# Families' social background matters: Socioeconomic factors, home learning and young children's language, literacy and social outcomes

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Abstract

Parental support with children's learning is thought as one pathway through which socio-economic factors influence child competencies. Utilising a national longitudinal sample from the Millennium Cohort Study, this study examined the relationship between home learning and parents' socio-economic status and their impact on young children's language / literacy and socio-emotional competence. The findings consistently showed that, irrespective of socio-economic status, parents engaged with various learning activities (except reading) roughly equally. The socio-economic factors examined in this study, i.e., family income and maternal educational qualifications, were found to have a stronger effect on children's language / literacy than on social-emotional competence. Socio-economic disadvantage, lack of maternal educational qualifications in particular, remained powerful in influencing competencies in children aged 3 and at the start of primary school. For children in the first decade of this century in England, these findings have equity implications, especially as the socio-economic gap in our society widens.

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## Introduction

Numerous studies have established a link between poverty and children's cognitive abilities and social–emotional competence (eg, Dahl and Lochner, 2005; Gershoff et al, 2003; Mayer, 2002). While the size of the impact has been debated (Mayer, 1997), there is compelling evidence that increases in family income, particularly among poor families, have a positive impact on children (Gershoff, Aber, Raver and Lennon, 2007; Morris & Gennetian, 2003; Costello, Compton, Keeler, & Angold, 2003). In much literature, socio-economic risk factors generally are found to be more strongly associated with children's long-term cognitive and language than with their social – emotional outcomes (Aber, Jones, and Cohen, 2000; Duncan & Brooks- Gunn, 1997; Duncan, Yeung, Brooks-Gunn, & Smith, 1998), although links between poverty and children's behavioural outcomes have also been established (e.g., Dearing, McCartney, & Taylor, 2001). Impoverished learning environments are likely to impact on children's cognitive skills and language (Feinstein, 2003), whereas poverty that impacts on parenting practices and well-being is linked to behavioural difficulties in children as young as age 5 (Bor et al, 1997).

The effects of socio-economic disadvantage on children's development have been explained through parents' decisions about how to allocate a range of resources, eg, money, time, energy (investment model) (Foster et al, 2005).The amount of money parents spend on children (e.g., purchasing books, toys), and the time they spend with them in joint activities (e.g., reading books) are considered investments that have the potential to enhance children's cognitive skills and language (Gershoff et al, 2007) and emergent literacy (eg, Dickinson and Tabors, 2001). The investment model often explains the link between family income and children's cognitive and linguistic development, whereas the link between socio-economic disadvantage and children's behavioural functioning is explained through the impact of poverty on parental skills and capabilities (family stress model, see Foster et al, 2005), and has been found to be modest (Linver et al., 2002).

Studies have repeatedly shown that parental investment in the form of home learning is associated with children's early linguistic and cognitive development and emergent literacy (eg, Dickinson and Tabors, 2001), which are precursors to school success, especially in reading (Whitehurst et al, 1999). Literacy-rich environments where pre-school children have access to books and other print materials and parents engage with them in age-appropriate learning opportunities contribute positively to child literacy and language (Raz and Bryant, 1990), and emotional and behavioural regulation (Brinton et al, 1993). Beyond reading, parents engage their children in activities, such as reciting rhymes and songs (Baker, Serpell and Sonnensehein, 1995), telling stories (Watson, 2002), and teaching the alphabet, numbers, and letters (Parker, Boak, Griffin, Ripple and Peay, 1999).

Access to financial resources and services and the human capital accumulated through educational qualifications influence the ways in which parents interact with their children, the type of activities they promote and the attitudes, beliefs and values they express towards learning, as well as their views about child development and the capabilities they wish to develop in their children (Hoff et a1., 2002). Maternal educational qualifications are associated with access to financial resources (Duncan and Magusson, 2002) and human and cultural capital (Hoff et al, 2002). Moreover, children's literacy competence is strongly related to parents' education, with children of parents with reading difficulties being at a greater risk for literacy difficulties (National Institute for Literacy, 1997).

Despite much research on the benefits of parental involvement in home learning, ambiguity surrounds its effectiveness, especially with regard to learning activities such as homework, which directly relate to school (e.g., Dearing et al., 2006; Hill et al., 2004). Although parents' involvement with activities not directly related to school that promote children's overall intellectual development has been linked with school achievement (Dickinson and Tabors, 2001), assistance with homework does not always appear to have such benefits. Several studies of families from diverse backgrounds have revealed that parental involvement with homework is associated with poor performance in school (e.g., Cooper, Lindsay and Nye, 2000). This may be due to the fact that parental assistance with homework is often a reaction to children's low academic performance. Lack of definitive conclusions about the effectiveness of parental involvement with home learning however raises particular concerns, especially among low- income families in that home learning is the most frequent form of involvement for most parents (Ritblatt et al., 2002).

The ambiguity that surrounds the effectiveness of home learning (eg, Dearing et al, 2006) raises the need to examine the impact of parental involvement with various learning activities on their children's literacy and social competence in families from diverse backgrounds. The relationship between home learning and child social adjustment in particular has been relatively under researched in young children (Pomerantz et al., 2006). This has important implications considering that the effects of socio-economic disadvantage are stronger in early childhood (Yeung et al, 2002) and are linked to adjustment problems in later life (Tremblay, 2000). There is also little research on the impact of socio-economic factors and routine parental involvement with home learning on young children's language / literacy and social-emotional competence prior to and at the end of the first year at primary school, utilising a nationally representative sample. Examining parental involvement with home learning prior to and after a child starts formal schooling enables us to make a distinction between parental involvement (eg, homework support) as a response to children's school demands and a more proactive parental support to prepare children for formal schooling (eg, reading, rhymes signing) or simply enrich their life (eg, music). Finally, although the time parents spend with their children playing or doing homework has increased significantly over the years (Gershuny, 2000), we have little information about the number of parents from diverse socioeconomic groups and the frequency with which they engage with their pre-school children at the start of this century.

The purpose of this study was to examine the relationship between parents' socio-economic factors and home learning and at ages 3 and 5, and their impact on child language / literacy and socio-emotional competence at the end of the first year of primary school. Socio-economic indicators included family income and maternal educational qualifications in that family income can vary temporally, whereas maternal education is less varied over time (McLoyd, 1989). Also, for some families with income below the poverty line, parents with some educational qualifications may be more resourceful in making ends meet (Gershoff, 2003).

