manual				
Other Professional, Non-Manual	-3.18	*	1.42	-0.25
Skilled, Non-Manual	-3.66	*	1.52	-0.29
Skilled Manual	-4.58	**	1.66	-0.36
Semi-Skilled	-3.40	*	1.71	-0.27
Unskilled	-6.47	**	2.39	-0.51
Not working/never worked	-2.36		2.39	-0.19
Missing	1.10		4.81	0.09
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	-3.62	***	0.83	-0.29
Not known	-0.34		2.05	-0.03
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	-0.98		1.16	-0.08
16 academic	2.58	**	0.93	0.20
18 academic	1.60		1.27	0.13
Other professional/Miscellaneous	-2.06		2.44	-0.16
Degree or equivalent	4.32	**	1.32	0.34
Higher degree	4.28	*	1.84	0.34
Missing	4.54		3.63	0.36
Marital Status of Parent: Ref=Married				
Single	-3.13	**	0.99	-0.25
Separated/Divorced	0.30		0.97	0.02
Living with partner	-2.08	**	0.84	-0.16
Widow/ widower /other	3.94		2.85	0.31
Missing	0.17		8.44	0.01
Early years Home Learning Environment				
Low 14-19	0.67		1.12	0.05
Average 20-24	0.83		1.15	0.07
High 25-32	2.76	*	1.14	0.22
Very high 33-45	2.59	#	1.39	0.21
Missing	-0.94		2.19	-0.07
KS3 Academic enrichment: Ref=Low				
Medium	1.43	#	0.83	0.11
High	1.93	#	1.04	0.15
Missing	-2.26	**	0.83	-0.18
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	3.06	**	1.02	0.24
Medium deprivation	1.45	#	0.77	0.11
Missing	-2.23		13.61	-0.18
Neighbourhood: % White British	-0.05	**	0.02	-0.19
School composition: % FSM	0.07	*	0.03	0.17
School composition: % SEN	-0.69	*	0.31	-0.14
KS4 Academic ethos: Ref=Low				
Medium	1.94	*	0.98	0.15
High	2.67	*	1.25	0.21
Missing	-1.44		0.98	-0.11
Intercept	96.34	***	2.27	
Random effects parameters				
Variance (Level 2)	21.21		4.15	
Variance (Level 1)	159.24		5.30	
Total Variance	180.43			
Number of Level-1 Observations	2146			
Number of Level-2 Units	525			
Deviance (-2 x Log Restricted-Likelihood)	17030.46			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.24: The influence of 'Emphasis on learning' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.86	***	0.56	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.24	*	0.65	0.10
Summer born	2.07	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.25		1.60	0.19
Black Caribbean heritage	-2.74		1.68	-0.22
Black African heritage	0.15		2.18	-0.03
Any other ethnic minority	-0.21		2.08	-0.03
Indian heritage	-3.08		2.02	-0.26
Pakistani heritage	-2.67		1.69	-0.22
Bangladeshi heritage	-3.10		2.89	-0.23
Mixed race	1.03		1.29	0.09
Missing	-13.00		13.07	-1.06
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.99	*	0.94	0.15
2+ Behavioural Problems	4.85	*	1.94	0.38
Missing	10.21		8.92	0.78
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.68		0.72	-0.06
3+ Siblings	2.18	*	0.99	0.18
Missing	4.01		5.21	0.23
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.22		1.17	0.04
Skilled, Non-Manual	1.38		1.30	0.13
Skilled Manual	3.26	*	1.46	0.29
Semi-Skilled	2.00		1.51	0.18
Unskilled	6.74	**	2.23	0.56
Not working/never worked	-0.62		2.24	-0.02
Missing	1.06		4.50	0.12
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.99	***	0.81	0.39
Not known	3.59	*	1.81	0.28
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.97		1.14	0.07
16 academic	-2.18	*	0.92	-0.17
18 academic	-1.88		1.23	-0.14
Other professional/Miscellaneous	-1.04		2.37	-0.10
Degree or equivalent	-4.27	**	1.24	-0.33
Higher degree	-4.26	**	1.61	-0.33
Missing	-3.02		3.56	-0.25
Marital Status of Parent: Ref=Married				
Single	3.06	**	0.98	0.24
Separated/Divorced	1.00		0.94	0.09
Living with partner	2.35	**	0.81	0.19
Widow/ widower /other	-5.99	*	2.80	-0.48
Missing	-9.08		8.53	-0.59
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.10		1.09	0.00
Average 20-24	-0.82		1.12	-0.05
High 25-32	-1.98	#	1.11	-0.15
Very high 33-45	-3.03	*	1.32	-0.23
Missing	1.39		2.07	0.11
KS3 Academic enrichment: Ref=Low				
Medium	-1.37	*	0.80	-0.14
High	-2.66	**	0.98	-0.25
Missing	4.19	***	1.68	0.24
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.52	**	0.96	-0.19
Medium deprivation	-0.51		0.74	-0.04
Missing	5.60		9.42	0.42
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Emphasis on learning: Ref=Low				
Medium	-3.78		0.88	-0.30
High	-5.17		1.09	-0.41
Missing	-4.12		1.76	-0.32
Intercept	105.67	***	2.17	
Random effects parameters				
Variance (Level 2)	14.65		3.44	
Variance (Level 1)	162.23		5.19	
Total Variance	176.88			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19142.84			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.25: The influence of 'Poor behaviour climate' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-6.04	***	0.57	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.34	*	0.65	0.11
Summer born	2.16	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.17		1.60	0.17
Black Caribbean heritage	-2.93		1.68	-0.23
Black African heritage	0.53		2.18	0.04
Any other ethnic minority	-0.37		2.09	-0.03
Indian heritage	-3.05		2.02	-0.24
Pakistani heritage	-2.83	#	1.70	-0.22
Bangladeshi heritage	-3.03		2.90	-0.24
Mixed race	1.04		1.29	0.08
Missing	-13.21		13.07	-1.04
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.78	*	0.95	0.14
2+ Behavioural Problems	4.89	*	1.94	0.38
Missing	9.83		8.93	0.77
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.73		0.72	-0.06
3+ Siblings	2.08	*	0.99	0.16
Missing	3.65		5.21	0.29
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.39		1.17	0.03
Skilled, Non-Manual	1.39		1.30	0.11
Skilled Manual	3.40	*	1.46	0.27
Semi-Skilled	1.88		1.51	0.15
Unskilled	6.87	**	2.24	0.54
Not working/never worked	-0.59		2.25	-0.05
Missing	1.44		4.51	0.11
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.89	***	0.80	0.38
Not known	3.72	*	1.81	0.29
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.88		1.14	0.07
16 academic	-2.24	*	0.92	-0.18
18 academic	-1.96		1.24	-0.15
Other professional/Miscellaneous	-1.10		2.37	-0.09
Degree or equivalent	-4.09	**	1.25	-0.32
Higher degree	-3.82	**	1.62	-0.30
Missing	-3.04		3.56	-0.24
Marital Status of Parent: Ref=Married				
Single	3.08	**	0.98	0.24
Separated/Divorced	1.08		0.94	0.08
Living with partner	2.33	**	0.81	0.18
Widow/ widower /other	-6.28	*	2.81	-0.49
Missing	-8.63		8.55	-0.68
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.08		1.09	-0.01
Average 20-24	-0.63		1.12	-0.05
High 25-32	-1.79		1.10	-0.14
Very high 33-45	-2.74	*	1.32	-0.22
Missing	1.55		2.08	0.12
KS3 Academic enrichment: Ref=Low				
Medium	-1.51	#	0.80	-0.12
High	-2.68	**	0.98	-0.21
Missing	3.34	*	1.68	0.26
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.42	**	0.96	-0.19
Medium deprivation	-0.56		0.75	-0.04
Missing	6.01		9.42	0.47
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Poor behaviour climate: Ref=Low				
Medium	2.83	**	0.89	0.22
High	4.58	***	1.12	0.36
Missing	2.75		1.77	0.22
Intercept	99.68	***	2.17	
Random effects parameters				
Variance (Level 2)	15.63		3.44	
Variance (Level 1)	162.24		5.16	
Total Variance	177.87			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19151.02			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.26: The influence of 'Headteacher qualities' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.99	***	0.57	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.33	*	0.65	0.10
Summer born	2.14	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.48		1.61	0.19
Black Caribbean heritage	-2.95		1.69	-0.23
Black African heritage	-0.28		2.18	0.02
Any other ethnic minority	-0.36		2.09	-0.03
Indian heritage	-3.35		2.02	-0.26
Pakistani heritage	-2.69	#	1.70	-0.21
Bangladeshi heritage	-3.07		2.91	-0.24
Mixed race	1.07		1.29	0.08
Missing	-13.66		13.10	-1.07
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	2.04	*	0.95	0.16
2+ Behavioural Problems	4.96	*	1.94	0.39
Missing	10.36		8.95	0.81
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.73		0.72	-0.06
3+ Siblings	2.16	*	0.99	0.17
Missing	2.50		5.22	0.20
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.59		1.17	0.05
Skilled, Non-Manual	1.66		1.30	0.13
Skilled Manual	3.74	*	1.46	0.29
Semi-Skilled	2.35		1.51	0.18
Unskilled	7.36	**	2.24	0.58
Not working/never worked	-0.24		2.25	-0.02
Missing	1.69		4.52	0.13
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.03	***	0.80	0.39
Not known	3.80	*	1.81	0.30
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.98		1.14	0.08
16 academic	-2.12	*	0.92	-0.17
18 academic	-1.86		1.24	-0.15
Other professional/Miscellaneous	-1.26		2.38	-0.10
Degree or equivalent	-4.26	**	1.25	-0.33
Higher degree	-4.27	**	1.62	-0.33
Missing	-3.37		3.57	-0.26
Marital Status of Parent: Ref=Married				
Single	3.09	**	0.98	0.24
Separated/Divorced	1.15		0.94	0.09
Living with partner	2.34	**	0.81	0.18
Widow/ widower /other	-6.18	*	2.81	-0.48
Missing	-7.45		8.56	-0.58
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.04		1.09	0.00
Average 20-24	-0.69		1.12	-0.05
High 25-32	-1.94	#	1.11	-0.15
Very high 33-45	-3.00	*	1.32	-0.23
Missing	1.35		2.08	0.11
KS3 Academic enrichment: Ref=Low				
Medium	-1.59		0.80	-0.12
High	-3.06	*	0.98	-0.24
Missing	3.31	*	1.68	0.26
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.34	*	0.96	-0.18
Medium deprivation	-0.53		0.75	-0.04
Missing	4.66		9.45	0.36
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Headteacher qualities: Ref=Low				
Medium	-2.12	***	0.87	-0.17
High	-2.15	***	1.07	-0.17
Missing	-1.83	*	1.73	-0.14
Intercept	103.86	***	2.16	
Random effects parameters				
Variance (Level 2)	15.64		3.53	
Variance (Level 1)	163.03		5.18	
Total Variance	178.67			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19162.02			
*Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001*				

