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Sylva, K. and Melhuish, Edward C. and Sammons, P. and Siraj-Blatchford, I. and Taggart, B. and Toth, K. and Smees, R. and Draghici, D. and Mayo, A. and Welcomme, W. (2012) Effective pre-school, primary and secondary education 3-14 project (EPPSE 3-14) - Final report from the Key Stage 3 phase: influences on students' development from age 11 - 14. Project Report. Institute of Education, London, UK.

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EFFECTIVE PRE-SCHOOL, PRIMARY AND SECONDARY EDUCATION PROJECT (EPPSE 3-14)

Final Report from the Key Stage 3 Phase:

Influences on Students' Development from age 11 – 14

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Introduction

Since 1997 the Effective Pre-school, Primary and Secondary Education project (EPPE/EPPSE) has investigated the attainment and development of approximately 3,000 children from pre-school to the end of Key Stage 3 (KS3). This current phase of the research explored how different phases of education, especially secondary school, are related to students' attainment, social behaviour and dispositions at age 14 (Year 9 in secondary school) and the factors that predict developmental change. However, schools are not the only influence on students' development; families and communities matter too and these 'social' influences are carefully studied in EPPSE 3-14. The net effects of neighbourhood, pre-school, primary and secondary school are reported after taking account of individual student and background influences.

The adolescents in this current phase of the EPPSE study shape their own pathways as well as being influenced by their schools, family or neighbourhood. For this reason, this research highlights students' perceptions of themselves as learners as well as their views of aspects of their secondary school provision and experience. For details of the full report see Sylva et al., 2012.

Key findings

Individual student characteristics, family and social background continue to influence academic and social-behavioural outcomes at the end of Key Stage 3

- Differences in academic attainment and social-behavioural development related to background emerged early (at age 3) and remained fairly stable to age 14.
- Girls had better attainment in English and also made more progress in English, maths and science. They also had better social-behavioural outcomes. The gender gap widened during KS3.
- Autumn born students (oldest in year group) showed higher attainment and made more academic progress over KS3.
- Students who experienced multiple disadvantage in the early years had an increased risk of poorer social-behavioural development and lower attainment at age 14.
- Students' academic attainment and progress are strongly influenced by the education level of their parents (weaker for social behaviours and dispositions). Whilst fathers' qualification levels showed stronger effects than when children were younger, their influence is only half as strong as mothers.
- Positive parenting experiences, especially the early years Home Learning Environment (HLE) helps to promote better longer term outcomes.

- There was an increasing, though not strong, neighbourhood effect. Higher levels of deprivation amongst children aged under 16 in a local area predicted poorer attainment and social behaviour.

High quality pre-school still shows beneficial outcomes after 10 years of intervening experiences from multiple influences

- There were continuing effects of pre-school quality for later attainment in maths and science, but not in English. Higher pre-school quality also predicted better social-behavioural outcomes at age 14. The effectiveness¹ of the pre-school attended was also important for all three academic outcomes.
- High quality pre-school had particular benefits for children who had a poor early years HLE.

The academic effectiveness of primary school continues to predict outcomes

- The academic effectiveness of the primary school attended predicted better outcomes in maths and science at age 14 but had no effect on English or social-behavioural outcomes.

Students who had a positive transition from primary to secondary schools had higher attainment and better progress across KS3 although the effects were relatively weak

Students' views of their secondary school predicted attainment and progress and social behaviour

- Most students liked school, their lessons and their teachers.
- Students who reported they 'enjoyed school' had better attainment. This is in contrast to findings during primary school where 'enjoyment of school' was not related to academic attainment.
- There were strong positive links between students' 'academic self-concept' in English and maths and their attainment in these subjects.
- Time spent on homework was a strong predictor of better attainment and progress in all three core academic subjects as well as influencing better social-behavioural outcomes.

Specific secondary school characteristics influence student outcomes

- Better attainment and progress across KS3 were found when students reported their schools to have a strong 'emphasis on learning' and a positive 'behaviour climate'.
- Students made more academic progress across KS3 where they reported having positive 'teacher support', and felt they were valued and respected by teachers. These factors also predicted improvements in social-behavioural outcomes but the effects were smaller than for academic outcomes.
- The level of disadvantage of the school's intake of students had a weak negative effect on both progress and attainment.

Ofsted inspection indicators predicted both attainment and progress

- Attending a school judged to be 'outstanding' was associated with better attainment in all three core curriculum areas. Ofsted measures (students' attendance, behaviour and learning) also predicted better social-behavioural outcomes and dispositions.

Students who 'succeeded against the odds' were helped by parents, friends and their communities as well as by pre-school and school

- *Parents* helped through 'active cultivation'. They valued learning, provided emotional support, and had high aspirations and standards of behaviour. They provided practical support by encouraging participation in extra-curricular activities etc. Parents' own resilience in the face of hardship provided a role model for their children's efforts.
- These parents recognised that *pre-school* developed literacy, numeracy and social skills as well as preparing children for school.