The research questions that guided this study were:

Are there any differences in the number of parents involved with their children in home learning prior to (age 3) and after the start of formal schooling (age 5) as a function of socio-economic factors (i.e., family income, maternal educational qualifications)?
What are the effects of socio-economic factors and the frequency of home learning (eg, homework, enrichment activities, emergent literacy activities) on children's language / literacy and social competence as measured by teachers at the end of the first year at school?
Are family income and maternal educational qualifications associated with a differential variation in children's language / literacy skills and social –emotional competence?

## Method

### Participants

The data for this study came from the Millennium Cohort Study (MCS), a national longitudinal birth cohort study, which offers a large-scale information about the 'New Century's Children' and their families. Its first sweep, carried out in 2001-2002, included a 'year long' cohort of around 19,000 children from ages 9-11 months. The second and third sweeps, from which data were used for this study, were carried out when the cohort child reached the ages of 3 and 5 respectively, achieving response rates of 78% and 79% of the target sample. The working sample used for this study consisted of 15,600 singleton cohort children (only one child from twin or triplet births was included). The parent interviews took place when the cohort child was 3 and 5 years old, and teacher questionnaire ratings were recorded at the end of the first school year. The MCS sample was clustered geographically by using electoral wards as a sampling frame. The sample design allowed for over-representation of families with high levels of child poverty, as well as a high proportion of families from minority ethnic backgrounds. The child poverty component of the Index of Deprivation 2000 provided an indicator of wards with high proportion of children in families receiving means-tested benefits (Hansen, 2008). To ensure that the study is representative, the data were weighted to account for over-representation, non-response in the recruitment of the original sample and sample attrition at ages 3 and 5. Full details about the origins and objectives of the Millennium Cohort Study can be obtained from the UK Data Archive at Essex University.

### Measures

Three sets of measures were utilized for this study: socio-economic, home learning and Foundation Stage Profile (FSP) measures. The socio-economic and home learning measures were obtained from face-to-face interviews with parents when their children were 3 and 5 years of age. FSP measures were obtained from teacher ratings of child performance at the end of reception year in England only. The FSP assessment framework includes teacher ratings of child social and academic progress based on continued observation during the first year of primary school collected by the Department for Children, Schools and Families. The MCS survey data were linked to FSP data taken during the academic year 2005-2006.

The socio-economic measures included: family income for which living below the poverty line was based on below the 60% of the national median income before housing cost; and maternal educational qualifications, ranging from no qualifications to qualifications at a degree (or vocational equivalent) level. Family income data were adjusted for age and the number of family members using the equivalence scales produced by the Organisation for Economic Co-operation and Development. Maternal educational qualifications were classified into five levels equivalent to the National Vocational Qualification (NVQ) scale (see Table 1).
[Table 1 goes here]

Home learning involved parental support with homework (i.e., help with reading and writing) and enrichment activities (i.e., bookreading, playing music, storytelling) at age 5, and emergent literacy activities (i.e., learning the alphabet, songs / rhymes, bookreading) at age 3. Home learning data were collected during parent interviews and the responses were rated using a Likert scale, ranging from 'every day' to 'not at all'.

For the FSP, teacher ratings of Personal, Social and Emotional (PSE) development and Communication, Language and Literacy (CLL) were obtained. PSE contains Dispositions and Attitudes; Social Development; Emotional Development, and CLL contains Language for Communication and Thinking; Linking Sounds and Letters; Reading; Writing. Each of these assessment scales has 9 points, with scores ranging between 3 and 27 for PSE and 4-36 for CLL (For PSE: M=21.11, SD=4.2; for CLL: M=25.36, SD=6.9; N=8407). The first 3 points describe a child who is still progressing towards the achievements described in the Early Learning Goals and guidance for the Foundation Stage (see DfEE/ Qualifications and Curriculum Authority, 2000). The next five points are drawn from the learning goals themselves and are presented in an approximate order of difficulty. The last point in each scale describes a child who has achieved all the points from 1-8 on that scale and has developed further and works consistently beyond the level of the early learning goals. Compared to standardised tests, FSP is thought to provide a more developmentally appropriate picture of social and academic progress within the school context for children of all abilities and children with English as an additional language (Qualifications and Curriculum Authority, 2000).

Results

A series of univariate analyses of variance (ANOVA) were conducted to examine the main and interaction effects of learning activities at ages 3 and 5 and socio-economic factors (i.e., family income, maternal educational qualifications) on child FSP-CLL and FSP-PSE. Descriptive statistics (eg, cross-tabs) provided information on the percentage of parents and the frequency with which they were involved in learning activities with their children. Chi-square tests examined the differences in the percentage of parents involved with home learning activities across different socio-economic groups.

Socioeconomic factors and parental involvement with home learning

In general, across socio-economic groups, small differences were found in the number of parents involved with their children in helping with homework (eg, writing); teaching the alphabet and songs/ rhymes; and telling stories and playing music. Across family income and educational qualifications groups, the number of parents involved with these learning activities was roughly equal (see Tables 2, 3, 4 in Appendix). Significant differences modest in size were found with regard to reading to child at ages 3 and 5, and helping with reading at 5, showing that a higher percentage of parents living above the poverty line (65.8% at 3; 54.1% and 61.2% at 5) and mothers educated at a degree level (78.8% at 3; 60.7% and 61.6% at 5) read to their children and helped with homework in reading every day, compared to the number of less well- off parents (45.4% at 3; 45.2% and 56.2% at 5) and mothers without any educational qualifications (33.1% at 3; 37.8% and 55% at 5).

Across socio-economic groups, over three quarters of parents engaged in learning activities with their children daily or several times a week, with a small number of parents engaging with home learning less frequently or not at all. These results were consistent with findings obtained from national surveys in the United States showing that about 70% of parents help their children at least once a week, regardless of parents' socioeconomic status, educational attainment, or ethnicity (U.S. Department of Education, 2006). Activities such as book reading and learning songs/ rhymes, directly related to school, were found to be popular in that over a half of all parents read daily to their children, ages 3 and 5, and helped them with reading homework at age 5 (a very small percentage of parents engaged with reading less often / not at all).