Table A3.27: The influence of 'Valuing students' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.90	***	0.56	-0.46
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.34	*	0.65	0.11
Summer born	2.16	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.17		1.60	0.17
Black Caribbean heritage	-3.45		1.68	-0.27
Black African heritage	0.64		2.17	0.05
Any other ethnic minority	-0.98		2.08	-0.08
Indian heritage	-3.53		2.01	-0.28
Pakistani heritage	-2.47	#	1.69	-0.19
Bangladeshi heritage	-3.01		2.88	-0.28
Mixed race	0.83		1.29	0.07
Missing	-13.17		13.02	-1.04
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.91	*	0.94	0.15
2+ Behavioural Problems	4.85	*	1.93	0.38
Missing	10.27		8.89	0.81
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.82		0.72	-0.06
3+ Siblings	1.98	*	0.99	0.16
Missing	2.66		5.18	0.21
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.30		1.16	0.02
Skilled, Non-Manual	1.37		1.30	0.11
Skilled Manual	3.93	*	1.46	0.31
Semi-Skilled	2.04		1.50	0.16
Unskilled	6.85	**	2.22	0.54
Not working/never worked	-0.82		2.24	-0.06
Missing	1.42		4.49	0.11
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.00	***	0.80	0.39
Not known	3.93	*	1.80	0.31
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.95		1.14	0.07
16 academic	-2.26	*	0.92	-0.18
18 academic	-1.91		1.23	-0.15
Other professional/Miscellaneous	-1.23		2.36	-0.10
Degree or equivalent	-4.30	**	1.23	-0.34
Higher degree	-4.29	**	1.61	-0.34
Missing	-3.88		3.55	-0.31
Marital Status of Parent: Ref=Married				
Single	2.99	**	0.97	0.24
Separated/Divorced	1.12		0.94	0.09
Living with partner	2.25	**	0.81	0.18
Widow/ widower /other	-6.61	*	2.79	-0.52
Missing	-7.33		8.50	-0.58
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.26		1.09	-0.02
Average 20-24	-0.77		1.11	-0.06
High 25-32	-2.04	#	1.10	-0.16
Very high 33-45	-3.09	*	1.32	-0.24
Missing	1.40		2.07	0.11
KS3 Academic enrichment: Ref=Low				
Medium	-1.28		0.80	-0.10
High	-2.49	*	0.98	-0.20
Missing	3.45	*	1.68	0.27
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.37	*	0.96	-0.19
Medium deprivation	-0.39		0.74	-0.03
Missing	3.78		9.39	0.30
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Valuing students: Ref=Low				
Medium	-4.65	***	0.88	-0.37
High	-6.29	***	1.09	-0.50
Missing	-4.03	*	1.72	-0.32
Intercept	106.48	***	2.17	
Random effects parameters				
Variance (Level 2)	15.21		3.47	
Variance (Level 1)	160.99		5.12	
Total Variance	176.20			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19130.42			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.28: The influence of 'Learning resources' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.97	***	0.57	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.29	*	0.65	0.10
Summer born	2.13	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.13		1.61	0.17
Black Caribbean heritage	-2.84		1.68	-0.22
Black African heritage	-0.34		2.18	-0.03
Any other ethnic minority	-0.39		2.09	-0.03
Indian heritage	-3.40	#	2.03	-0.27
Pakistani heritage	-2.65		1.70	-0.21
Bangladeshi heritage	-2.97		2.90	-0.23
Mixed race	1.07		1.29	0.08
Missing	-13.36		13.12	-1.05
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.90	*	0.95	0.15
2+ Behavioural Problems	5.01	*	1.95	0.39
Missing	9.49		8.95	0.74
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.61		0.72	-0.05
3+ Siblings	2.28	*	0.99	0.18
Missing	3.17		5.22	0.25
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.39		1.17	0.03
Skilled, Non-Manual	1.46		1.31	0.11
Skilled Manual	3.52	*	1.47	0.28
Semi-Skilled	2.05		1.51	0.16
Unskilled	6.95	**	2.24	0.54
Not working/never worked	-0.47		2.25	-0.04
Missing	1.54		4.52	0.12
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.98	***	0.80	0.39
Not known	3.52	*	1.81	0.28
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.90		1.14	0.07
16 academic	-2.19	*	0.92	-0.17
18 academic	-1.89		1.24	-0.15
Other professional/Miscellaneous	-1.30		2.38	-0.10
Degree or equivalent	-4.30	**	1.25	-0.34
Higher degree	-4.33	**	1.62	-0.34
Missing	-3.22		3.57	-0.25
Marital Status of Parent: Ref=Married				
Single	3.14	**	0.98	0.25
Separated/Divorced	1.06		0.94	0.08
Living with partner	2.37	**	0.81	0.18
Widow/ widower /other	-5.87	*	2.81	-0.52
Missing	-7.53		8.56	-0.58
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.06		1.09	0.00
Average 20-24	-0.58		1.12	-0.05
High 25-32	-1.80		1.11	-0.14
Very high 33-45	-2.87	*	1.32	-0.22
Missing	1.49		2.08	0.12
KS3 Academic enrichment: Ref=Low				
Medium	-1.66		0.80	-0.13
High	-3.07	*	0.98	-0.24
Missing	3.85	**	1.70	0.30
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.44	*	0.96	-0.19
Medium deprivation	-0.54		0.75	-0.04
Missing	4.81		9.45	0.38
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Learning resources: Ref=Low				
Medium	-1.88	*	0.87	-0.15
High	-1.98	*	1.08	-0.15
Missing	-2.22		1.74	-0.17
Intercept	103.80	***	2.17	
Random effects parameters				
Variance (Level 2)	15.10		3.46	
Variance (Level 1)	163.42		5.19	
Total Variance	178.52			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19130.42			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.29: The influence of 'Teacher discipline' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.97	***	0.57	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.28	*	0.65	0.10
Summer born	2.15	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.27		1.61	0.18
Black Caribbean heritage	-2.94		1.69	-0.23
Black African heritage	-0.41		2.18	-0.03
Any other ethnic minority	-0.50		2.09	-0.04
Indian heritage	-3.24	#	2.02	-0.25
Pakistani heritage	-2.79		1.70	-0.22
Bangladeshi heritage	-2.98		2.90	-0.23
Mixed race	1.11		1.29	0.09
Missing	-13.45		13.12	-1.05
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	2.01	*	0.95	0.16
2+ Behavioural Problems	4.88	*	1.94	0.38
Missing	10.34		8.95	0.81
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.74		0.72	-0.06
3+ Siblings	2.21	*	0.99	0.17
Missing	3.18		5.22	0.25
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.47		1.17	0.04
Skilled, Non-Manual	1.63		1.30	0.13
Skilled Manual	3.75	*	1.46	0.29
Semi-Skilled	2.28		1.51	0.18
Unskilled	7.25	**	2.24	0.57
Not working/never worked	-0.27		2.25	-0.02
Missing	1.66		4.52	0.13
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.06	***	0.81	0.40
Not known	3.76	*	1.81	0.29
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.90		1.14	0.07
16 academic	-2.20	*	0.93	-0.17
18 academic	-1.86		1.24	-0.15
Other professional/Miscellaneous	-1.09		2.38	-0.09
Degree or equivalent	-4.29	**	1.25	-0.34
Higher degree	-4.11	**	1.62	-0.32
Missing	-3.15		3.57	-0.25
Marital Status of Parent: Ref=Married				
Single	3.04	**	0.98	0.24
Separated/Divorced	1.12		0.94	0.09
Living with partner	2.24	**	0.81	0.18
Widow/ widower /other	-6.31	*	2.82	-0.49
Missing	-8.27		8.57	-0.65
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.07		1.09	0.00
Average 20-24	-0.66		1.12	-0.05
High 25-32	-1.85		1.11	-0.14
Very high 33-45	-2.90	*	1.32	-0.23
Missing	1.56		2.08	0.12
KS3 Academic enrichment: Ref=Low				
Medium	-1.56	*	0.80	-0.12
High	-3.02	**	0.98	-0.24
Missing	3.29	*	1.49	0.26
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.47	*	0.96	-0.19
Medium deprivation	-0.60		0.75	-0.05
Missing	5.06		9.45	0.40
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Teacher discipline: Ref=Low				
Medium	-1.34	*	0.91	-0.10
High	-2.69	*	1.10	-0.21
Missing	-1.44		1.55	-0.11
Intercept	103.61	***	2.18	
Random effects parameters				
Variance (Level 2)	15.03		3.46	
Variance (Level 1)	163.42		5.19	
Total Variance	178.55			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19162.54			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.30: The influence of 'Teacher support' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-6.04	***	0.57	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.32	*	0.65	0.10
Summer born	2.13	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.42		1.60	0.19
Black Caribbean heritage	-2.94		1.68	-0.23
Black African heritage	-0.21		2.18	-0.02
Any other ethnic minority	-0.42		2.09	-0.03
Indian heritage	-3.20	#	2.02	-0.25
Pakistani heritage	-2.47		1.70	-0.19
Bangladeshi heritage	-2.96		2.90	-0.23
Mixed race	1.04		1.29	0.08
Missing	-13.28		13.10	-1.04
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.88	*	0.95	0.15
2+ Behavioural Problems	4.92	*	1.94	0.39
Missing	10.64		8.94	0.83
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.74		0.72	-0.06
3+ Siblings	2.17	*	0.99	0.17
Missing	3.00		5.21	0.23
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.34		1.17	0.03
Skilled, Non-Manual	1.41		1.30	0.11
Skilled Manual	3.48	*	1.47	0.27
Semi-Skilled	2.03		1.51	0.16
Unskilled	6.99	**	2.24	0.55
Not working/never worked	-0.49		2.25	-0.04
Missing	1.53		4.52	0.12
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.04	***	0.80	0.39
Not known	3.70	*	1.81	0.29
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.90		1.14	0.07
16 academic	-2.20	*	0.93	-0.17
18 academic	-1.86		1.24	-0.15
Other professional/Miscellaneous	-1.09		2.38	-0.09
Degree or equivalent	-4.29	**	1.25	-0.34
Higher degree	-4.11	**	1.62	-0.32
Missing	-3.15		3.57	-0.25
Marital Status of Parent: Ref=Married				
Single	3.03	**	0.98	0.24
Separated/Divorced	1.04		0.94	0.08
Living with partner	2.23	**	0.81	0.17
Widow/ widower /other	-6.51	*	2.82	-0.51
Missing	-8.33		8.55	-0.65
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	0.03		1.09	0.00
Average 20-24	-0.63		1.12	-0.05
High 25-32	-1.86		1.11	-0.15
Very high 33-45	-2.86	*	1.32	-0.22
Missing	1.40		2.08	0.11
KS3 Academic enrichment: Ref=Low				
Medium	-1.39	*	0.80	-0.11
High	-2.77	**	0.98	-0.22
Missing	3.41	*	1.52	0.27
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.47	*	0.96	-0.19
Medium deprivation	-0.57		0.75	-0.04
Missing	4.32		9.44	0.34
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 Teacher support: Ref=Low				
Medium	-2.05	*	0.88	-0.16
High	-3.66	**	1.08	-0.29
Missing	-2.01		1.56	-0.16
Intercept	104.35	***	2.19	
Random effects parameters				
Variance (Level 2)	15.09		3.47	
Variance (Level 1)	162.97		5.18	
Total Variance	178.06			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19147.00			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.31: The influence of 'School environment' (in KS3) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-6.04	***	0.57	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.36	*	0.65	0.11
Summer born	2.16	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.38		1.61	0.19
Black Caribbean heritage	-2.93	#	1.69	-0.23
Black African heritage	-0.37		2.18	-0.03
Any other ethnic minority	-0.51		2.09	-0.04
Indian heritage	-3.21		2.02	-0.25
Pakistani heritage	-2.65		1.70	-0.21
Bangladeshi heritage	-3.21		2.91	-0.25
Mixed race	1.08		1.29	0.08
Missing	-13.57		13.11	-1.06
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.94	*	0.95	0.15
2+ Behavioural Problems	4.98	*	1.95	0.39
Missing	9.72		8.96	0.76
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.73		0.72	-0.06
3+ Siblings	2.21	*	0.99	0.17
Missing	3.62		5.23	0.28
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.51		1.17	0.04
Skilled, Non-Manual	1.62		1.30	0.13
Skilled Manual	3.70	*	1.46	0.29
Semi-Skilled	2.22		1.51	0.17
Unskilled	7.14	**	2.24	0.56
Not working/never worked	-0.27		2.25	-0.02
Missing	1.71		4.52	0.13
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.99	***	0.80	0.39
Not known	3.56	*	1.81	0.28
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.95		1.14	0.07
16 academic	-2.21	*	0.92	-0.17
18 academic	-1.89		1.24	-0.15
Other professional/Miscellaneous	-1.26		2.38	-0.10
Degree or equivalent	-4.22	**	1.25	-0.33
Higher degree	-4.15	*	1.62	-0.32
Missing	-3.18		3.57	-0.25
Marital Status of Parent: Ref=Married				
Single	3.08	**	0.98	0.24
Separated/Divorced	1.12		0.94	0.09
Living with partner	2.33	**	0.81	0.18
Widow/ widower /other	-5.97	*	2.81	-0.47
Missing	-8.32		8.57	-0.65
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.01		1.09	0.00
Average 20-24	-0.66		1.12	-0.05
High 25-32	-1.88	#	1.11	-0.15
Very high 33-45	-2.93	*	1.32	-0.23
Missing	1.56		2.08	0.12
KS3 Academic enrichment: Ref=Low				
Medium	-1.54	#	0.80	-0.12
High	-2.86	**	0.99	-0.22
Missing	4.00	*	1.70	0.31
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.49	*	0.96	-0.19
Medium deprivation	-0.54		0.75	-0.04
Missing	4.62		9.45	0.36
Neighbourhood: % White British	0.04	*	0.02	0.15