¹ A 'value added' measure. For instance 'more effective' pre-schools were defined as those whose children made significantly greater cognitive/developmental gains controlling for their prior attainment/development and background characteristics from age 3 to 5 years. Centres where children made less developmental gains than predicted were defined as 'less effective'.

- *Friends* and the wider community offered practical or emotional support with school or learning.
- High quality *teachers* encouraged students and offered specific school support to tackle difficulties such as booster lessons.

Aims and Methodology

This phase of the research investigated the influence of the following on students' outcomes in Year 9:

- individual, family and Home Learning Environment (HLE) background characteristics;
- pre-school, primary and secondary school experiences (singly and combined), in terms of quality, academic effectiveness and change over time;
- being more or less disadvantaged;
- students' dispositions;
- students' reports of their secondary school and classroom processes.

The research design is based on an educational effectiveness and mixed methods approach (Sammons et al., 2005; Siraj-Blatchford et al., 2006). Statistical models were used to predict students' academic outcomes and social-behavioural developmental progress in KS3 allowing for differences in their families, home environments, schools, and neighbourhoods. However, analytic models can only identify statistical patterns; they cannot take account of the unique characteristics of each child, their personal and individual life experiences. Case studies of 50 individual children and their families sought to capture some of this uniqueness (Siraj-Blatchford et al., 2011). The selection for the qualitative case studies utilised the quantitative analyses using the wealth of data already collected on these students, thus linking the two approaches. For earlier phases of the research see Sylva et al., 2010.

The KS3 academic outcomes were attainment in English, maths and science derived from Teacher Assessment National Curriculum levels². Social-behavioural outcomes were 'self-regulation' (problem-solving, motivation, self-confidence, assertiveness etc.), 'pro-social' behaviour (peer empathy, co-operation, altruism etc.), 'hyperactivity' (reduced self-control, impulsiveness etc.) and 'anti-social' behaviour (verbal abuse, aggression etc.). Students' dispositions were measured in six areas: 'enjoyment of school', 'academic self-concept (English and maths)', 'popularity', 'citizenship values' and 'anxiety'. In studying students' reports of their schools, eight areas were found to be important in shaping students' educational outcomes: 'teacher support' for learning, 'teacher discipline', 'emphasis on learning', 'valuing students', 'poor behaviour climate', 'headteacher qualities', 'school environment' and 'school/learning resources'. Measures of secondary school academic effectiveness from KS2-KS4 contextual value added (CVA) indicators produced by the DfE were added to the EPPSE data set. In addition, selected Ofsted inspection judgements were used as external indicators of the quality of secondary schools. These complement the measures of quality and effectiveness for pre-school settings and the primary school academic effectiveness used in previous phases of the research. It has therefore been possible to explore the influences of various measures of pre-, primary and secondary school on students' outcomes in Year 9. Multiple imputation of missing data was conducted in order to maximise the sample size and limit bias; original and imputed results are reported in the full technical papers (Sammons et al., 2011a; 2011b; 2011c). In this research brief, the results for the academic and dispositional outcomes are drawn from analyses of the original data while, the results for social behaviours are reported for imputed data. Overall, the analyses are based on data for over 2,900 students attending over 770 secondary schools.

Insights into the influence on student attainment and development during KS3 were collected from a range of sources: CVA measures, Ofsted judgements and questionnaires to students, teachers and parents. Two student questionnaires, 'All about Me' and 'All about Me in School', provided student report data about their secondary school as well as their own dispositions to learning in their early teenage years. In addition, Heads of Year 9 (HoY9) and parents were surveyed about their views on school and students. The 50

² In 2008 Key Stage 3 national assessment tests were discontinued therefore the EPPSE sample had KS3 test scores for only 2 of its 4 cohorts. Teacher Assessment levels were available for all four cohorts therefore these were used to measure academic outcomes.

qualitative case studies of students' learning trajectories included a) 20 low SES students who were academically successful and 'succeeding against the odds'; b) 15 low SES students who were 'expected low achievers'; c) 9 high SES students who were 'unexpected underachievers'; and d) 6 high SES students who were 'expected high achievers' (Siraj-Blatchford et al., 2011).

Major findings

Most of the results are reported as 'effect sizes' (ES) which allow a comparison of the relative strength of different influences. All the presented ES are statistically significant; however they vary in their strength, for instance anything below 0.2 would be regarded as relatively 'weak' and above ES 0.6 would be 'strong'³.

1. Individual and background characteristics and their influence on outcomes

In Year 9, girls had higher attainment than boys in English, by approximately 0.4 of a national curriculum level. There were no significant gender differences in maths or science results. Girls were rated by teachers as showing significantly better social-behavioural profiles than boys at age 14 in all four measures (e.g. ES=0.45 for 'self-regulation'; ES=-0.42 for 'anti-social').

Overall, there was evidence that students made more progress in English, maths and science over KS3 if they were older for their year group (Autumn born - ES=0.24 English; ES=0.32 maths; ES=0.20 science). Age in year group did not predict social-behavioural changes for students during KS3.