The impact of socio-economic factors and home learning on child outcomes

The impact of family income, maternal educational qualifications and home learning on FSP measures of CLL and PSE was examined. Specifically, univariate analyses revealed the main effects for family income, maternal educational qualifications and the frequency of home learning (Tables 5, 6), as well as their interaction effects (i.e., family income x home learning; educational qualifications x home learning) on five year olds' CLL and PSE (Tables 7, 8, 9 in Appendix). Consistently, across different types of learning activities at ages 3 and 5, the interaction effects between the socio-economic factors and the frequency of home learning on FSP CLL and PSE were nonsignificant. This finding indicates that the impact of family income and maternal educational qualifications on

child language /literacy and social outcomes was not affected by the frequency with which parents supported their children's learning activities at ages 3 and 5.

[Table 5 goes somewhere here]

The main effects for the frequency of home learning on child outcomes were found to be nonsignificant for all learning activities except reading at ages 3 and 5 and homework support with reading at 5 (Tables 5). These results showed that children's language / literacy and social / emotional development were not affected by the frequency of home learning activities such as help with alphabet and writing, singing songs/ rhymes, telling stories and playing music. Whether parents engaged daily or once/ twice a week with these activities did not make any substantive difference in their children's CLL and PSE measures. In contrast, the frequency with which parents read to their children and supported them with reading homework was found to exert a modest effect on CLL and a weak/modest effect on PSE.

Significant socio-economic main effects on FSP CLL and PSE were found (Table 6). Children of families living below the poverty line were rated by their teachers significantly lower in CLL and PSE than their peers in economically better -off families (d= .57 –moderate effect for CLL; d=.45 –modest effect for PSE). Moreover, children of educated mothers significantly outperformed their peers whose mothers had no educational qualifications in CLL and PSE. Group comparisons between mothers with educational qualifications at a degree level (i.e., NVQ5) and those without yielded significant moderate effects on PSE (d=.70) and strong effects on CLL (d=1.08). The results consistently showed that family income and, especially maternal educational qualifications, had a substantial impact on children's scores in language / literacy and social /emotional development. Their impact was differential in that family income yielded a moderate effect on CLL and a modest effect on PSE, whereas maternal educational qualifications had a strong effect on CLL and a moderate on PSE.
[put Table 6 goes somewhere here]

The findings from this study paint an interesting picture. Irrespective of socio-economic status, a roughly equal number of parents were frequently involved with their children in various learning activities (except reading). Despite the involvement of a high percentage of parents from diverse socio-economic groups with activities directly related to school (eg, learning the alphabet, writing), children's literacy and social outcomes at the end of the first school year were differentiated by parents' socio-economic status. Moreover, the frequency of home learning (i.e., every day, several times a week, once or twice a week) was not found to influence children's language /literacy and social outcomes. On the one hand, parents' socioeconomic status did not influence parental support with children's learning and, on the other hand, socio-economic risk factors were shown to have a moderate to strong impact on children's language, literacy and social development. These results offer evidence for the existence of a wide socio-economic gap in children's literacy and social outcomes, and this gap was independent of the frequency of home-based learning.

## Discussion

Parental involvement with children's learning is thought as one pathway through which socio-economic risk factors influence child competencies (Foster et al, 2005). This study investigated the relationship between parents' socio-economic status and home learning and their effects on child language /literacy and social development.

### Does family's social background matter?

Consistently with previous research, family income and maternal educational qualifications yielded modest to moderate effects on social adjustment and moderate to strong effects on language / literacy (eg, George, Hansen and Schoon, 2007; Yeung et al., 2002). Specifically, children with educated parents (degree level or vocational equivalent) were on average about 6 months ahead in language/ literacy compared to their peers whose parents did not have any educational qualifications. These findings agree with those from previous analyses of the Millennium Cohort Study, which indicated that three year olds in families experiencing socio-economic disadvantage were less likely to display advanced cognitive skills and had higher risks for externalising and internalising behaviour difficulties (Kiernan and Huerta, 2008).

The socio-economic risk factors were found to have a stronger effect on children's language / literacy than on social competence, suggesting that their influence is specific to child competencies (eg, Duncan and Brooks-Gunn, 1997; Yeung et al, 2002). Moreover, the socio-economic factors exerted a differential effect. For language / literacy, income had a moderate effect whereas maternal educational qualifications yielded a strong effect. A similar pattern was found regarding social competence, with income and educational qualifications yielding a modest and a moderate effect, respectively.

The distinction between family income and maternal educational qualifications is critical because their relationship is not monotonic. Although families with educated mothers are more likely to be of a higher income, in poor families, mothers with some educational qualifications may be more resourceful in accessing support and services as well as cognitively stimulating materials that benefit their children. Income has been found to make modest / moderate contributions to child outcomes in that much of its influence is through parents' investment in educational resources and services (Linver et al., 2002; Yeung et al., 2002). Mothers with fewer years of education may be less likely to access educational services effectively. Moreover, increases in family income, particularly among poor families, can have a positive impact on child development (Gershoff et al, 2007). However, income alone is not enough to reduce socio-economic inequalities in children's literacy and social skills development. Supporting the development of parents' capabilities through access to education and training is crucial.

### Can routine home learning counteract inequality?

The findings consistently showed that parents from diverse socio-economic groups engaged equally frequently in various learning activities with their children (eg, learning the alphabet, writing) except reading. Differences in the frequency of book reading showed that, compared to well-off families, a lower percentage of mothers with no educational qualifications and mothers living below the poverty line read to their children frequently, having a negative impact on their literacy. Mothers with fewer years of education have been found to read to their children less frequently (Raikes et al., 2006) and use less sophisticated language and literacy skills themselves (Rowe, Pan, & Ayoub, 2005), which can affect the quantity and quality of their verbal interactions with their children (Hoff, 2003).