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS3 School environment: Ref=Low				
Medium	-1.20		0.88	-0.09
High	-2.48	*	1.10	-0.19
Missing	-1.95		1.74	-0.15
Intercept	103.39	***	2.16	
Random effects parameters				
Variance (Level 2)	15.30		3.50	
Variance (Level 1)	163.30		5.19	
Total Variance	178.60			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19162.98			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.32: The influence of 'Teacher professional focus' (in KS4) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.58	***	0.56	-0.47
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.32	*	0.64	0.11
Summer born	2.21	**	0.67	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.37		1.59	0.19
Black Caribbean heritage	-3.11		1.66	-0.23
Black African heritage	-0.62		2.16	-0.03
Any other ethnic minority	-0.64		2.06	-0.04
Indian heritage	-3.06	#	2.00	-0.25
Pakistani heritage	-2.87		1.68	-0.21
Bangladeshi heritage	-2.92		2.87	-0.25
Mixed race	1.38		1.28	0.08
Missing	-14.38		12.95	-1.06
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.85	*	0.94	0.15
2+ Behavioural Problems	4.49	*	1.92	0.39
Missing	9.75		8.94	0.76
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.91		0.71	-0.06
3+ Siblings	1.88	#	0.98	0.17
Missing	1.42		5.16	0.28
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.45		1.16	0.04
Skilled, Non-Manual	1.75		1.29	0.13
Skilled Manual	3.81	**	1.45	0.29
Semi-Skilled	2.49	#	1.49	0.17
Unskilled	7.67	**	2.21	0.56
Not working/never worked	0.63		2.23	-0.02
Missing	1.38		4.47	0.13
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.75	***	0.80	0.39
Not known	3.37	#	1.79	0.28
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	1.16		1.13	0.07
16 academic	-2.07	*	0.91	-0.17
18 academic	-1.39		1.23	-0.15
Other professional/Miscellaneous	-0.77		2.35	-0.10
Degree or equivalent	-3.84	**	1.24	-0.33
Higher degree	-3.69	*	1.60	-0.32
Missing	-2.01		3.53	-0.25
Marital Status of Parent: Ref=Married				
Single	2.54	**	0.97	0.24
Separated/Divorced	0.92		0.93	0.09
Living with partner	2.08	*	0.80	0.18
Widow/ widower /other	-6.54	*	2.77	-0.47
Missing	-7.40		8.46	-0.65
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.19		1.08	0.00
Average 20-24	-0.81		1.11	-0.05
High 25-32	-1.76		1.09	-0.15
Very high 33-45	-2.78	*	1.31	-0.23
Missing	1.41		2.06	0.12
KS3 Academic enrichment: Ref=Low				
Medium	-1.35	#	0.79	-0.12
High	-2.53	*	0.97	-0.22
Missing	1.90	*	0.80	0.31
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.10	*	0.97	-0.19
Medium deprivation	-0.25		0.74	-0.04
Missing	4.16		9.33	0.36
Neighbourhood: % White British	0.04	*	0.02	0.16

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS4 Teacher professional focus: Ref=Low				
Medium	-1.76		0.89	-0.09
High	-3.49	*	1.08	-0.19
Missing	2.74		0.93	-0.15
Intercept	103.39	***	2.16	
Random effects parameters				
Variance (Level 2)	15.15		3.50	
Variance (Level 1)	159.27		5.19	
Total Variance	174.42			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19103.68			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.33: The influence of 'Positive relationships' (in KS4) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.78	***	0.56	-0.46
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.28	*	0.64	0.10
Summer born	2.18	**	0.67	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.13		1.57	0.17
Black Caribbean heritage	-3.18	#	1.65	-0.25
Black African heritage	-0.71		2.14	-0.06
Any other ethnic minority	-0.75		2.05	-0.06
Indian heritage	-3.26		1.99	-0.26
Pakistani heritage	-2.67		1.67	-0.21
Bangladeshi heritage	-2.43		2.85	-0.19
Mixed race	1.06		1.27	0.08
Missing	-14.38		12.83	-1.15
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.72	#	0.93	0.14
2+ Behavioural Problems	4.70	*	1.91	0.38
Missing	9.37		8.77	0.75
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.90		0.71	-0.07
3+ Siblings	1.82	#	0.98	0.15
Missing	1.98		5.11	0.16
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.26		1.15	0.02
Skilled, Non-Manual	1.59		1.28	0.13
Skilled Manual	3.27	*	1.44	0.26
Semi-Skilled	2.15		1.48	0.17
Unskilled	7.68	***	2.20	0.61
Not working/never worked	0.06		2.21	0.00
Missing	1.11		4.44	0.09
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.66	***	0.79	0.37
Not known	3.38	#	1.78	0.27
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	1.14		1.12	0.09
16 academic	-2.06	*	0.91	-0.16
18 academic	-1.51		1.22	-0.12
Other professional/Miscellaneous	-0.44		2.33	-0.04
Degree or equivalent	-3.74	**	1.23	-0.30
Higher degree	-3.49	*	1.59	-0.28
Missing	-2.37		3.50	-0.19
Marital Status of Parent: Ref=Married				
Single	2.49	**	0.96	0.20
Separated/Divorced	0.88		0.92	0.07
Living with partner	2.04	*	0.80	0.16
Widow/ widower /other	-7.20	**	2.75	-0.58
Missing	-6.98		8.40	-0.56
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.30		1.12	-0.02
Average 20-24	-0.81		0.91	-0.06
High 25-32	-1.88	#	1.22	-0.15
Very high 33-45	-2.81	*	1.30	-0.22
Missing	1.09		2.04	0.09
KS3 Academic enrichment: Ref=Low				
Medium	-1.16		0.78	-0.09
High	-2.44	*	0.96	-0.20
Missing	1.94	*	0.80	0.16
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.00	*	0.95	-0.16
Medium deprivation	-0.28		0.73	-0.02
Missing	4.28		9.26	0.34
Neighbourhood: % White British	0.04	*	0.02	0.16

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS4 Positive relationships: Ref=Low				
Medium	-5.39		0.89	-0.43
High	-6.84	*	1.09	-0.55
Missing	0.06		0.92	0.00
Intercept	105.53	***	2.18	
Random effects parameters				
Variance (Level 2)	16.38		3.55	
Variance (Level 1)	156.02		4.98	
Total Variance	172.42			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19103.68			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.34: The influence of 'Monitoring students' (in KS4) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.55	***	0.56	-0.44
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.29	*	0.64	0.10
Summer born	2.20	**	0.68	0.17
Ethnicity: Ref=White UK Heritage				
White European heritage	2.20		1.59	0.17
Black Caribbean heritage	-2.92	#	1.67	-0.23
Black African heritage	-0.56		2.16	-0.04
Any other ethnic minority	-0.67		2.07	-0.05
Indian heritage	-3.10		2.00	-0.25
Pakistani heritage	-2.99	#	1.68	-0.24
Bangladeshi heritage	-3.02		2.87	-0.24
Mixed race	1.40		1.28	0.11
Missing	-14.43		12.96	-1.14
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	2.00	*	0.94	0.16
2+ Behavioural Problems	4.56	*	1.92	0.36
Missing	9.59		8.85	0.76
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.79		0.71	-0.06
3+ Siblings	2.13	#	0.98	0.17
Missing	1.55		5.16	0.12
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.37		1.16	0.03
Skilled, Non-Manual	1.65		1.29	0.13
Skilled Manual	3.67	*	1.45	0.29
Semi-Skilled	2.43		1.50	0.19
Unskilled	7.73	***	2.22	0.61
Not working/never worked	0.41		2.23	0.03
Missing	1.32		4.47	0.10
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.72	***	0.79	0.37
Not known	3.48	#	1.78	0.28
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	1.13		1.13	0.09
16 academic	-2.07	*	0.91	-0.16
18 academic	-1.39		1.23	-0.11
Other professional/Miscellaneous	-0.67		2.35	-0.05
Degree or equivalent	-3.83	**	1.24	-0.30
Higher degree	-3.80	*	1.60	-0.30
Missing	-2.00		3.53	-0.16
Marital Status of Parent: Ref=Married				
Single	2.61	**	0.96	0.21
Separated/Divorced	0.93		0.93	0.07
Living with partner	2.06	*	0.81	0.16
Widow/ widower /other	-6.73	**	2.78	-0.53
Missing	-7.42		8.47	-0.59
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.07		1.08	-0.01
Average 20-24	-0.70		1.10	-0.06
High 25-32	-1.65	#	1.10	-0.13
Very high 33-45	-2.71	*	1.31	-0.22
Missing	1.59		2.06	0.14
KS3 Academic enrichment: Ref=Low				
Medium	-1.51		0.79	-0.12
High	-2.66	**	0.97	-0.21
Missing	1.82	*	0.80	0.14
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.09	*	0.95	-0.17
Medium deprivation	-0.27		0.74	-0.02
Missing	4.86		9.35	0.38
Neighbourhood: % White British	0.04	*	0.02	0.16