Multiple disadvantage, experienced by children during the early years, continued to be a strong predictor of differences in students' later social behaviour. Those who had experienced several disadvantages in the early years showed poorer 'self-regulation' (ES=-0.75) and 'pro-social' behaviour (ES=-0.60) and increased scores for 'hyperactivity' (ES=0.72) and 'anti-social' behaviour (ES=0.62) in KS3. For academic outcomes, of those students who were the most disadvantaged (4+ disadvantages) only 58 per cent achieved Level 5 (+) in English and 62 per cent in maths. This compares with results for those students who were least disadvantaged where 87 per cent achieved Level 5+ in English and 89 per cent in maths.

Of the students' background characteristics, mother's qualification level was the strongest predictor of better attainment. Students with highly qualified parents (degree level) had much higher attainment on average than those students whose parents had no qualifications (the difference was 1.4 of a national curriculum level for English, 1.7 for maths and 1.5 for science). Similar patterns were evident for social-behavioural outcomes. Having a mother with a degree or equivalent (compared to no qualifications) predicted better 'self-regulation' (ES=0.47) and reduced 'hyperactivity' (ES=-0.40).

The quality of the early years HLE was also strongly associated with differences in attainment at KS3. Those who had experienced a high compared to low early years HLE were generally one (1.0) national curriculum level higher for English and science and 1.3 higher for maths. The early years HLE continued to predict better social-behavioural outcomes for students at the end of KS3 taking into account other student and family influences (high versus very low HLE: ES=0.48 for 'self-regulation'; ES=0.30 for 'pro-social'; ES=-0.35 for 'hyperactivity').

Attainment in English and science was predicted by neighbourhood disadvantage as measured by the Index of Multiple Disadvantage (IMD)⁴ scores although the effect sizes were weak. The higher the IMD the lower the academic results in Year 9 (English: ES=-0.17; science: ES=-0.14). The level of neighbourhood disadvantage weakly predicted social-behavioural outcomes after controlling for other factors. Higher levels of criminality in neighbourhoods predicted poorer outcomes in all four social-behavioural domains (e.g. ES=0.14 for 'hyperactivity').

³ For summary tables of Effect Sizes see Tables 1, 2 and 3.

⁴ Index of Multiple Disadvantage (Noble et al., 2004; 2008).

2. Pre-school influences

The quality⁵ of the pre-school attended predicted better outcomes in maths (ES=0.28 for high quality versus low quality) and science in KS3. The effects for medium and high quality were slightly larger than for low quality. In science, only those who had attended a medium or high quality pre-school continued to show significantly better attainment in Year 9 than the 'home'⁶ group. Pre-school quality positively predicted all four social behaviours in KS3. Students who attended higher quality pre-schools showed significantly better social-behavioural outcomes at age 14 than the 'home' group or those who had previously experienced only a low quality pre-school. These effects were relatively weak, for 'self-regulation' (ES=0.14 high quality versus 'home' group), 'pro-social' (ES=0.14), 'hyperactivity' (ES=-0.13) and 'anti-social' (ES=-0.14) behaviours.

The effectiveness of the pre-school attended (in promoting pre-reading skills) continued to predict better outcomes in English at age 14 but this was only statistically significant when comparing children who had attended highly effective settings with the 'home' group (ES=0.20). For maths, all pre-school effectiveness groups (ES=0.36 for high; ES=0.22 for medium; ES=0.30 for low effectiveness) had better KS3 results than the 'home' group. Attending a high (ES=0.33) or medium effective (ES=0.19) pre-school predicted better outcomes in science compared to the 'home' group.

3. Combined pre-school and Home Learning Environment (HLE) influences

Pre-school quality continued to show relatively stronger effects on students' later outcomes for those who experienced a poor early years HLE compared to students who had experienced a more stimulating HLE. Such children can benefit even from low quality pre-school on certain outcomes (e.g. ES=0.40 compared with low HLE/no pre-school for 'self-regulation'). However, they benefit even more from high quality pre-school (ES=0.50 for 'self-regulation'). For children with a high early years HLE, only high quality pre-school had any effects. Similar patterns emerge when looking at pre-school effectiveness and KS3 maths attainment.

4. The academic effectiveness of the primary school

After controlling for student, family and HLE background characteristics, primary school effects were found to influence KS3 results. Students who had attended a highly academically effective primary school compared with a low effective one showed positive benefits for attainment (ES=0.31, maths; ES=0.29, science). These effects are similar in size to those for poverty (measured by Free School Meals). The effect represents a third of a national curriculum level for maths and a quarter of a level for science. The academic effectiveness of the primary school attended does not predict English attainment or social-behavioural outcomes at age 14.

5. Transition from primary to secondary schools

Students who quickly became accustomed to secondary school routines and who experienced continuity in the curriculum from primary to secondary school made better progress in maths and science across KS3 and also had higher attainment in all three core subjects at Year 9. Although statistically significant, these effects were relatively moderate (ES ranged between 0.21 and 0.32 with the strongest effect for maths).