The differences in children's participation in reading may contribute modestly to the disparities seen in their language /literacy scores in socio-economically diverse families. Reading has been found to be an important determinant of language and emergent literacy in that it enhances children's language comprehension and expressive language skills (Whitehurst et al, 1991). In contrast to learning activities such as learning the alphabet / rhymes, writing or telling stories, which are thought to promote language and school readiness, in this study, participation in reading was found to have a modest impact on chid literacy. Shared reading, the prototypical aspect of home literacy, provides a developmentally sensitive context for children to facilitate the development of vocabulary, phonemic skills, print concept knowledge and positive attitudes to literacy (Dickinson & Tabors, 2001; Rodriguez et al, 2009). The association between reading and positive child literacy outcomes may suggest a specific influence of reading alone, perhaps because reading serves as a platform where a range of skills such as phonics, oral language, listening comprehension are brought together and practised with contextual support.

Over the last three decades, parents have become increasingly involved with their children's learning, indicating a wider trend in parenting culture (Gershuny, 2000). In considering the large number of parents who, irrespective of social status, were involved with home learning daily or at least once a week, the findings from this study confirmed this trend. However, apart from book reading whose effect was modest in size, the frequency of home learning did not affect young children's literacy and social competences. These findings suggest that what parents from diverse socio-economic groups routinely do with their children did not reduce inequality in children's language /literacy and social development. Socio-economic disadvantage, lack of maternal educational qualifications in particular, remained powerful in influencing child competencies at the start of primary school.

In much research, parental involvement with home learning is thought to make a positive contribution to child development by enhancing skills such as organisation, planning and monitoring and language that are conducive to learning, as well as motivation towards learning by developing academic interests and making connections between curriculum subjects and everyday experiences (eg, Hoff et al, 2002). However, its effectiveness depends on the 'how' and 'under what socio-economic circumstances' parents support their children's learning, which in turn are affected by parents' monetary and

nonmonetary capacity to invest in services and educational resources and, most crucially, the human capital generated through parental education and its influence on parental behaviour and parenting practices. Educated parents are likely to interact with their children in different ways and may be more resilient and resourceful when dealing with economic adversity.

As the findings from this study suggest, frequent parental involvement with home learning alone cannot counteract the impact of the socio-economic gap on child outcomes. To approach parental involvement as the panacea for making up for the effects of socio-economic inequality is overly simplistic and potentially misleading. Offering an idealized construction of parenthood in which what parents do with their children, regardless of their socio-economic circumstances, is a key determinant to their educational advancement and social-emotional wellbeing shifts the debate from supporting parents accessing genuine educational and training opportunities to moralizing about them by holding them responsible for their children's academic and social difficulties. Finally, the rhetoric of parental involvement may replace debates on the consequences of social inequality, lack of social mobility and the widening socio-economic gap for child development.

The strengths of this study lie in its use of a population-based, nationally representative sample which enabled replication of other studies with fairly small samples to explore the impact of parents' socio-economic status and home learning on child development at the start of this century. Also, this study involved longitudinal rather than cross-sectional measures to examine parental involvement with home learning at ages 3 and 5, exploring both parental involvement as a response to school demands and as a proactive act towards enhancing school readiness and enriching children's life.

A limitation of this study was the reliance on parent reports to obtain measures regarding the frequency of home learning and parents' socio—economic indicators due to the potential parent bias and also the independence of data. However, the measures of child language /literacy (i.e., CLL) and social-emotional competencies (i.e., PSE) were based on objective assessments via teacher ratings within the FSP assessment framework. Also, home learning was defined in terms of frequency and not actual time spent with children, though frequency offers a measure of a consistent participation in routine literacy activities. Due to small numbers of non-involved parents (i.e., parents who rated their involvement as 'less often' or 'not at all'), comparisons between involved and non-involved parents with regard to various learning activities were not possible. Finally, future research is needed to explore parent-child dynamics likely to facilitate or hinder the benefits of home learning at a micro family level, and shed light on the 'how' parents support young children's learning at home.

## Conclusions and implications

The findings from this study confirm what Hills and colleagues found in their report on social inequality, that family's social background matters for children's linguistic, literacy and social outcomes (2010). Despite that most parents from diverse backgrounds

invested frequently in home learning, children living in poverty and children of mothers without any educational qualifications fared less well in language / literacy and social development, compared to their peers in educationally and economically well-off families. Frequent home learning alone cannot iron out the effects of the socio-economic gap on young children's development in that, in this study, parents' frequency of involvement with home learning did not appear to compensate for the disadvantage stemming from the family's social background at school entry. However, the effects of home learning on child literacy and social development may take time to materialise into observable outcomes. For example, in a study by Reynolds, Mavrogenes, Bezruczko and Hagemann, parental involvement with supporting children's learning at ages 3 and 4 was found to significantly associate with higher reading and maths achievement at age 12 (2008). Moreover, rather than having a direct impact on certain academic areas, home learning may stimulate more generalised and motivational experiences in children in terms of internalising the value of learning and parental expectations regarding academic success and becoming aware of the links between learning at home and learning at school (Melhuish et al, 2008).

The efficacy of home learning is likely to be affected by parents' capacity to invest into financial and intellectual resources and maximise their human capital through education. What makes home learning effective is how well equipped parents are, educationally and financially, to maximise the learning experiences for their children. In families experiencing socio-economic disadvantage, the effectiveness of home learning and the educational experiences generated through it may be compromised due to a limited access to educational resources and services. These findings have a particular resonance in the current climate of economic downturn in that these trends may not be reversed in the second decade of this century.

Interventions designed to support parental involvement must however begin by building on families' strengths and, in so doing, account for the diversity inherent in the ways in which parents interact with their children. Interventions at a family level, especially for poor families, should be multi-layered in that along with increases in family income it is crucial to: enhance family literacy by supporting mothers in particular to access educational opportunities and maximize their human and financial capital; provide children with cognitively stimulating materials and activities; and support parents to engage with literacy-based (eg, reading) and enrichment activities (eg, museum visits, music) effectively. The effectiveness of family literacy can be strengthened by emphasising the 'how' parents support children's learning and social development across diverse socio-economic groups. Although frequent parental involvement with home learning can turn learning into a routine activity, the quality of parent-child interactions and the closeness between home and school cultures play a significant part in making home learning effective. Family literacy programmes should have a wider remit in terms of supporting families to extend their human capital (for example, through education) rather than solely focusing on supporting parents to transmit specific literacy or numeracy skills to their children. Most crucially, family literacy need to account for the changing face of poverty and the complexity of needs faced by families living in poverty considering that it is the specifics of poverty that influence child outcomes. Such family programmes may be more effective than interventions that focus solely on parenting

skills in making a long lasting contribution to supporting young children's competencies at school entry and beyond.