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS4 Monitoring students: Ref=Low				
Medium	-1.12		0.89	-0.09
High	-2.73	*	1.07	-0.22
Missing	3.23	**	0.93	0.26
Intercept	101.68	***	2.18	
Random effects parameters				
Variance (Level 2)	15.21		3.42	
Variance (Level 1)	159.53		5.06	
Total Variance	174.74			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19111.66			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.35: The influence of 'Formative feedback' (in KS4) on hyperactivity

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.62	***	0.56	-0.45
Term of birth within the academic year: Ref=Autumn term				
Spring born	1.38	*	0.64	0.11
Summer born	2.22	**	0.67	0.18
Ethnicity: Ref=White UK Heritage				
White European heritage	2.20		1.59	0.17
Black Caribbean heritage	-2.89	#	1.66	-0.23
Black African heritage	-0.46		2.15	-0.04
Any other ethnic minority	-0.70		2.06	-0.06
Indian heritage	-3.19		2.00	-0.25
Pakistani heritage	-2.80	#	1.68	-0.22
Bangladeshi heritage	-2.95		2.87	-0.23
Mixed race	1.33		1.28	0.11
Missing	-14.40		12.93	-1.14
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.96	*	0.94	0.16
2+ Behavioural Problems	4.58	*	1.92	0.36
Missing	10.49		8.84	0.83
Number of siblings in the house (at age 3/5): Ref=no siblings				
1-2 Siblings	-0.80		0.71	-0.06
3+ Siblings	2.11	*	0.98	0.17
Missing	1.58		5.15	0.13
Parents' Highest SES age3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	0.32		1.15	0.03
Skilled, Non-Manual	1.71		1.29	0.14
Skilled Manual	3.69	*	1.45	0.29
Semi-Skilled	2.44		1.49	0.19
Unskilled	7.50	***	2.21	0.60
Not working/never worked	0.57		2.23	0.05
Missing	1.45		4.46	0.12
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	4.67	***	0.80	0.37
Not known	3.52	*	1.79	0.28
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	1.10		1.13	0.09
16 academic	-2.08	*	0.91	-0.17
18 academic	-1.30		1.22	-0.10
Other professional/Miscellaneous	-0.55		2.35	-0.04
Degree or equivalent	-3.71	**	1.24	-0.29
Higher degree	-3.62	*	1.60	-0.29
Missing	-1.90		3.53	-0.15
Marital Status of Parent: Ref=Married				
Single	2.68	**	0.97	0.21
Separated/Divorced	0.88		0.93	0.07
Living with partner	2.02	*	0.80	0.16
Widow/ widower /other	-6.67	**	2.68	-0.53
Missing	-8.41		8.45	-0.67
Early years HLE Index Ref=0-13 (Lowest)				
Low 14-19	-0.04		1.08	0.00
Average 20-24	-0.66		1.11	-0.05
High 25-32	-1.59		1.09	-0.13
Very high 33-45	-2.67	*	1.31	-0.21
Missing	1.55		2.05	0.15
KS3 Academic enrichment: Ref=Low				
Medium	-1.36		0.79	-0.11
High	-2.53	**	0.97	-0.20
Missing	1.87	*	0.80	0.15
Neighbourhood IDACI: Ref=High deprivation				
Low deprivation	-2.11	*	0.95	-0.17
Medium deprivation	-0.27		0.74	-0.02
Missing	4.61		9.33	0.37
Neighbourhood: % White British	0.04	*	0.02	0.16