6. The influence of students' dispositions⁷ on outcomes

Students' self-reported 'enjoyment of school' predicted attainment, with stronger effects for maths (ES=0.38) than science (ES=0.31) or English (ES=0.29). This is in contrast to findings during primary school where 'enjoyment of school' was not related to academic attainment. 'Enjoyment of school' as reported by students, was also a consistent though modest predictor of better social-behavioural outcomes in Year 9 (e.g. 'self-regulation' ES=0.33).

⁵ Measured by the ECER-R (Harms et al., 1998) and ECERS-E (Sylva et al., 2003).

⁶ The 'home' group are those students who had little or no pre-school experience.

⁷ For details regarding disposition factors and associated items see Table 5.

There were strong and positive links between students 'academic self-concept' for English and maths and their attainment in these subjects. 'Maths academic self-concept' was a predictor of maths attainment in Year 9 (ES=1.2; nearly 1 national curriculum level). 'English academic self-concept' also predicted Year 9 English attainment but not as strongly (ES=0.74; equivalent to approximately a half of a national curriculum level).

'Maths academic self-concept' showed stronger positive effects for on 'self-regulation' (ES=0.45) and 'pro-social' behaviour (ES=0.31) than for 'English academic self-concept' ('self-regulation [ES=0.31] and 'pro-social [ES=0.23]). In addition, higher scores on these two measures of 'academic self-concept' predicted lower scores for both 'hyperactivity' (ES=-0.38) and 'anti-social' behaviour (ES=-0.26). Due to the likely reciprocal nature of relationships between 'academic self-concept', attainment and behaviour it is not possible to infer causal connections from these analyses.

7. Time spent on homework (as reported by students)

The time students reported they spent doing homework was a strong predictor of better attainment and progress in all three core academic subjects. Doing 2-3 hours of homework after school compared to none produced effect sizes ranging between 0.69 and 0.85 for the three core subjects. Time spent on homework also strongly predicted better social-behavioural outcomes for all measures, again spending 2-3 hours per night after school, compared with doing no homework had ES=0.72 for 'self-regulation'; ES=0.62 'pro-social behaviour'; ES=-0.71 'hyperactivity' and ES=-0.55 'anti-social behaviour'.

8. The influence of students' secondary school experiences on outcomes

Students who reported⁸ that their school placed a higher 'emphasis on learning' had significantly higher attainment. The difference was half a national curriculum level in English and science and three quarters of a level for maths (ES ranged between 0.20 and 0.22). Attainment was also higher where students reported a more positive 'behaviour climate' in their secondary school, the effects being particularly large for maths (ES=0.46) and representing approximately three quarters of a national curriculum level. However, a 'poor behaviour climate' predicted lower scores for 'self-regulation' (ES=-0.32) and 'pro-social' behaviour (ES=-0.26) and higher scores for 'hyperactivity' (ES=0.31) and 'anti-social' behaviour (ES=0.25). When tested together, 'emphasis on learning' and 'behaviour climate' significantly predicted Year 9 academic attainment in all three core subjects.

Positive 'school environment'⁹ and good 'school/learning resources' (e.g. computers etc.) were significant predictors of better attainment and progress for maths and science. The effect sizes for 'school/learning resources' were equivalent to approximately half a national curriculum level for both subjects. Similar positive effects were found for the social-behavioural outcomes: higher 'self-regulation' and 'pro-social' behaviour and reduced 'anti-social' behaviour.

Students' reports of the 'valuing students' and 'teacher support' were significant predictors of progress in English, maths and science. The latter factor linking to the quality of teaching experienced in KS3 predicted better 'self-regulation' (ES=0.17) and reduced 'hyperactivity' (ES=-0.20).

'Headteacher qualities' was a significant predictor for progress in maths (ES=0.15) and better social-behavioural scores, while 'teacher discipline' was a significant predictor of progress in science (ES=0.14).

⁸ For details of students' self-reports on school processes and experiences see Table 4.

⁹ This factor includes attractive and well decorated buildings, cleanliness of toilets etc.

9. Secondary school quality as captured in Ofsted judgements

For attainment, students who attended a school judged to be 'outstanding' by Ofsted for 'quality of pupil's learning'¹⁰ had better outcomes in English (ES=0.42), maths (ES=0.56) and science (ES=0.51) when compared to 'inadequate' schools. Additionally, for maths only schools judged by Ofsted as 'good' (on the 'quality of pupil's learning') also showed significant positive effects (ES=0.26). These results show that secondary school quality remains important in shaping students' academic attainment, over and above the impact of background characteristics. The effects ranged between 0.34 and 0.64 of a national curriculum level for those who attended an 'outstanding' rather than an 'inadequate' school.

A similarly strong pattern was identified for Ofsted judgments of 'attendance of learners'. It should be noted that these two Ofsted measures ('quality of pupil's learning' and 'learners' attendance') are also correlated and hence were tested separately.

Better progress was made by EPPSE students, in the three core subjects, when they attended an 'outstanding' compared to an 'inadequate' school in terms of the Ofsted 'quality of learning' judgement (ES ranged between 0.29 and 0.36). Again, students in 'outstanding', 'good' or even 'satisfactory', schools (for 'attendance of learners') made significantly more progress in English (ES=0.48 for 'outstanding') and maths (ES=0.35 for 'outstanding').