Endnotes:

1. Due to large sample sizes, a number of chi-square analyses were statistically significant; however, the effects sizes (Crammer's V) were weak with the exception of some analyses, i.e., Reading at 3 and 5 and Reading Homework at 5, for which the effect sizes were modest.
2. In Tables 2, 3, 4, horizontally, the percentages of parents involved with learning activities do not add to 100 because the very small percentage of parents who rated the frequency of involvement with home learning as 'not at all' was not included.

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Appendix

Table 1 Frequencies for Family Income (FI) and Educational Qualifications (EQ)

| | Second Survey (age 3) | Third Survey (age 5) |
|---|---|---|
| FI: | | |
| Above 60% median | 61.7 | 64.1 |
| Below 60% median | 24.2 | 26.8 |
| Missing | 14 | 9.1 |
| EQ: | | |
| NVQ1 | 7.5 | 7.1 |
| NVQ2 | 28.6 | 27.4 |
| NVQ3 | 15.4 | 15.4 |
| NVQ4 | 31.4 | 29.5 |
| NVQ5 | 4.3 | 8.5 |
| None | 10.4 | 9.7 |

N= 12204

Note: In the second and third surveys, 2.5% and 2.4% have oversees qualifications.

Table 2 % of parents across Family Income (FI) and Educational Qualifications (EQ) groups involved in home learning with children aged 3

| | Reading | | | Alphabet | | | Songs/ Rhymes | | |
|---|---|---|---|---|---|---|---|---|---|
| | Every day | Once/ Several times a week | Less often | Every day | Once/ Several times a week | Less often | Every day | Once/ Several times a week | Less often |
| FI: | | | | | | | | | |
| Above 60% | 65.8 | 30 | 3 | 24.8 | 59.7 | 15.5 | 58 | 38.5 | 3.5 |
| Below 60% | 45.4 | 41.6 | 7.5 | 23.7 | 61.9 | 14.4 | 53.2 | 42.2 | 4.6 |
| EQ: | | | | | | | | | |
| NVQ1 | 44.1 | 44.1 | 8.5 | 25 | 61.2 | 14.8 | 54.2 | 41.5 | 4.3 |
| NVQ2 | 54.5 | 38.7 | 5.1 | 23.6 | 60.2 | 16.2 | 55.8 | 39.8 | 4.4 |
| NVQ3 | 63.4 | 31.8 | 4 | 25 | 60.5 | 14.4 | 58.6 | 38.3 | 3.2 |
| NVQ4 | 72.9 | 25.1 | 1.6 | 25.2 | 59.7 | 15.1 | 60.1 | 36.8 | 3.2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NVQ5 | 78.8 | 19.4 | 1.5 | 22.2 | 59.9 | 17.8 | 56.5 | 40.4 | 3.1 |
| None | 33.1 | 44.6 | 9 | 22.4 | 63.1 | 14.4 | 47.3 | 47.5 | 5.1 |

N= 11426 -13110 (R); N= 9203- 10587 (A); N= 10930 -12499 (S/R)
Note: chi-square statistics for:
Reading: $X^2$ (10)=7.80* V=.102 for FI; $X^2$ (30)=1.86*, V=.123 for EQ
Alphabet: $X^2$ (12)=18.24,n.s. for FI; $X^2$ (36)=48.2, n.s. for EQ
Song/Rhymes: $X^2$ (12)=72.28**, V=.05 for FI; $X^2$ (36)=1.66**, V=.04 for EQ

Table 3 % of parents across Family Income (FI) and Educational Qualifications (EQ) groups involved in home learning with children aged 5

| | Read | | | Tell stories | | | Music | | |
|---|---|---|---|---|---|---|---|---|---|
| | Every day | Once/ Several times a week | Less often | Every day | Once/ Several times a week | Less often | Every day | Once/ Several times a week | Less often |
| FI: | | | | | | | | | |
| Above 60% | 54.1 | 41.9 | 2.3 | 12.1 | 43.8 | 17.7 | 35.9 | 51.4 | 5.2 |
| Below 60% | 45.2 | 45.9 | 3.5 | 14.9 | 43.0 | 12.6 | 40.6 | 44.4 | 9.8 |
| EQ: | | | | | | | | | |
| NVQ1 | 43.3 | 49.8 | 3.1 | 10.6 | 41.3 | 14.8 | 36.5 | 49.0 | 6.6 |
| NVQ2 | 47.4 | 46.9 | 3.4 | 12.5 | 42.4 | 15 | 38.3 | 49.5 | 6.3 |
| NVQ3 | 52.4 | 52.9 | 2.9 | 14.7 | 44.4 | 15 | 39.2 | 48.1 | 6.7 |
| NVQ4 | 59.6 | 38.2 | 1.5 | 13.1 | 45.1 | 18.6 | 36.6 | 51.3 | 7.4 |
| NVQ5 | 60.7 | 35.7 | 2.1 | 15.1 | 46.6 | 17.1 | 37.1 | 50.5 | 7.3 |
| None | 37.8 | 46.4 | 3.5 | 13.8 | 40.0 | 12.4 | 35.4 | 42.3 | 6 |

N=10747- 14685 (R ); N=11382-14682 (TS); N=10746-14682 (M)
**p<.01
Note: chi-square statistics for:
Reading: $X^2$ (10)=3.18*, V=.102 for FI; $X^2$ (30)=1.11*, V=.121 for EQ
Telling Stories: $X^2$ (10)=1.49*, V=.07 for FI; $X^2$ (30)=3.18*, V=.06 for EQ
Music: $X^2$ (10)=2.64**, V=.09 for FI; $X^2$ (30)=5.73**, V=.08 for EQ