Hyperactivity [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
KS4 Formative feedback: Ref=Low				
Medium	-3.26	***	0.90	-0.26
High	-4.17	***	1.09	-0.33
Missing	1.64	#	0.93	0.13
Intercept	103.15	***	2.16	
Random effects parameters				
Variance (Level 2)	15.33		3.42	
Variance (Level 1)	158.78		5.06	
Total Variance	174.11			
Number of Level-1 Observations	2417			
Number of Level-2 Units	667			
Deviance (-2 x Log Restricted-Likelihood)	19102.14			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.36: The influence 'Emphasis on Learning' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.05	***	0.61	-0.38
Ethnicity: Ref=White UK Heritage				
White European heritage	1.43		1.81	0.11
Black Caribbean heritage	1.20		1.78	0.09
Black African heritage	0.51		2.35	0.04
Any other ethnic minority	-0.76		2.23	-0.06
Indian heritage	-0.76		2.19	-0.06
Pakistani heritage	-0.31		1.80	-0.02
Bangladeshi heritage	-1.74		2.99	-0.13
Mixed race	2.32		1.42	0.18
Missing	-0.11		13.52	-0.01
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.78	#	1.04	0.13
2+ Behavioural Problems	2.38		2.14	0.18
Missing	21.68	*	8.66	1.64
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.78		1.47	0.13
Skilled, Non-Manual	2.38		1.57	0.18
Skilled Manual	4.98	**	1.72	0.38
Semi-Skilled	3.14	#	1.76	0.24
Unskilled	6.85	**	2.47	0.52
Not working/never worked	0.70		2.51	0.05
Missing	-0.31		4.97	-0.02
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.96	***	0.85	0.45
Not known	3.10		2.13	0.23
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.15		1.20	0.01
16 academic	-3.19	**	0.96	-0.24
18 academic	-1.54		1.30	-0.12
Other professional/Miscellaneous	0.37		2.53	0.03
Degree or equivalent	-4.43	**	1.35	-0.33
Higher degree	-5.08	*	1.89	-0.38
Missing	-4.52		3.80	-0.34
Marital Status of Parent: Ref=Married				
Single	2.80	**	1.03	0.21
Separated/Divorced	0.76		1.01	0.06
Living with partner	1.93	*	0.87	0.15
Widow/ widower /other	-4.67	#	2.47	-0.35
Missing	-11.68		8.73	-0.88
KS3 Academic enrichment: Ref=Low				
Medium	-0.86		0.87	-0.07
High	-1.67	*	1.09	-0.13
Missing	6.98	***	0.86	0.53
Neighbourhood: % White British	0.05	*	0.02	0.19
School composition: % SEN	0.58	*	0.29	
KS3 Emphasis on learning: Ref=Low				
Medium	-3.81	***	0.95	-0.29
High	-5.53	***	1.21	-0.42
Intercept	102.37	***	2.03	-0.52
Random effects parameters				
Variance (Level 2)	14.58		3.80	
Variance (Level 1)	175.08		5.85	
Total Variance	189.66			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17103.86			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.37: The influence 'Poor behaviour climate' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.26	***	0.61	-0.40
Ethnicity: Ref=White UK Heritage				
White European heritage	1.41		1.82	0.11
Black Caribbean heritage	1.21		1.79	0.09
Black African heritage	0.43		2.35	0.03
Any other ethnic minority	0.31		2.23	0.02
Indian heritage	-1.02		2.20	-0.08
Pakistani heritage	-0.60		1.81	-0.05
Bangladeshi heritage	-1.72		3.00	-0.13
Mixed race	2.17		1.43	0.16
Missing	-0.52		13.57	-0.04
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.62	#	1.05	0.12
2+ Behavioural Problems	2.55		2.15	0.19
Missing	21.24	*	8.69	1.60
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.92		1.48	0.13
Skilled, Non-Manual	2.15		1.58	0.16
Skilled Manual	5.17	**	1.72	0.39
Semi-Skilled	3.06	#	1.77	0.23
Unskilled	7.03	**	2.48	0.53
Not working/never worked	0.86		2.51	0.06
Missing	0.26		4.98	0.02
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.83	***	0.85	0.44
Not known	3.05		2.14	0.23
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.15		1.21	0.01
16 academic	-3.15	**	0.97	-0.24
18 academic	-1.59		1.31	-0.12
Other professional/Miscellaneous	0.21		2.54	0.02
Degree or equivalent	-4.15	**	1.36	-0.31
Higher degree	-4.61	*	1.90	-0.35
Missing	-4.74		3.81	-0.36
Marital Status of Parent: Ref=Married				
Single	2.87	**	1.04	0.22
Separated/Divorced	0.87		1.01	0.07
Living with partner	1.87		0.88	0.14
Widow/ widower /other	-4.76		2.97	-0.36
Missing	-11.31		8.76	-0.85
KS3 Academic enrichment: Ref=Low				
Medium	-1.08		0.86	-0.08
High	-1.91	#	1.09	-0.14
Missing	6.25	**	1.83	0.47
Neighbourhood: % White British	0.05	#	0.02	0.18
School composition: % SEN	0.55	#	0.30	
KS3 Poor behaviour climate: Ref=Low				
Medium	1.88	#	1.06	0.14
High	3.88	**	1.27	0.29
Missing	-0.85		1.98	-0.06
Intercept	97.22	***	2.10	
Random effects parameters				
Variance (Level 2)	14.80		3.82	
Variance (Level 1)	176.20		5.88	
Total Variance	188.00			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17117.88			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.38: The influence 'Headteacher qualities (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.22	***	0.61	-0.39
Ethnicity: Ref=White UK Heritage				
White European heritage	1.65		1.82	0.12
Black Caribbean heritage	1.15		1.79	0.09
Black African heritage	0.73		2.35	0.06
Any other ethnic minority	0.36		2.23	0.03
Indian heritage	-1.16		2.20	-0.09
Pakistani heritage	-0.31		1.81	-0.02
Bangladeshi heritage	-1.72		3.00	-0.13
Mixed race	2.25		1.42	0.17
Missing	-0.85		13.56	-0.06
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.88	#	1.05	0.14
2+ Behavioural Problems	2.59		2.15	0.20
Missing	20.92	*	8.69	1.58
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	2.02		1.48	0.15
Skilled, Non-Manual	2.33		1.58	0.18
Skilled Manual	5.35	**	1.72	0.40
Semi-Skilled	3.44	#	1.77	0.26
Unskilled	7.42	**	2.48	0.56
Not working/never worked	1.01		2.51	0.08
Missing	0.21		4.98	0.02
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.95	***	0.85	0.45
Not known	3.26		2.14	0.25
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.20		1.21	0.02
16 academic	-3.09	**	0.97	-0.23
18 academic	-1.54		1.31	-0.12
Other professional/Miscellaneous	0.07		2.54	0.01
Degree or equivalent	-4.38	**	1.36	-0.33
Higher degree	-4.86	*	1.89	-0.37
Missing	-5.12		3.82	-0.39
Marital Status of Parent: Ref=Married				
Single	2.80	**	1.04	0.21
Separated/Divorced	0.86		1.01	0.06
Living with partner	1.87		0.88	0.14
Widow/ widower /other	-4.93		2.97	-0.37
Missing	-10.41		8.76	-0.79
KS3 Academic enrichment: Ref=Low				
Medium	-1.02		0.87	-0.08
High	-2.10	#	1.08	-0.16
Missing	5.73	**	1.82	0.43
Neighbourhood: % White British	0.05	*	0.02	0.18
School composition: % SEN	0.60	*	0.30	
KS3 Headteacher qualities: Ref=Low				
Medium	-2.68	**	0.94	-0.20
High	-3.04	*	1.19	-0.23
Missing	-4.58	*	1.87	-0.35
Intercept	101.20	***	2.01	
Random effects parameters				
Variance (Level 2)	15.44		3.90	
Variance (Level 1)	175.94		5.88	
Total Variance	191.38			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17119.38			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.39: The influence 'School environment' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.24	***	0.61	-0.39
Ethnicity: Ref=White UK Heritage				
White European heritage	1.64		1.82	0.12
Black Caribbean heritage	1.20		1.79	0.09
Black African heritage	0.64		2.35	0.05
Any other ethnic minority	0.22		2.24	0.02
Indian heritage	-1.04		2.20	-0.08
Pakistani heritage	-0.27		1.81	-0.02
Bangladeshi heritage	-1.64		3.00	-0.12
Mixed race	2.27		1.43	0.17
Missing	-0.78		13.58	-0.06
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.78	#	1.05	0.13
2+ Behavioural Problems	2.63		2.15	0.20
Missing	21.28	*	8.70	1.60
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	2.05		1.48	0.15
Skilled, Non-Manual	2.39		1.58	0.18
Skilled Manual	5.41	**	1.73	0.41
Semi-Skilled	3.39	#	1.77	0.26
Unskilled	7.26	**	2.48	0.55
Not working/never worked	1.07		2.52	0.08
Missing	0.47		4.98	0.04
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.93	***	0.85	0.45
Not known	3.00		2.14	0.23
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.11		1.21	0.01
16 academic	-3.21	**	0.97	-0.24
18 academic	-1.56		1.31	-0.12
Other professional/Miscellaneous	0.02		2.54	0.00
Degree or equivalent	-4.41	**	1.36	-0.33
Higher degree	-4.89	*	1.90	-0.37
Missing	-4.86		3.82	-0.37
Marital Status of Parent: Ref=Married				
Single	2.81	**	1.04	0.21
Separated/Divorced	0.88		1.02	0.07
Living with partner	1.91		0.88	0.14
Widow/ widower /other	-4.74		2.97	-0.36
Missing	-11.22		8.77	-0.84
KS3 Academic enrichment: Ref=Low				
Medium	-0.99		0.87	-0.07
High	-1.94	#	1.09	-0.15
Missing	6.56	**	1.83	0.49
Neighbourhood: % White British	0.05	*	0.02	0.18
School composition: % SEN	0.54	*	0.30	
KS3 School environment: Ref=Low				
Medium	-1.85	*	0.93	-0.14
High	-2.56	*	1.24	-0.19
Missing	-4.78	*	1.87	-0.36
Intercept	100.57	***	2.01	
Random effects parameters				
Variance (Level 2)	15.19		3.87	
Variance (Level 1)	176.32		5.89	
Total Variance	191.51			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17121.84			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.40: The influence 'Valuing students' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.16	***	0.61	-0.39
Ethnicity: Ref=White UK Heritage				
White European heritage	1.26		1.81	0.10
Black Caribbean heritage	0.68		1.78	0.05
Black African heritage	0.31		2.34	0.02
Any other ethnic minority	-0.29		2.22	-0.02
Indian heritage	-1.30		2.18	-0.10
Pakistani heritage	-0.17		1.80	-0.01
Bangladeshi heritage	-1.66		2.99	-0.13
Mixed race	2.05		1.42	0.16
Missing	-0.43		13.50	-0.03
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.78		1.05	0.13
2+ Behavioural Problems	2.63		2.15	0.20
Missing	21.28	*	8.70	1.61
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.70		1.48	0.13
Skilled, Non-Manual	2.06		1.58	0.16
Skilled Manual	5.01	**	1.73	0.38
Semi-Skilled	3.13	#	1.77	0.24
Unskilled	7.15	**	2.48	0.54
Not working/never worked	0.45		2.52	0.03
Missing	0.02		4.98	0.00
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.91	***	0.85	0.45
Not known	3.17		2.13	0.24
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.20		1.20	0.02
16 academic	-3.22	**	0.96	-0.24
18 academic	-1.55		1.30	-0.12
Other professional/Miscellaneous	0.03		2.53	0.00
Degree or equivalent	-4.37	**	1.35	-0.33
Higher degree	-4.95	*	1.88	-0.37
Missing	-5.41		3.80	-0.41
Marital Status of Parent: Ref=Married				
Single	2.74	**	1.03	0.21
Separated/Divorced	0.92		1.01	0.07
Living with partner	1.83		0.87	0.14
Widow/ widower /other	-5.26		2.96	-0.40
Missing	-10.02		8.71	-0.76
KS3 Academic enrichment: Ref=Low				
Medium	-0.78		0.86	-0.06
High	-1.62		1.09	-0.12
Missing	6.32	**	1.83	0.48
Neighbourhood: % White British	0.05	*	0.02	0.19
School composition: % SEN	0.60	*	0.29	
KS3 Valuing students: Ref=Low				
Medium	-4.34	***	0.95	-0.33
High	-6.01	***	1.20	-0.45
Missing	-6.56	***	1.87	-0.50
Intercept	102.95	***	2.03	
Random effects parameters				
Variance (Level 2)	14.83		3.82	
Variance (Level 1)	174.49		5.83	
Total Variance	189.32			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17098.74			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.41: The influence 'Learning resources' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.18	***	0.61	-0.39
Ethnicity: Ref=White UK Heritage				
White European heritage	1.76		1.82	0.13
Black Caribbean heritage	1.34		1.79	0.10
Black African heritage	0.79		2.36	0.06
Any other ethnic minority	0.25		2.23	0.02
Indian heritage	-1.22		2.20	-0.09
Pakistani heritage	-0.32		1.81	-0.02
Bangladeshi heritage	-1.64		3.00	-0.12
Mixed race	2.24		1.43	0.17
Missing	-0.52		13.58	-0.04
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.76	#	1.05	0.13
2+ Behavioural Problems	2.61		2.15	0.20
Missing	20.67	*	8.70	1.56
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.82		1.48	0.14
Skilled, Non-Manual	2.12		1.58	0.16
Skilled Manual	5.16	**	1.73	0.39
Semi-Skilled	3.10	#	1.77	0.23
Unskilled	6.96	**	2.48	0.52
Not working/never worked	0.81		2.52	0.06
Missing	0.07		4.99	0.01
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.91	***	0.85	0.45
Not known	2.93		2.14	0.22
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.09		1.21	0.01
16 academic	-3.19	**	0.97	-0.24
18 academic	-1.58		1.31	-0.12
Other professional/Miscellaneous	-0.02		2.54	0.00
Degree or equivalent	-4.39	**	1.31	-0.33
Higher degree	-4.96	**	1.89	-0.37
Missing	-4.91		3.82	-0.37
Marital Status of Parent: Ref=Married				
Single	2.81	**	1.04	0.21
Separated/Divorced	0.75		1.02	0.06
Living with partner	1.89	*	0.86	0.14
Widow/ widower /other	-4.55		2.97	-0.34
Missing	-10.59		8.76	-0.80
KS3 Academic enrichment: Ref=Low				
Medium	-1.10		0.86	-0.08
High	-2.06	#	1.09	-0.16
Missing	6.57	***	1.83	0.49
Neighbourhood: % White British	0.05	*	0.02	0.18
School composition: % SEN	0.57	*	0.30	
KS3 Learning resources: Ref=Low				
Medium	-1.67	#	0.94	-0.13
High	-2.70	*	1.21	-0.20
Missing	-4.78	*	1.88	-0.36
Intercept	100.81	***	2.05	
Random effects parameters				
Variance (Level 2)	15.08		3.87	
Variance (Level 1)	176.37		5.89	
Total Variance	191.45			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17121.84			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.42: The influence 'Teacher discipline' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.17	***	0.61	-0.39
Ethnicity: Ref=White UK Heritage				
White European heritage	1.54		1.82	0.12
Black Caribbean heritage	1.25		1.79	0.09
Black African heritage	0.65		2.36	0.05
Any other ethnic minority	0.21		2.24	0.02
Indian heritage	-1.09		2.20	-0.08
Pakistani heritage	-0.47		1.81	-0.04
Bangladeshi heritage	-1.74		3.01	-0.13
Mixed race	2.40	#	1.43	0.18
Missing	-0.58		13.58	-0.04
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.85	#	1.05	0.14
2+ Behavioural Problems	2.51		2.15	0.19
Missing	21.38	*	8.71	1.61
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.87		1.48	0.14
Skilled, Non-Manual	2.30		1.58	0.17
Skilled Manual	5.37	**	1.73	0.40
Semi-Skilled	3.32	#	1.77	0.25
Unskilled	5.37	**	2.48	0.40
Not working/never worked	1.05		2.52	0.08
Missing	0.14		4.99	0.01
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	6.00	***	0.85	0.45
Not known	3.12		2.14	0.23
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.07		1.21	0.01
16 academic	-3.19	**	0.97	-0.24
18 academic	-1.48		1.31	-0.11
Other professional/Miscellaneous	-0.19		2.54	-0.01
Degree or equivalent	-4.40	**	1.36	-0.33
Higher degree	-4.76	**	1.90	-0.36
Missing	-4.67		3.82	-0.35
Marital Status of Parent: Ref=Married				
Single	2.74	**	1.04	0.21
Separated/Divorced	0.86		1.02	0.06
Living with partner	1.80	*	0.88	0.14
Widow/ widower /other	-4.85		2.98	-0.36
Missing	-11.06		8.77	-0.83
KS3 Academic enrichment: Ref=Low				
Medium	-1.07		0.87	-0.08
High	-2.10	#	1.09	-0.16
Missing	5.18	***	1.60	0.39
Neighbourhood: % White British	0.05	*	0.02	0.18
School composition: % SEN	0.58	*	0.30	
KS3 Teacher Discipline: Ref=Low				
Medium	-1.01	#	0.99	-0.08
High	-2.74	*	1.22	-0.21
Missing	-2.97	*	1.68	-0.22
Intercept	100.29	***	2.03	
Random effects parameters				
Variance (Level 2)	14.70		3.83	
Variance (Level 1)	176.80		5.90	
Total Variance	191.50			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17124.44			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.43: The influence 'Teacher support' (in KS3) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-5.26	***	0.61	-0.40
Ethnicity: Ref=White UK Heritage				
White European heritage	1.82		1.82	0.14
Black Caribbean heritage	1.23		1.79	0.09
Black African heritage	0.84		2.35	0.06
Any other ethnic minority	0.29		2.23	0.02
Indian heritage	-1.14		2.19	-0.09
Pakistani heritage	-0.14		1.81	-0.01
Bangladeshi heritage	-1.59		3.00	-0.12
Mixed race	2.36	#	1.42	0.18
Missing	-0.40		13.57	-0.03
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.71		1.05	0.13
2+ Behavioural Problems	2.50		2.15	0.19
Missing	21.65	*	8.69	1.63
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.77		1.48	0.13
Skilled, Non-Manual	2.10		1.58	0.16
Skilled Manual	5.09	**	1.73	0.38
Semi-Skilled	3.07	#	1.77	0.23
Unskilled	6.99	**	2.48	0.53
Not working/never worked	0.93		2.52	0.07
Missing	0.15		4.98	0.01
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.96	***	0.85	0.45
Not known	3.06		2.14	0.23
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.06		1.21	0.00
16 academic	-3.20	**	0.97	-0.24
18 academic	-1.60		1.31	-0.12
Other professional/Miscellaneous	0.03		2.54	0.00
Degree or equivalent	-4.64	**	1.36	-0.35
Higher degree	-4.91	**	1.89	-0.37
Missing	-5.28		3.81	-0.40
Marital Status of Parent: Ref=Married				
Single	2.75	**	1.04	0.21
Separated/Divorced	0.78		1.02	0.06
Living with partner	1.81	#	0.88	0.14
Widow/ widower /other	-5.11		2.98	-0.39
Missing	-11.36		8.76	-0.86
KS3 Academic enrichment: Ref=Low				
Medium	-0.78		0.87	-0.06
High	-1.83	#	1.09	-0.14
Missing	5.70	***	1.63	0.43
Neighbourhood: % White British	0.05	*	0.02	0.18
School composition: % SEN	0.60	*	0.30	
KS3 Teacher support: Ref=Low				
Medium	-2.47	*	0.96	-0.19
High	-3.85	***	1.21	-0.29
Missing	-4.42	**	1.67	-0.33
Intercept	101.47	***	2.03	
Random effects parameters				
Variance (Level 2)	14.82		3.83	
Variance (Level 1)	176.16		5.88	
Total Variance	190.98			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17118.00			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.44: The influence 'Teacher professional focus' (in KS4) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-4.76	***	0.61	-0.36
Ethnicity: Ref=White UK Heritage				
White European heritage	1.59		1.80	0.12
Black Caribbean heritage	0.86		1.78	0.07
Black African heritage	0.17		2.34	0.01
Any other ethnic minority	-0.12		2.22	-0.01
Indian heritage	-0.92		2.18	-0.07
Pakistani heritage	-0.51		1.80	-0.04
Bangladeshi heritage	-1.70		2.98	-0.13
Mixed race	2.73	*	1.41	0.21
Missing	-1.70		13.46	-0.13
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.70		1.04	0.13
2+ Behavioural Problems	2.02		2.14	0.15
Missing	19.76	*	8.62	1.50
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.77		1.48	0.13
Skilled, Non-Manual	2.10		1.58	0.16
Skilled Manual	5.09	**	1.73	0.39
Semi-Skilled	3.07	#	1.77	0.23
Unskilled	6.99	**	2.48	0.53
Not working/never worked	0.93		2.52	0.07
Missing	0.15		4.98	0.01
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.63	***	0.85	0.43
Not known	2.73		2.12	0.21
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.42		1.20	0.03
16 academic	-2.93	**	0.96	-0.22
18 academic	-0.93		1.30	-0.07
Other professional/Miscellaneous	0.64		2.52	0.05
Degree or equivalent	-3.94	**	1.35	-0.30
Higher degree	-4.05	**	1.88	-0.31
Missing	-3.86		3.79	-0.29
Marital Status of Parent: Ref=Married				
Single	2.40	**	1.03	0.18
Separated/Divorced	0.64		1.01	0.05
Living with partner	1.67	#	0.87	0.13
Widow/ widower /other	-5.30		2.94	-0.40
Missing	-9.94		8.69	-0.75
KS3 Academic enrichment: Ref=Low				
Medium	-0.87		0.86	-0.07
High	-1.77	#	1.08	-0.13
Missing	2.27	***	0.87	0.17
Neighbourhood: % White British	0.05	*	0.02	0.19
School composition: % SEN	0.52	*	0.29	
KS4 Teacher professional focus: Ref=Low				
Medium	-1.77	*	0.97	-0.13
High	-3.49	***	1.20	-0.26
Missing	2.36	**	1.01	0.18
Intercept	99.28	***	2.03	
Random effects parameters				
Variance (Level 2)	14.55		3.75	
Variance (Level 1)	173.50		5.79	
Total Variance	188.05			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17118.00			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.45: The influence 'Positive relationships' (in KS4) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-4.93	***	0.61	-0.38
Ethnicity: Ref=White UK Heritage				
White European heritage	1.40		1.79	0.11
Black Caribbean heritage	0.88		1.76	0.07
Black African heritage	0.09		2.32	0.01
Any other ethnic minority	-0.24		2.20	-0.02
Indian heritage	-1.18		2.16	-0.09
Pakistani heritage	-0.32		1.79	-0.02
Bangladeshi heritage	-1.23		2.96	-0.09
Mixed race	2.43	#	1.41	0.19
Missing	-1.64		13.36	-0.13
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.61		1.03	0.12
2+ Behavioural Problems	2.32		2.12	0.18
Missing	19.66	*	8.57	1.50
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.51		1.46	0.12
Skilled, Non-Manual	2.15		1.55	0.16
Skilled Manual	4.65	**	1.70	0.36
Semi-Skilled	2.96	#	1.74	0.23
Unskilled	7.20	**	2.44	0.55
Not working/never worked	1.11		2.48	0.08
Missing	-1.13		4.91	-0.09
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.48	***	0.84	0.42
Not known	2.79		2.11	0.21
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.42		1.19	0.03
16 academic	-2.94	**	0.95	-0.22
18 academic	-1.07		1.29	-0.08
Other professional/Miscellaneous	1.01		2.50	0.08
Degree or equivalent	-3.76	**	1.34	-0.29
Higher degree	-3.93	*	1.87	-0.30
Missing	-4.33		3.76	-0.33
Marital Status of Parent: Ref=Married				
Single	2.27	*	1.02	0.17
Separated/Divorced	0.55		1.00	0.04
Living with partner	1.54	#	0.87	0.12
Widow/ widower /other	-6.03		2.93	-0.46
Missing	-9.26		8.63	-0.71
KS3 Academic enrichment: Ref=Low				
Medium	-0.68		0.86	-0.05
High	-1.73		1.07	-0.13
Missing	2.32	**	0.86	0.18
Neighbourhood: % White British	0.05	*	0.02	0.19
School composition: % SEN	0.53	#	0.29	
KS4 Positive relationships: Ref=Low				
Medium	-5.51	***	0.97	-0.42
High	-6.06	***	1.22	-0.46
Missing	-0.31		1.00	-0.02
Intercept	102.42	***	2.06	
Random effects parameters				
Variance (Level 2)	15.34		3.86	
Variance (Level 1)	170.72		5.72	
Total Variance	186.06			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17106.42			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Table A3.46: The influence 'Formative feedback' (in KS4) on anti-social behaviour