Attending a secondary school judged to be better at promoting the 'behaviour of learners'¹¹ predicted better 'self-regulation' and 'pro-social behaviour', taking into account students' individual, family and HLE characteristics. Students who attended a secondary school that had been judged 'outstanding' showed significantly better positive social behaviours (e.g. ES=0.55 'self-regulation'; ES=0.66 'pro-social').

Attending a 'good' or an 'outstanding' school offered the greatest benefits in promoting better social-behavioural outcomes for more advantaged students (higher SES groups and those whose mothers had higher qualification levels etc.). It also benefitted other student groups but the positive effects were not as strong. For instance, by the end of KS3 attending a higher quality secondary school had only a marginal benefit in terms of predicting better outcomes for those students who are most disadvantaged. This is in contrast to findings at younger ages which indicated that it was the disadvantaged children who benefited most from attending higher quality pre-schools and more academically effective primary schools.

In addition, students from schools that have a higher proportion of Free School Meal (FSM) students made significantly less progress in English (ES=-0.18) and science (ES=-0.21) during KS3.

10. The views of teachers and parents

Overall, Heads of Year 9 gave a largely positive picture of their secondary school. The majority:

- were satisfied with the support/training they had been given to enable them to respond to the needs of a range of students. However, two groups of students stood out as needing additional support: those with English as an Additional Language (EAL) and 'looked after' students;
- reported positively on the general accessibility of services to support students, the exceptions being services for sexuality/health, EAL and speech/language therapy;
- were positive about how their school communicated and listened to parents; however they acknowledged that improvements could be made in the extent to which schools supported parents in helping their children learn at home.

¹⁰ As measured by inspectors from the Office for Standards in Education (Ofsted) during formal school inspections.

¹¹ As measured by Ofsted during formal school inspections. NB the effects reported are on non-imputed data, as it was thought inappropriate to impute inspection judgements.

Most parents:

- held positive views of their child's secondary school. Only a minority reported concerns about poor behaviour;
- had high aspirations for their children and regarded good GCSE English and maths results as particularly important. Also important in parents' views were their children getting 'A' levels, good vocational qualifications and a university degree.

11. Students from disadvantaged backgrounds who 'succeed against the odds'

Disadvantaged children generally do less well at school. EPPSE research has provided evidence about the powerful influence of various individual and family characteristics that shape students' outcomes from a very young age (evident at age three). These remain significant and important predictors of academic outcomes as students move through secondary school. At age 14, many factors continue to influence teenage outcomes adversely such as being a boy, mothers' (and to a lesser extent fathers') low qualification levels, low birth weight, early developmental/behavioural problems and being a member of a large family. Low family SES, low or no earned income and FSM are also significant predictors of poorer outcomes but with less strong effects than parental education. Having an increasing number of these disadvantages compounded the 'risk' of underachievement. EPPSE created a single index that 'counts' the number of disadvantaging factors experienced by students and this showed that the experience of multiple disadvantage from a young age shaped academic and social behaviours (see Table 6). Although the experience of multiple disadvantage is powerful, the picture is not all grim, however, because education can also play an important role in supporting children from disadvantaged families to achieve

High quality pre-school is particularly important for children whose families had low scores on the early years HLE. These children benefited more from higher quality pre-school compared to children who had stimulating home learning environments. In other words, children from less stimulating homes were more responsive to the quality of pre-school provision than those from homes that had high levels of stimulation and intellectual challenge.

In the EPPSE case studies of 50 children, those who succeeded 'against the odds' had:

- higher levels of individual agency, determination and active participation from themselves as well as from the people around them.
- parents who valued learning and had high aspirations and standards of behaviour for their children. These parents practiced 'active cultivation'; nurturing skills and offered emotional support that enabled children to benefit from what schools offered. They encouraged extra-curricular activities explicitly for learning and development whereas other low SES parents saw them just as fun. Their children had social networks that provided emotional and practical support which enhanced their self-efficacy and enabled them to become 'active agents' in their learning. These parents' resilience in the face of hardship provided a role model for their children's effort in learning.
- parents who saw the value of pre-school for developing basic literacy and numeracy and preparing for school routine. This was particularly important for boys from low SES families who were more likely to have a poor HLE. While only a small sub-sample, pre-school quality seemed particularly important for low SES boys: all those who attended excellent pre-school settings went on to succeed above expectation.
- primary teachers who consistently presented a positive image of learning, and specific school support, such as booster lessons or interventions to tackle difficulties. Children who made poor progress, or who were not seen as clever, developed a negative self-image which led to, or reinforced, poor learning strategies/motivation. Parents often felt let down and sometimes angry with schools for not meeting a child's individual needs effectively. Some high SES parents felt they had to buy extra support outside school.
- friends who offered practical or emotional support with school or learning. This helped them to enjoy school and to deal with difficulties encountered. Children who failed to make good progress tended to have friends with negative attitudes to school and learning.