Table 4 % of parents across Family Income (FI) and Educational Qualifications (EQ) groups helping children aged 5 with homework

| | Help with Reading | | | Help with Writing | | |
|---|---|---|---|---|---|---|
| | Every day | Once/ Several | Less often | Every day | Once/ Several | Less often |

| | | times a week | | | times a week | |
|---|---|---|---|---|---|---|
| FI: | | | | | | |
| Above 60% | 61.2 | 38.2 | .4 | 30.4 | 65.8 | 2.4 |
| Below 60% | 56.2 | 22.7 | .6 | 38.1 | 58.6 | 2.1 |
| EQ: | | | | | | |
| NVQ1 | 52.7 | 46.5 | .6 | 33.2 | 62.8 | 1.8 |
| NVQ2 | 58.9 | 40.4 | .3 | 34.5 | 61.9 | 2.0 |
| NVQ3 | 62.2 | 37.1 | .6 | 37.1 | 59.5 | 2.2 |
| NVQ4 | 63.2 | 36.4 | .3 | 28.9 | 67.3 | 2.5 |
| NVQ5 | 61.6 | 38.4 | .6 | 31.7 | 63 | 3.7 |
| None | 55 | 43.7 | .8 | 37 | 60 | 1.7 |

N=10388-14161 (R); N=9748-12869 (W)
Note: chi-square statistics for:
Reading: $X^2$ (10)=1.43*, V=.07 for FI; $X^2$ (30)=2.36*, V=.05 for EQ
Writing: $X^2$ (10)=94.21, V=.05 for FI; $X^2$ (30)=95.48, V=.03 for EQ

Table 5 M, SD, F for Reading Main Effects on CLL and PSE

| | | Every day M(SD) | Several times a week M(SD) | Once or twice a week M(SD) | F, P | Cohen's d |
|---|---|---|---|---|---|---|
| CLL | R(5) | 25.66 (6.9) | 24.54 (7.0) | 23.57 (6.8) | 50.65*** | .30 |
| | R (3) | 26.35 (6.6) | 24.50 (6.9) | 22.92 (7.1) | 138.83*** | .50 |
| | R (Hwk) | 25.44 (6.9) | 24.81 (6.9) | 22.13 (7.0) | 88.85*** | .47 |
| PSE | R (5) | 21.16 (4.2) | 20.73 (4.3) | 20.43 (4.3) | 16.97*** | .17 |
| | R (3) | 21.55 (4.0) | 20.69 (4.4) | 20.06 (4.5) | 66.61*** | .34 |
| | R (Hwk) | 21.11 (4.2) | 20.82 (4.3) | 19.86 (4.5) | 32.90*** | .28 |

N= 7095-8398
***p<.000
Note$_1$: R(3), R(5) =reading to child at age 3 and 5; R(Hwk)= help with homework reading at 5
Note$_2$: Cohen's d effect size for pair-wise comparisons (every day v once/twice a week)
Note$_3$: The main effects for the following learning activities were nonsignificant: Alphabet (A): F=5.3 (FI x A) and F=2.5 (EQ x A); Songs/ Rhymes (S/R): F=12.22 (FI x S/R) and F=3.45 (EQ x S/R); Telling Stories (TS): F=.176 (FIxTS) and F=.279 (EQ x TS); Music (M): F=2.75 (FI x M) and F=1.02 (EQ x M).

Table 6 M, SD and F for Socio-economic Main Effects on PSE and CLL

| | PSE<br>M (SD) | F,<br>Cohen's d | CLL<br>M (SD) | F,<br>Cohen's d |
|---|---|---|---|---|
| EQ: | | 88.19***,<br>.709 | | 171.34***,<br>1.08 |
| NVQ 1 (712) | 19.70 (4.76) | | 22.38 (7.28) | |
| NVQ 2 (2472) | 20.56 (4.33) | | 24.33 (6.98) | |
| NVQ 3 (1170) | 21.10 (4.05) | | 25.37 (6.59) | |
| NVQ 4 (2205) | 22.04 (3.90) | | 27.28 (6.21) | |
| NVQ 5 (625) | 22.09 (4.04) | | 27.76 (5.97) | |
| None (1171) | 18.99 (4.67) | | 20.61 (7.22) | |
| | | | | |
| FI: | | 185.92***,<br>.452 | | 305.19***,<br>.574 |
| Above 60 % median | 21.54 (4.10) | | 26.25 (6.64) | |
| Below 60 % median | 19.57 (4.60) | | 22.26 (7.24) | |

N=8670-8671

***p<.000

Note: Cohen's d effect size for pair-wise comparisons (NVQ5 v None)

Table 7 M, SD and F for Interaction Effects (Socioeconomic x Activities at 3) on CLL and PSE