Anti-social behaviour [SEM CFA Derived Latent Construct, IQ Standardized]: Contextualised model				
Fixed effects parameters	**Estimate**	**Sig.**	**Std. Error**	**Effect Size**
Gender: (Girls compared to boys)	-4.80	***	0.61	-0.37
Ethnicity: Ref=White UK Heritage				
White European heritage	1.34		1.81	0.10
Black Caribbean heritage	1.16		1.78	0.09
Black African heritage	0.37		2.34	0.03
Any other ethnic minority	-0.22		2.22	-0.02
Indian heritage	-1.05		2.18	-0.08
Pakistani heritage	-0.36		1.80	-0.03
Bangladeshi heritage	-1.70		2.98	-0.13
Mixed race	2.57	#	1.42	0.20
Missing	-1.62		13.48	-0.12
Early child behavioural problems: Ref=no behavioural problems				
1 Behavioural Problem	1.86	#	1.04	0.14
2+ Behavioural Problems	2.22		2.13	0.17
Missing	21.01	*	8.61	1.60
Parents' Highest SES age 3/5: Ref = Professional Non-manual				
Other Professional, Non-Manual	1.72		1.46	0.13
Skilled, Non-Manual	2.34		1.56	0.18
Skilled Manual	5.18	**	1.71	0.39
Semi-Skilled	3.33	#	1.75	0.25
Unskilled	7.23	**	2.45	0.55
Not working/never worked	1.72		2.49	0.13
Missing	-0.61		4.93	-0.05
Free School Meals (FSM) status: Ref=no FSM				
Eligible for FSM	5.56	***	0.85	0.42
Not known	2.95		2.12	0.22
Parents' Highest Qualifications Level at age 3/5: Ref=no qualifications				
Vocational	0.31		1.20	0.02
16 academic	-2.99	**	0.96	-0.23
18 academic	-0.85		1.30	-0.06
Other professional/Miscellaneous	0.81		2.51	0.06
Degree or equivalent	-3.81	**	1.34	-0.29
Higher degree	-4.26	*	1.88	-0.32
Missing	-3.88		3.78	-0.30
Marital Status of Parent: Ref=Married				
Single	2.47	*	1.03	0.19
Separated/Divorced	0.55		1.01	0.04
Living with partner	1.58	#	0.87	0.12
Widow/ widower /other	-5.47	#	2.94	-0.42
Missing	-11.30		8.67	-0.86
KS3 Academic enrichment: Ref=Low				
Medium	-0.84		0.86	-0.06
High	-1.72		1.07	-0.13
Missing	2.32	**	0.87	0.18
Neighbourhood: % White British	0.05	*	0.02	0.19
School composition: % SEN	0.54	*	0.29	
KS4 Formative feedback: Ref=Low				
Medium	-3.91	***	0.97	-0.30
High	-4.77	***	1.22	-0.36
Missing	0.66		1.00	0.05
Intercept	100.94	***	2.05	
Random effects parameters				
Variance (Level 2)	14.59		3.75	
Variance (Level 1)	172.77		5.77	
Total Variance	187.36			
Number of Level-1 Observations	2139			
Number of Level-2 Units	524			
Deviance (-2 x Log Restricted-Likelihood)	17179.16			
Significance Levels: # p<0.10, * p<0.05, ** p<0.01, *** p<0.001				

Appendix 4: Views of school factors from KS3 and KS4

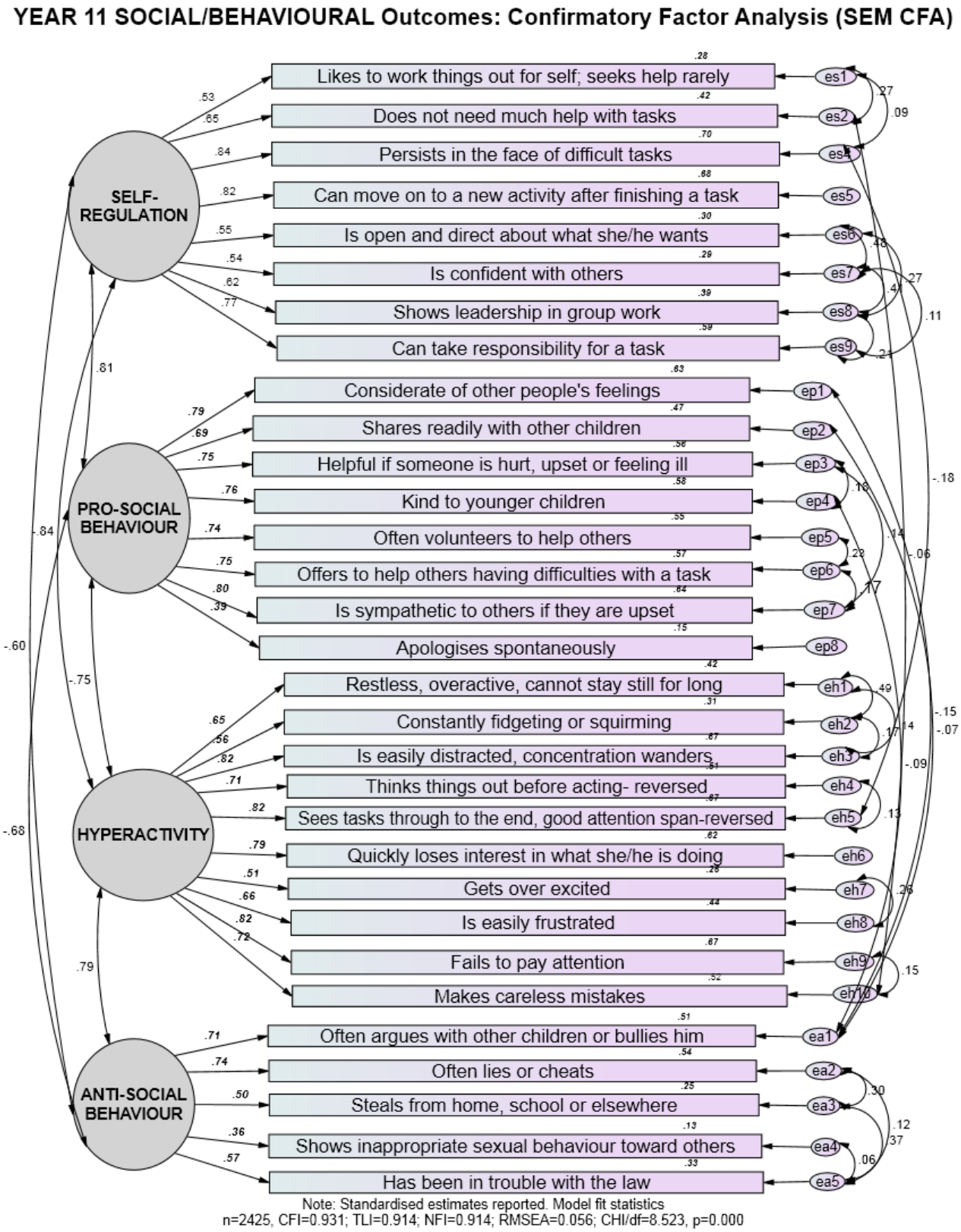
Table A4.1: Views Of school factors in KS3