Conclusion

Although some EPPSE findings are similar to those in other research studies, many provide new insights into the ways that families, schools and neighbourhoods shape student outcomes. This study shows the *relative* and *historical* (longitudinal) contribution of many positive and negative factors to students' pathways. It makes a strong contribution to our understanding of students' attainment, behaviour and dispositions by linking these to the educational experiences and practices that support development over time, especially in KS3. These school effects are revealing but are best understood alongside those of family or neighbourhood influences.

It is important to stress that all the effects reported, including those of secondary school, are over and above those of students' own characteristics and their social background, showing what matters in the education of young people after taking into account detailed background histories. It is because of the richness of the EPPSE data on pre-school and early home experiences that the developmental pathways of young people are unravelled and understood. Only a large and national sample, studied intensively over time, can allow this.

A strong test of an 'influencing' factor is its effect in predicting **change** on academic, social and dispositional outcomes between ages 11 and 14. In our analysis of change (academic progress and social behavioural development), the findings of the longitudinal case studies of children and their families also adds valuable explanatory detail to the quantitative statistical models. The case studies enhance our understanding of the protective factors that promote resilience, and they do this in a level of detail that goes much deeper than test scores, teacher judgements and even the reports of individual students on questionnaires.

The findings from this research point to continuing effects of disadvantage in England, to 'downward spirals' in development and (for a minority of students) to dissatisfaction and unhappiness in school. The other side to this coin is that EPPSE has reported on pathways to success, on feelings of confidence and factors associated with them. Positive pre-school and school experiences can make a difference and this research describes some of the factors that may underpin success. Still, homes and communities shape development too, and the case studies show how these factors may combine to shape an individual student's success or failure. The longitudinal nature of the rich EPPSE dataset allowed us to discover the long-term effects of pre-school experiences, especially those of high quality settings. Each student's pre-school and early home learning environment created the 'platform' on which the marks of primary and secondary school are then etched.

Some implications

EPPSE findings support the development of policies to help students, their families and schools by:

- ameliorating the impact of multiple disadvantage;
- enhancing parenting skills, especially in the early years;
- supporting young people in out of school activities that develop their sense of belonging, responsibility and citizenship as members of their community;
- continuing to improve pre-school quality;
- enabling teachers to make both curriculum and pedagogical adjustments including adopting a more personalised learning agenda to enable 'vulnerable' children to make the most of their school experiences;
- consulting students and obtaining their views. This may be helpful for school self-evaluation and action planning.

There is no 'one' predictor which explains attainment, progress and development but rather it is the combination of factors that make a difference to young people's long-term life chances. The message for policy is that there is no magic bullet because addressing one area in isolation is unlikely to have a strong impact on narrowing the gap.

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Table 1: Summary of the effects of students' background characteristics and pre-school, primary and secondary school influences on academic attainment in Year 9

(Only the largest significant effect sizes for the original data are reported; comparison group in brackets)

		English	Maths	Science
Student characteristics				
Age	(continuous)	0.19	0.15	0.16
Gender	(boys)	0.46	ns	ns
Birth weight	(normal)	-0.37	-0.40	-0.35
Ethnicity [†]	(White UK heritage)	ns	0.37	0.30
Early developmental problems	(none)	-0.21	-0.16	-0.15
Early behavioural problems	(none)	-0.18	-0.18	ns
Number of siblings	(none)	-0.31	-0.19	ns
Family characteristics				
Mother's age	(continuous)	0.16	ns	0.09
Mother's qualification level	(none)	0.61	0.50	0.61
Father's qualification level	(none)	0.36	0.37	0.48
Free school meals (FSM)	(non-FSM)	-0.30	-0.31	-0.31
Family SES	(professional non-manual)	-0.29	-0.36	-0.31
Family earned income	(none)	0.40	0.21	0.29
School level FSM	(continuous)	-0.19	-0.20	-0.22
Home Learning Environment (HLE)				
Early years HLE	(low)	0.29	0.38	0.41
Key Stage 1 HLE	(low)	0.24	ns	0.15
Key Stage 2 HLE	(low)	0.19	0.17	0.17
Pre-school*				
Attending	(not attending)	ns	0.26	0.22
Pre-school quality*				
ECERS-E	(no pre-school)	ns	0.28	0.23
ECERS-R	(no pre-school)	ns	ns	ns
Pre-school effectiveness*				
Early number concepts	(no pre-school)	ns	0.36	0.33
Pre-reading	(no pre-school)	0.20	ns	ns
Primary School Effectiveness**				
English		ns		
Mathematics			0.31	0.29
Science				0.24
Secondary School Quality				
Quality of pupils' learning	(inadequate)	0.42	0.56	0.51
Learners' attendance	(inadequate)	0.70	0.71	0.56

[†] The number of EPPSE students in minority ethnic group categories is typically small. Thus, any differences for specific groups must be interpreted with caution.

*The reference group for all pre-school quality and effectiveness comparisons is the 'home' group, who had very little or no pre-school experience. The effect sizes represent differences between the 'home' group and the 'high quality/effectiveness' group unless stated otherwise.