| | | CLL | | | PSE | | |
|---|---|---|---|---|---|---|---|
| | | Every day<br>M(SD) | Several times a week<br>M(SD) | Once or twice a week<br>M(SD) | Every day<br>M(SD) | Several times a week<br>M(SD) | Once or twice a week<br>M(SD) |
| F I: | | | | | | | |
| Above 60% median | R | 27.48 (6.1) | 25.82 (6.5) | 24.23 (6.5) | 22.10 (3.8) | 21.46 (4.0) | 20.73 (4.2) |
| | A | 27.55 (6.3) | 27.41 (6.2) | 26.09 (6.5) | 21.99 (3.9) | 22.01 (3.8) | 21.52 (4.0) |
| | S/R | 27.00 (6.2) | 25.97 (7.3) | 26.01 (6.3) | 21.95 (3.8) | 21.36 (4.1) | 21.68 (4.0) |
| Below 60% median | R | 23.33 (7.0) | 22.42 (6.8) | 21.85 (7.3) | 20.11 (4.2) | 19.34 (4.5) | 19.52 (4.7) |
| | A | 22.85 (7.0) | 23.55 (6.5) | 22.69 (7.0) | 19.49 (4.8) | 20.39 (3.9) | 19.90 (4.4) |
| | S/R | 23.37 (7.2) | 22.23 (6.9) | 21.48 (7.1) | 20.13 (4.2) | 20.21 (4.4) | 19.37 (4.7) |
| EQ: | | | | | | | |
| NVQ1 | R | 23.69 (7.2) | 23.16 (7.1) | 21.56 (7.5) | 20.32 (4.2) | 19.96 (4.9) | 19.23 (5.1) |
| | A | 23.07 (7.6) | 24.46 (6.3) | 22.88 (7.1) | 19.64 (4.6) | 29.22 (4.4) | 20.03 (4.5) |
| | S/R | 23.86 (7.0) | 22.50 (7.8) | 20.84 (6.6) | 20.50 (4.2) | 20.79 (4.6) | 18.68 (4.8) |
| NVQ2 | R | 25.74 (6.7) | 24.25 (6.5) | 23.72 (6.7) | 21.21 (4.1) | 20.55 (4.1) | 20.27 (4.2) |
| | A | 25.14 (7.1) | 26.23 (6.5) | 24.66 (7.0) | 20.76 (4.5) | 21.34 (4.0) | 20.68 (4.3) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | S/R | 25.21 (6.6) | 24.80 (6.9) | 23.89 (7.0) | 20.95 (4.1) | 20.75 (4.0) | 20.40 (4.4) |
| NVQ3 | R | 26.43 (6.4) | 24.95 (6.6) | 23.07 (6.5) | 21.58 (3.9) | 21.00 (4.2) | 20.33 (4.0) |
| | A | 26.92 (6.4) | 26.91 (7.2) | 25.24 (6.4) | 21.58 (3.9) | 21.90 (4.3) | 21.0 (4.0) |
| | S/R | 26.13 (6.5) | 25.80 (6.9) | 25.12 (6.4) | 21.50 (4.0) | 21.21 (3.7) | 21.54 (3.6) |
| NVQ4 | R | 28.09 (5.6) | 26.47 (6.6) | 25.31 (6.8) | 22.40 (3.6) | 21.69 (4.2) | 21.16 (4.1) |
| | A | 28.98 (5.4) | 27.76 (5.7) | 26.94 (6.0) | 23.18 (3.0) | 22.24 (3.6) | 21.99 (3.7) |
| | S/R | 28.08 (5.6) | 26.95 (6.4) | 26.54 (6.0) | 22.39 (3.6) | 21.57 (4.3) | 22.03 (3.7) |
| NVQ5 | R | 29.20 (5.0) | 27.24 (6.6) | 28.88 (4.1) | 22.82 (3.5) | 22.45 (3.7) | 22.62 (3.2) |
| | A | 29.80 (5.4) | 28.70 (4.5) | 28.79 (5.0) | 22.0 (3.0) | 22.48 (2.9) | 22.89 (3.6) |
| | S/R | 28.98 (5.3) | 28.30 (4.8) | 30.08 (5.6) | 22.52 (3.8) | 23.92 (3.1) | 23.50 (3.0) |
| None | R | 21.76 (7.0) | 20.92 (6.8) | 21.25 (6.8) | 19.54 (4.4) | 18.98 (4.6) | 19.26 (4.5) |
| | A | 21.65 (7.7) | 22.46 (6.1) | 21.23 (7.0) | 19.38 (4.9) | 20.12 (4.0) | 19.54 (4.4) |
| | S/R | 21.78 (7.2) | 21.33 (7.3) | 20.50 (6.4) | 21.33 (4.1) | 19.94 (4.7) | 19.22 (4.4) |

N= 6798-7095 (R); N=6944 –7259 (S/R); N= 6108-6398 (A)

Note: $F_{interaction}$ = Family Income (FI) / Educational Qualifications (EQ) x Reading (R) or Alphabet (A) or Song/Rhymes (S/R)

CLL: For FI x Activity interaction: $F_R$=4.2; $F_A$=1.26; $F_{S/R}$=2.64 and for EQ x Activity: $F_R$=2.04; $F_A$=1.12; $F_{S/R}$=1.07

PSE: For FI x Activity interaction: $F_R$=2.43; $F_A$=1.36; $F_{S/R}$=1.60 and EQ x Activity: $F_R$=.708; $F_A$=1.02;$F_{S/R}$=1.24

Table 8 M, SD and F for Interaction Effects (Socioeconomic x Activities at 5) on CLL and PSE

| | | CLL | | | PSE | | |
|---|---|---|---|---|---|---|---|
| | | Every day M(SD) | Several times a week M(SD) | Once or twice a week M(SD) | Every day M(SD) | Several times a week M(SD) | Once or twice a week M(SD) |
| FI: | | | | | | | |
| Above 60% median | R | 27.00 (6.3) | 25.92 (6.6) | 25.14 (6.4) | 21.88 (3.9) | 21.40 (4.1) | 21.13 (4.0) |
| | TS | 26.05 (6.5) | 26.38 (6.6) | 26.32 (6.6) | 21.47 (3.8) | 21.55 (4.0) | 21.61 (4.0) |
| | M | 26.33 (6.7) | 26.36 (6.3) | 26.66 (6.2) | 21.55 (4.2) | 21.67 (3.8) | 21.72 (3.7) |
| Below 60% median | R | 22.99 (7.3) | 22.03 (7.0) | 21.76 (6.9) | 19.69 (4.5) | 19.47 (4.6) | 19.67 (4.3) |
| | TS | 22.77 (7.1) | 22.37 (7.0) | 22.40 (6.8) | 19.80 (4.5) | 19.72 (4.4) | 19.82 (4.3) |
| | M | 22.21 (7.1) | 23.05 (7.1) | 22.37 (7.1) | 19.51 (4.6) | 19.97 (4.5) | 19.66 (4.4) |
| EQ: | | | | | | | |
| | R | 23.01 (7.4) | 22.32 (6.9) | 22.49 (6.4) | 19.61 (4.8) | 19.93 (4.6) | 19.97 (4.1) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| NVQ1 | | | | | | | |
| | TSM | 22.56 (7.0) | 22.19 (7.0) | 22.38 (6.5) | 19.47 (5.0) | 19.02 (4.6) | 20.44 (3.8) |
| | | 22.12 (7.0) | 23.64 (6.4) | 22.27 (7.5) | 19.43 (4.6) | 20.34 (4.1) | 19.82 (4.8) |
| NVQ2 | R | 25.00 (6.8) | 24.09 (6.9) | 23.64 (6.7) | 20.80 (4.2) | 20.45 (4.4) | 20.49 (4.2) |
| | TSM | 23.62 (7.0) | 23.91 (7.2) | 24.77 (7.0) | 20.24 (4.2) | 20.30 (4.3) | 20.77 (4.2) |
| | | 24.00 (7.1) | 24.98 (6.6) | 24.83 (6.6) | 20.27 (4.5) | 20.98 (4.1) | 20.87 (3.9) |
| NVQ3 | R | 25.88 (6.5) | 25.08 (6.5) | 24.62 (6.2) | 21.23 (4.1) | 21.07 (3.7) | 20.97 (3.8) |
| | TSM | 24.78 (7.1) | 25.64 (6.4) | 25.27 (6.4) | 20.97 (4.0) | 21.32 (3.8) | 20.94 (4.2) |
| | | 25.53 (6.6) | 25.09 (6.4) | 25.63 (6.2) | 21.40 (3.9) | 20.96 (4.1) | 20.97 (3.9) |
| NVQ4 | R | 27.82 (5.9) | 26.99 (6.2) | 25.93 (6.6) | 22.28 (3.8) | 21.84 (3.9) | 21.61 (3.9) |
| | TSM | 26.72 (6.3) | 27.31 (6.0) | 27.17 (6.1) | 21.87 (4.0) | 22.09 (3.8) | 22.11 (3.7) |
| | | 27.01 (6.3) | 27.64 (5.1) | 27.62 (5.8) | 21.83 (4.1) | 22.27 (3.6) | 22.20 (3.6) |
| NVQ5 | R | 28.25 (5.8) | 27.33 (6.1) | 27.17 (5.3) | 22.28 (3.7) | 22.16 (4.0) | 21.81 (4.1) |
| | TSM | 28.75 (5.3) | 27.40 (5.9) | 28.08 (6.0) | 22.00 (3.4) | 21.85 (4.3) | 22.31 (3.7) |
| | | 28.05 (5.9) | 27.65 (5.8) | 27.67 (5.9) | 22.20 (3.8) | 22.03 (3.9) | 22.21 (3.4) |
| None | R | 21.31 (7.3) | 20.51 (7.2) | 20.46 (6.5) | 19.30 (4.6) | 18.79 (4.7) | 18.99 (4.5) |
| | TSM | 21.64 (6.7) | 21.36 (6.9) | 20.43 (7.1) | 19.41 (4.2) | 19.41 (4.2) | 19.41 (4.2) |
| | | 20.96 (7.5) | 20.47 (7.2) | 20.86 (7.0) | 19.30 (4.6) | 18.82 (4.9) | 19.01 (4.4) |