Teacher support Cronbach's alpha=0.86	**School environment Cronbach's alpha=0.75**
Most teachers mark and return my homework promptly	My school has attractive buildings
Most teachers make helpful comments on my work	Classrooms are nicely decorated and clean
Teachers praise me when I work hard	Toilets are well cared for and clean
Teachers tell me how to make my work better	My school is well organised
Teachers make me feel confident about my work	People think my school is a good school
Teachers are available to talk to me privately	
Teachers will help me if I ask for help	
I get rewarded for good behaviour	
Headteacher qualities Cronbach's alpha=0.72	**Behaviour climate Cronbach's alpha=0.72**
I often see the headteacher around the school	Most pupils want to leave this school as soon as they can
The headteacher makes sure pupils behave well	Pupils who work hard are given a hard time by others
The headteacher is interested in how much we learn	Most pupils take no notice of school rules
	There are often fights (in or around school)
	Some kids bring knives or weapons into school
Teacher discipline Cronbach's alpha=0.62	**Learning resources Cronbach's alpha=0.70**
Teachers make sure that it is quiet during lessons	There are enough computers
Teachers make clear how I should behave	Science labs are good
Teachers take action when rules are broken	We have a good library
Teachers are not bothered if pupils turn up late	We get enough time using computers in subject lessons
Valuing pupils Cronbach's alpha=0.78	**Emphasis on learning Cronbach's alpha=0.68**
The school values pupils' views	Most pupils want to do well in exams
Teachers listen to what pupils say about the school	Teachers expect me to do my best
The teachers in this school show respect for all pupils	The lessons are usually 'challenging' but 'do-able'
Teachers are unpleasant if I make mistakes	Most teachers want me to understand something, not just memorise it
Teachers are friendly towards me	Most teachers believe that mistakes are OK so long as we learn

Table A4.2: Views Of school factors in KS4

Monitoring students Cronbach's alpha=0.69	**Positive relationships Cronbach's alpha=0.79**
I am set targets for my learning by my teachers which are individual to me and not for the whole class	Teachers in this school treat the pupils fairly
The school has rewards for pupils who work hard or make good progress even if they do not get high grades	My teachers are interested in me as a person
A pupil who works hard or makes good progress is noticed and praised	Teachers in this school show respect for the pupils
Teachers notice those pupils who are not working as well as they could and try to make them work harder	The teachers and pupils get on well in this school
Academic ethos Cronbach's alpha=0.78	**Formative feedback Cronbach's alpha=0.83**
Most pupils at this school want to do well in exams	Teachers help me when I am stuck
Most pupils at this school want to continue their education after GCSEs	Teachers make helpful comments on my work
Most pupils at this school are interested in learning	Teachers tell me how to make my work better
Teacher professional focus Cronbach's alpha=0.77	
If a pupil is bullied, they would feel able to tell a teacher about it	
Teachers spend all of the time in lessons teaching us or making sure we are working	
Teachers have the same rules about behaviour	
Teachers in this school come to their lessons on time	
Teachers mark and return homework promptly	
Teachers make sure that it is quiet and orderly during lessons	
Teachers in this school believe that learning is important	

Appendix 5: Year 6 Confirmatory Factor Analysis of social-behaviours (standardised loadings displayed)



Note: Standardised estimates reported. Model fit statistics
n=2425, CFI=0.931; TLI=0.914; NFI=0.914; RMSEA=0.056; CHI/df=8.523, p=0.000

Appendix 6: Key stage 3 Home learning environment

Factors	Items
Learning support and resources	(Parent) Bought/downloaded educational computer software
	(Parent) Helped with using the internet
	(Parent) Given help with difficult homework
	(Parent) Bought a book to help with school work
Computer use	(EPPSE child) Computer use MSN
	(EPPSE child) Computer use E mail
	(EPPSE child) Computer use Listening to music
	(EPPSE child) Computer use Browsing/downloading from the net
Parental interest in school	(Parent) Talked to them about their school work
	(Parent) Talked to them about their experiences at school
	(Parent) Talked to them about subjects for GCSE
Academic enrichment	(EPPSE child) Read on your own for pleasure
	(EPPSE child) With family Go on educational visits
	(EPPSE child) Go to the library (not school library)
Parental Academic Supervision	(EPPSE child) My parents make sure I do my homework
	(EPPSE child) My parents know how I am getting on at school

Glossary of terms

A-level (include Applied A-level): the GCE Advanced Level qualifications are the main pre-university qualification taken by students in England. For further information see http://ofqual.gov.uk/qualifications-and-assessments/qualification-types/a-levels/

A/S-level: The AS is a stand-alone qualification, usually made up of two units, and is worth half the value of a full A level. For further information see http://ofqual.gov.uk/qualifications-and-assessments/qualification-types/a-levels/

Academic self-concept: EPPSE derived two measures of Academic self-concept from Year 9 student questionnaire data: 'Academic self-concept for English' & 'Academic self-concept for maths'. Both measures are based on items taken from existing well established 'academic self-concept' scales (Marsh, 1990a; 1990b; Marsh & Hau, 2003; Marsh & Craven, 2006). In addition a General academic self-concept measure, based on similar items (and based on Marsh's scale) was derived from the Year 11 questionnaire.

Academic ethos – Year 11 Factor: A factor derived from Year 11 student questionnaire items that relate to the extent to which students feel that other students within the school are interested in learning, doing well and continuing their education past compulsory schooling age.

Age standardised scores: Assessment scores adjusted to take account of the pupil's age at testing, enabling comparisons between the cognitive/academic outcome of an individual pupil, and the achievement of a nationally representative sample of pupils in the same age group or, in this case, the achievement of the EPPSE sample.

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.

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.

Aspiration: Aspirations refer to students intentions for future educational destinations and achievements, such as gaining qualifications, carry on in education (e.g. going to university) and career choices.

'At risk': The term 'at risk' is complex and differs depending on the criteria used. The definition of possible cognitive/academic 'at risk' used in the ETYSEN study (Taggart et al., 2006), was based on children's cognitive/academic attainment age 3; a score of one standard deviation (sd) below the mean (in standardised assessments) in relation to national norms (at risk). In the EPPSE case studies, there are various definitions of risk and resilience (Siraj-Blatchford et al., 2011).

Basic Skills: qualifications in literacy and numeracy for adults and other skills for everyday life (http://ofqual.gov.uk/files/2010-11-26-statistics-glossary.pdf [Last accessed 14 March 2014]).

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 1001-1500 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.

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.

BTEC: This is a type of vocational work-related qualification offered by the Business and Technology Education Council (BTEC) in three levels: Award, Certificate and Diploma.

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.

City & Guilds: This is a type of vocational work-related qualification, offered by City & Guilds qualifications, which can be completed in the workplace, in the classroom or

workshop. For further information, see http://www.cityandguilds.com/courses-and-qualifications/qualifications-explained/ [Last accessed 14 March 2014]).

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).

Continuous measures: Numerical/Scale variables. In this report, continuous measures include total GCSE and equivalents point score, grade achieved in full GCSE English, grade achieved in full GCSE maths, and total number of full GCSE entries

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 ranging 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.

Dichotomous measures: categorical variable with only two possible values (1 defining the existence of a characteristic and 0 defining the inexistence). In this report, dichotomous measures include achieved 5 or more GCSE/GNVQs at grades A*-C, achieved 5 or more GCSE and equivalents at grades A*-C including GCSE English and maths and achieved the English Baccalaureate.

The Diploma: The Diploma is composite qualification for 14 to 19 year-olds, made up of individual free-standing qualifications combined in a specific way, mixing practical and theoretical learning, with an emphasis on 'applied learning'. Three of the components of the Diploma (Principal Learning, Project and Functional Skills) can also be studied as qualifications in their own right. (http://webarchive.nationalarchives.gov.uk/+/http://www.ofqual.gov.uk/popups/explaining-qualifications/ [Last accessed 14 March 2014]).

Disaffected behaviour (from Year 11 Dispositions report): Disaffected behaviour is the term EPPSE has used to reflect negative and positive behaviours/attitudes that indicate the extent of school engagement (behaviour within class and a more general item covering perceptions of the worth of schooling).

Dispositions: An overarching term used to refer to factors such as 'Mental well-being', 'School Enjoyment', 'Disaffected behaviour', 'Resistance to Peer Influence' and 'general academic self concept'. The EPPSE study derived these factors from the Life in Year 11 questionnaire. EPPSE had previously derived other disposition factors such as 'enjoyment of school', 'academic self concept (English and maths)', 'popularity', 'citizenship values' and 'anxiety' from questionnaires completed by students in Year 9 called 'All about Me' and 'All about Me in school'.

E2E: Entry to employment is a learning programme which is part of the work-based learning route and funded by the Learning and Skills Council (LSC). It is designed to provide opportunities for young people aged 16 and over who are not yet ready or able to take up a Modern Apprenticeship or further education or to move directly into employment. http://www.nfer.ac.uk/publications/EET01/EET01_home.cfm

English Baccalaureate (EBacc): The EBacc is not a qualification but a performance measure that indicates where a student has secured a C grade or above across a core of KS4 academic subjects (https://www.gov.uk/government/publications/english-baccalaureate-eligible-qualifications/ [Last accessed 14 March 2014]).

ECERS-R and ECERS-E: The American Early Childhood Environment Rating Scale (ECERS-R) is an observational instrument based on child centred pedagogy that assesses interactions and resources for indoor and outdoor learning (Harms et al., 1998). The English ECERS-E rating scale (Sylva et al., 2003) is an extension to the ECERS-R that was developed specially for the Effective Provision of Pre-school Education (EPPE) study to reflect developmentally appropriate practices in early years Literacy, Numeracy, Science & the Environment and Diversity (gender, race, individual needs).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 size (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.