** The reference group for primary school effectiveness is 'low effectiveness'. The effect sizes represent differences between the 'low effectiveness' group and the 'high effectiveness' group.

ns = not statistically significant

Table 2: Summary of the effects of background characteristics on social behavioural factors in Year 9
(Only the largest, statistically significant effect sizes for the imputed data are reported; comparison group in brackets)

	Self-regulation	Pro-social	Hyperactivity	Anti-social
Student characteristics				
Gender (boys)	0.45	0.61	-0.54	-0.42
Age (continuous)	0.12	0.08	-0.08	ns
Birth weight	ns	ns	ns	ns
Number of siblings (none)				
1 sibling	0.13	0.11	-0.15	-0.12
Ethnicity (White UK heritage)				
Indian heritage	0.33	ns	-0.33	ns
Bangladeshi heritage	0.37	ns	-0.48	-0.34
Early behavioural problems (none)				
1 Behavioural Problem	-0.30	-0.28	0.36	0.32
2+ Behavioural Problems	-0.34	ns	0.44	0.33
Family characteristics				
Parents' Highest SES at KS2 (unemployed/not working)				
Unskilled	ns	ns	ns	ns
Semi-skilled	ns	ns	0.17	ns
Skilled, Manual	ns	ns	ns	ns
Skilled, Non-Manual	0.30	0.20	-0.20	-0.20
Other Professional, Non-Manual	0.31	0.23	-0.24	-0.19
Professional, Non-Manual	0.45	0.31	-0.28	-0.25
Mother's Highest Qualification Level (none)				
16 academic	0.17	0.15	-0.15	-0.13
18 academic	0.31	0.22	-0.25	-0.21
Degree or equivalent	0.47	0.36	-0.40	-0.37
Higher degree	0.54	0.35	-0.43	-0.36
Marital Status of Parent/Guardian/Carer (married)				
Single	-0.13	ns	0.21	0.15
Separated/Divorced	ns	ns	0.21	0.18
Living with partner	-0.18	-0.13	0.21	0.14
Widow/Widower	ns	ns	ns	ns
Home Learning Environment (HLE)				
Early Years HLE Index (Grouped) (Very low)				
Low (14-19)	0.15	0.13	ns	ns
Average (20-24)	0.17	ns	ns	ns
High (25-32)	0.32	0.27	-0.25	ns
Very high (33-45)	0.48	0.30	-0.35	ns
Early years Home Learning Environment Index (Continuous scale)	n/a	n/a	n/a	-0.12*
Pre-school quality				
ECERS-R (high quality vs. low quality)	0.12	ns	ns	ns
ECERS-E (high quality vs. low quality)	0.14	0.14	-0.13	-0.14
Secondary School Quality				
Behaviour of learners (outstanding vs. inadequate)	0.55	0.63	ns	ns

*Continuous scale – no statistically significant differences associated with categorical HLE measure. However, a statistically significant marginal effect was found when testing this variable as a continuous scale.
ns = not statistically significant

Table 3: Summary of the effects of student background characteristics on dispositions in Year 9
(Only statistically significant effect sizes are reported; comparison group in brackets)

	Maths academic self-concept	English academic self- concept	Anxiety	Citizenship values	Popularity	Enjoyment of school
Student characteristics						
Gender (girls)	0.38	ns	-0.48	-0.31	0.12	ns
Age (continuous)	0.16	ns	ns	ns	ns	ns
Birth weight (normal)	ns	ns	ns	ns	-0.51	ns
Number of siblings (none)	ns	ns	ns	ns	ns	-0.20
Birth order (first)	ns	-0.24	ns	ns	ns	ns
Ethnicity [†] (White UK heritage)	0.74	0.56	-0.47	0.39	0.60	0.55
Early behavioural problems (none)	-0.48	ns	0.38	ns	ns	-0.23
Early developmental problems (none)	ns	ns	ns	0.19	ns	ns
Special Educational Needs (none)	-0.45	-0.46	0.77	ns	-0.69	-0.54
Family characteristics						
Free school meals (FSM) (non-FSM)	-0.25	ns	ns	ns	ns	ns
Family SES (professional non-manual)	-0.33	ns	ns	ns	ns	ns
Father's employment (unemployed)	0.75	ns	ns	ns	ns	ns
Mother's qualification Level (none)	ns	ns	ns	-0.32	-0.39	ns
Father's qualification Level (none)	ns	0.35	ns	ns	ns	ns
Marital Status (married)	ns	ns	0.58	ns	0.21	ns
Family salary in KS1 (none)	ns	ns	ns	ns	0.34	0.52
Home Learning Environment (HLE)						
Early years HLE (low)	ns	ns	ns	0.26	ns	0.34
KS1 Parent-child interaction (low)	ns	ns	ns	ns	0.23	ns
KS2 Individual-child activities (low)	ns	0.52	ns	ns	ns	ns
KS2 Global index (low)	ns	ns	ns	ns	0.28	ns
Secondary School Quality						
Healthy lifestyles (inadequate)	ns	ns	-0.72	ns	ns	ns
Future economic well-being (inadequate)	ns	ns	-0.52	ns	ns	0.52
Learning difficulties & disabilities progress (inadequate)	0.42	ns	ns	ns	ns	0.46
Progress of learners (inadequate)	ns	ns	ns	ns	ns	0.37
Standards reached by learners (inadequate)	ns	ns	ns	ns	ns	0.36
How well learners achieve (inadequate)	ns	ns	ns	ns	ns	0.33
Quality of pupils' learning (inadequate)	ns	ns	ns	ns	ns	0.31

[†] The number of EPPSE students in minority ethnic group categories is typically small. Thus, any differences for specific groups must be interpreted with caution.

ns = not statistically significant

Table 4: Items associated with the eight experiences of school factors

Views of school factors in Year 9			
<p>Teacher support</p> <ul style="list-style-type: none"> • Most teachers mark & return my homework promptly • Most teachers make helpful comments on my work • Teachers praise me when I work hard • Teachers tell me how to make my work better • Teachers make me feel confident about my work • Teachers are available to talk to me privately • Teachers will help me if I ask for help • I get rewarded for good behaviour 	<p>School environment</p> <ul style="list-style-type: none"> • My school has attractive buildings • Classrooms are nicely decorated & clean • Toilets are well cared for & clean • My school is well organised • People think my school is a good school 	<p>Valuing students</p> <ul style="list-style-type: none"> • The school values pupils' views • Teachers listen to what pupils say about school • The teachers in this school show respect for all students • Teachers are unpleasant if I make mistakes • Teachers are friendly towards me 	<p>Headteacher qualities</p> <ul style="list-style-type: none"> • I often see the headteacher around the school • The headteacher makes sure students behave well • The headteacher is interested in how much we learn
<p>Poor behaviour climate</p> <ul style="list-style-type: none"> • Most pupils want to leave this school as soon as they can • Students who work hard are given a hard time by others • Most students take no notice of school rules • There are often fights (in or around school) • Some kids bring knives or weapons into school 	<p>Emphasis on learning</p> <ul style="list-style-type: none"> • Most students want to do well in exams • Teachers expect me to do my best • The 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 	<p>Teacher discipline</p> <ul style="list-style-type: none"> • Teachers make sure that it is quiet during lessons • Teachers make it clear how I should behave • Teachers take action when rules are broken • Teachers are not bothered if students turn up late 	<p>School/learning resources</p> <ul style="list-style-type: none"> • There are enough computers • Science labs are good • We have a good library • We get enough time using computers in subject lessons

Table 5: Items associated with the six disposition factors

Disposition factors in Year 9		
<p>Enjoyment of school</p> <ul style="list-style-type: none"> • My school is a friendly place • On the whole I like being at school • I like to answer questions in class • School is a waste of time for me • I like most of the lessons • I am bored in lessons 	<p>English Academic Self-concept</p> <ul style="list-style-type: none"> • I learn things quickly in my English classes • I have always done well in my English classes • Compared to others my age I am good at English • Work in my English classes is easy for me • I get good marks in English 	<p>Maths Academic Self-concept</p> <ul style="list-style-type: none"> • I learn things quickly in my maths classes • I have always done well in my maths classes • Compared to others my age I am good at maths • Work in my maths classes is easy for me • I get good marks in maths
<p>Citizenship Values</p> <ul style="list-style-type: none"> • Making sure strong people don't pick on weak people • Respecting rules and laws • Controlling your temper even when you feel angry • Respecting other peoples points of view • Sorting out disagreements without fighting 	<p>Popularity</p> <ul style="list-style-type: none"> • I make friends easily • Other teenagers want me to be their friend • I have more friends than most other teenagers my age • Most other teenagers like me • I am popular with other students in my age group 	<p>Anxiety</p> <ul style="list-style-type: none"> • In class I worry about what the others think of me • I get a lot of headaches, stomach aches or sickness • I worry a lot • I am often unhappy, downhearted or tearful • I am nervous in new situations • I have many fears, I am easily scared

Table 6: Characteristics in the multiple 'at risk' index

Child Characteristics	Disadvantage Indicator
First language	English not first language
Large family	3 or more siblings
Premature/Low birth weight	Premature or below 2500 grams
Parent Characteristics	
Mother's highest qualification	No qualifications
Social class of father's occupation	Semi-skilled, unskilled, never worked, absent father
Father's employment status	Not employed
Young mother	Age 13-17 at birth of EPPE child
Lone parent	Single parent
Mother's employment status	Unemployed
Home learning environment (HLE)	
Early years HLE index score	Bottom quartile

Additional Information

This Research Brief and the full report of the same name can be accessed at
<http://publications.education.gov.uk>
and also from the EPPSE Website:
<http://eppe.ioe.ac.uk>

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This research was commissioned before the new UK Government took office on 11 May
2010. As a result the content may not reflect current Government policy and may make
reference to the Department for Children, Schools and Families (DCSF) which has now
been replaced by the Department for Education (DFE).

The views expressed in this Research Brief are the authors' and do not necessarily reflect
those of the Department for Education.