EPPE: The Effective Provision of Pre-school Education (EPPE) project was designed to explore the impact of pre-school on children's cognitive/academic and social-behavioural outcomes as well as other important background influences (including family characteristics and the home learning environment). EPPE was the original phase of the EPPSE study, funded by the Department for Education and Employment it ran from 1997-2003.

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).

Formative feedback – Year 11 Factor: A factor derived from Year 11 student questionnaire items that relate to students' experiences of practical support from teachers, helping students when they are stuck and guiding them on how to improve their work.

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

Functional Skills: These qualifications, available in England to those aged 14 and older, are available as stand-alone qualifications at a number of different levels, and may also contribute towards the Diploma qualification. Functional Skills qualifications lead to the development of practical skills that allow learner to use English, maths and ICT in real life contexts (http://ofqual.gov.uk/files/2010-11-26-statistics-glossary.pdf [Last accessed 14 March 2014]).

GCSE: General Certificate of Secondary Education (GCSE) exams are usually sat during Year 11 at age 16 but can be taken by 15 to 18 year olds in schools or colleges. They can also be taken by those wanting to gain an exit school level qualification see http://ofqual.gov.uk/qualifications-and-assessments/qualification-types/gcses/ [Last accessed 14 March 2014]).

GCSE Benchmark Indicators: DfE benchmark indicators of GCSE performance include: achieved 5 or more GCSE/GNVQs at grades A*-C /-/ achieved 5 or more GCSE and equivalents at grades A*-C including GCSE English and maths /-/ achieved the English Baccalaureate.

Head teacher qualities: A factor derived from Year 9 student questionnaire items that reflect the head teacher 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 subgroups or levels within a system (i.e. students, schools, local authorities).

Higher academic route: dichotomous measure based on students' responses on the Life After Year 11-Questionnaire 1- Full-Time Education. It takes the value 1 for those who took 4 or more AS/A levels and 0 for all others returning a Life After Year 11 questionnaires.

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 1 for further details).

Homework: Student's self-reported time spent on homework on an average school night.

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).

Independent School - Category: An independent school is any school or establishment, which is not maintained by a local authority or a non-maintained special school, that provides full time education for 5 or more pupils of compulsory school age (http://www.education.gov.uk/edubase/glossary.xhtml?letter=I [Last accessed 14 March 2014]).

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).

International Baccalaureate: The International Baccalaureate Diploma Programme (DP) is a programme of education with final examinations that prepares students, aged 16 to 19, for success at university and life beyond - see http://www.ibo.org/diploma/ [Last accessed 14 March 2014]).

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 Skills: These qualifications can be studied in 6 subject areas (communication, application of number, information and communication technology (ICT), working with others, improving own learning and performance, and problem solving) that provide the necessary skills for learning, working and life in general (http://ofqual.gov.uk/files/2010-11-26-statistics-glossary.pdf [Last accessed 14 March 2014]).

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).

Lower academic route: dichotomous measure based on students' responses on the "Life After Year 11-Questionnaire 1- Full-Time Education". It takes the value 1 for those who took 3 or less As/A levels and 0 for those who are on a higher academic route.

Matriculation: exam refers to the qualification (in any country) that describes the transfer from secondary to tertiary education.

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).

Mental well-being (from Year Dispositions report): In order to asses mental well-being EPPSE included items from the Warwick-Edinburgh Mental Well-Being scale (WEMWB; Tennant et al., 2007) in the Life in Year 11 questionnaire. The Warwick-Edinburgh Mental Well-being scale was used to measure students' positive mental well-being in Year 11 allowing investigation of specific aspects of mental well-being as well as providing an overall scale.

Monitoring students – Year 11 Factor: A factor derived from Year 11 student questionnaire items that relate to the extent to which teachers monitor the progress students are making, set targets and reward hard work.

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., 2004d). 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., (2002).

Multiple regression: 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 1	Level 1
	Level 2 – Expected Level	Level 2	Level 2
	Level 3	Level 3	Level 3
	Level 4	Level 4 – Expected Level	Level 4
		Level 5	Level 5 – Expected Level
		Level 6	Level 6
			Level 7
			Level 8
Maths Levels	Working towards level 1		
	Level 1	Level 1	Level 1
	Level 2 – Expected Level	Level 2	Level 2
	Level 3	Level 3	Level 3
	Level 4	Level 4 – Expected Level	Level 4
		Level 5	Level 5 – Expected Level
		Level 6	Level 6
			Level 7
			Level 8
Science Levels	Working towards level 1		
	Level 1	Level 1	Level 1
	Level 2 – Expected Level	Level 2	Level 2
	Level 3	Level 3	Level 3
	Level 4	Level 4 – Expected Level	Level 4
		Level 5	Level 5 – Expected Level
		Level 6	Level 6
			Level 7
			Level 8

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

NEET: The term NEET (Not in Education, Employment or Training) is used to describe young people (aged 16 to 25) who are not studying, working or involved in formal training programmes.

Non-Maintained Special School - Category: Type of Establishment. Non-Maintained Special schools are special schools approved by the Secretary of State for Education and Skills, and are run on a not-for-profit basis by charitable trusts and normally cater for children with severe and/or low incidence special educational needs. Non-Maintained Special schools get the majority of their funding from local authorities placing children

with special educational needs statements at the schools and paying the fees (http://www.education.gov.uk/edubase/glossary.xhtml?letter=N) [Last accessed 14 March 2014]).

Null model: multilevel model with no predictors.

NVQ: National Vocational Qualifications (NVQ)s are 'outcome based' and are delivered in a workplace setting. NVQs are work-related, competence-based qualifications that cover a broad range of industry sectors and occupations (http://webarchive.nationalarchives.gov.uk/+/http://www.ofqual.gov.uk/popups/explaining-qualifications/ [Last accessed 14 March 2014]).

Odds Ratio (OR): Odds Ratios represent the odds of achieving certain benchmark performance indicators given certain characteristics relative to the odds of the reference group.

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/) for further details.

Out of school activities (from Year 11 Dispositions report): Out of school activities include activities students were involved in outside of school during Year 11 (during the month previous to completing the Life in Year 11 questionnaire). They include activities such as reading, going to the library, going to parties, going to church, music groups etc.

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.

Peer group (and Peer group affiliation) (from Year 11 Dispositions report): The peer group refers to other students in their immediate social circle, primarily other students sharing similarities such as age and background. Peer affiliation refers to being affiliated, or associated, with a specific friendship group.

Physical Health (from Year 11 Dispositions report): Physical health refers to students' health status, including any illness, disability or infirmity experienced in the 12 months pervious to completing the Life in Year 11 questionnaire.

(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.

Positive relationships – Year 11 Factor: A factor derived from Year 11 student questionnaire items that relate to how well students and teachers get on, such as students feeling they are treated fairly and respected and teachers showing an interest in students.

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., 2004b).

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 and Year 11 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.

Resistance to peer influence (from Year 11 Dispositions report): The Resistance to Peer Influence scale (RPI) examines a students' ability to resist the influence of their peers in more than just anti-social scenarios, ranging from wanting to fit in with the crowd to being willing to break the law to fit in with friends. Items included 'I think it's more important to be who I am than to fit in with the crowd'.

Risky behaviours (from Year 11 Dispositions report): Students were asked about activities considered as risky to health or as risky anti-social behaviours and responses to these items were then combined to form an overall measure of 'risky' behaviours. EPPSE asked about the following risky behaviours in the Life in Year 11 questionnaire: Truanting

- Smoking prevalence - Drinking prevalence - Drug usage - Anti-social criminal behaviours and legal intervention.

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.

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 engagement (from Year 11 Dispositions report): Fredericks et al (2004) view School engagement as multi-dimensional covering 'behavioural engagement', 'emotional engagement' and 'cognitive engagement'.

School enjoyment (from Year 11 Dispositions report): The EPPSE definition of School Enjoyment is an aspect of what Fredricks et al., (2004) would describe as the 'emotional' dimension of 'school engagement'. The EPPSE factor 'School Enjoyment' includes items such as 'On the whole I like being at school'.

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 16, 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.

Special Educational Needs (SEN): Children with an SEN have been assessed as having a specific need which demands additional attention/resources. Children with an SEN can be placed on the Code of Practice a various levels, depending on their conditions see https://www.gov.uk/government/publications/special-educational-needs-sen-code-of-practice

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

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 professional focus – Year 11 Factor: A factor derived from Year 11 student questionnaire items that relate to perceptions of teachers' focus on day to day teaching responsibilities such as learning and behaviour within the classroom.

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 GCSE and equivalents point score: This is a mechanism for comparing equivalencies of different types of KS4 exams, based on the total pupil's point scores and not the average points scores per subject. For example in School A, if pupils take 10 full GCSEs and in each obtain grade C, which has a points score of 40, their total points score will be 10 x 40, which is 400. If all pupils in the school had the same results, the school's average total points score would be 400. In School B all pupils might take only 8 GCSEs but in each attain grade B, which has a points score of 46. The school's average total points score would be 368. So School A has a higher average total points score than School B. In EPPSE total points score is a continuous measure.

Total number of full GCSE entries: The total number of GCSE's entered regardless of the results.

Truanting (from Year 11 Dispositions report): Truanting refers to whether the student had taken unauthorised time off school during Year 11 (the students were asked if they had bunked/skived off in Year 11).

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 pupils: 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 pupils', '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', and the Life in Year 11 questionnaire, completed in Year 11.

Vocational qualifications: work-related qualifications that are examined through practical assessment as opposed to formal academic assessment. Types of vocational qualification include NVQs, VRQs, and the Diploma.

Vocational route: dichotomous measure based on students' responses on the "Life After Year 11-Questionnaire 1- Full-Time Education". It takes the value 1 for those who did not take any As/A levels, but returned a "Life After Year 11-Questionnaire 1- Full-Time Education" questionnaire.

Z score (from Year 11 Dispositions report): A Z score is a statistical method for standardising data so that the mean equals zero and the standard deviation equals one.

VRQ: Vocationally Related Qualifications (VRQ) are related to employment but, unlike NVQs, do not necessarily require a work placement. VRQs are work-related, competence-based qualifications designed to provide learners with the skills and knowledge needed to do a job (http://ofqual.gov.uk/files/2010-11-26-statistics-glossary.pdf [Last accessed 14 March 2014]).

Well-being: Well-being here refers to aspects of young people's life such as physical health, peer and family relationships, and engagement (or not) in risky behaviours.

The Warwick-Edinburgh Mental Well-being scale: The Warwick-Edinburgh Mental Well-being scale is a 14 item scale (WEMWB; Tennant et al., 2007) that covers aspects of hedonic and eudaemonic well-being. Hedonic well-being is more emotional in nature, such as feelings of optimism, cheerfulness and feeling good about oneself. Eudaemonic well-being relates to mental capacities such as dealing with problems, thinking clearly and decision making.

Reference: DFE- RR351

ISBN: 978-1-78105-406-2

The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education

Any enquiries regarding this publication should be sent to us at:
Deborah.Wilson@education.gsi.gov.uk or www.education.gov.uk/contactus

This document is available for download at www.gov.uk/government/publications