N= 7962-7978 (R); N=4476- 4487 (TS); N=7123 -7135 (M)

***P<.000

Note: $F_{interaction}$ = Family Income (FI) / Educational Qualifications (EQ) x Reading or Telling Stories or Music

CLL: For FI x Activity interaction: $F_R$=.756; $F_{TS}$=.556; $F_M$=1.85 and EQ x Activity: $F_R$=.73; $F_{TS}$=1.24; $F_M$=1.30

PSE: For FI x Activity interaction: $F_R$=2.1; $F_{TS}$=.51; $F_M$=1.16 and EQ x Activity: $F_R$=.063;
$F_{TS}$=1.18; $F_M$=1.80

Table 9 M, SD and F for Interaction Effects (Socioeconomic x Homework) on CLL and PSE

| | | CLL | | | PSE | | |
|---|---|---|---|---|---|---|---|
| | | Every day M(SD) | Several times a week M(SD) | Once or twice a week M(SD) | Every day M(SD) | Several times a week M(SD) | Once or twice a week M(SD) |
| FI: | | | | | | | |
| Above 60% median | R | 26.79 (6.4) | 26.27 (6.4) | 23.81 (6.7) | 21.77 (3.9) | 21.55 (4.0) | 20.74 (4.2) |
| | W | 26.65 (6.5) | 26.88 (6.3) | 26.00 (6.4) | 21.68 (4.0) | 21.88 (3.9) | 21.44 (3.9) |
| Below 60% median | R | 22.94 (7.2) | 22.41 (6.9) | 20.54 (6.7) | 19.82 (4.5) | 19.63 (4.4) | 19.11 (4.4) |
| | W | 22.93 (7.2) | 22.83 (6.8) | 21.61 (7.0) | 19.92 (4.5) | 19.82 (4.3) | 19.37 (4.6) |

| EQ: | | | | | | | |
|---|---|---|---|---|---|---|---|
| NVQ1 | R | 22.87 (7.0) | 22.62 (7.3) | 21.48 (6.8) | 19.75 (4.4) | 20.00 (4.9) | 19.58 (4.5) |
| | W | 22.24 (7.03) | 23.16 (7.08) | 21.90 (7.01) | 19.49 (4.7) | 20.22 (4.4) | 19.65 (4.4) |
| NVQ2 | R | 25.15 (6.8) | 24.09 (6.8) | 21.87 (6.6) | 20.98 (4.1) | 20.37 (4.3) | 19.68 (4.2) |
| | W | 25.27 (6.9) | 24.54 (6.8) | 24.19 (6.7) | 20.94 (4.1) | 20.63 (4.2) | 20.63 (4.2) |
| NVQ3 | R | 25.87 (6.5) | 25.26 (9.2) | 24.00 (6.9) | 21.29 (4.0) | 21.00 (4.0) | 20.99 (3.6) |
| | W | 25.83 (6.6) | 25.79 (6.1) | 25.13 (6.8) | 21.27 (4.1) | 21.33 (3.8) | 20.93 (4.0) |
| NVQ4 | R | 27.67 (6.1) | 27.24 (6.0) | 24.89 (6.5) | 22.16 (3.8) | 22.04 (3.7) | 21.35 (4.2) |
| | W | 27.53 (6.0) | 27.91 (5.9) | 27.03 (6.0) | 22.28 (3.7) | 22.32 (3.7) | 21.91 (3.7) |
| NVQ5 | R | 28.11 (5.7) | 27.97 (5.9) | 25.45 (5.2) | 22.24 (3.8) | 22.24 (3.8) | 21.33 (3.6) |
| | W | 28.42 (5.4) | 27.93 (6.1) | 27.56 (5.7) | 22.18 (4.2) | 22.22 (3.8) | 22.18 (3.7) |
| None | R | 21.32 (7.2) | 20.98 (6.8) | 19.34 (6.7) | 19.39 (4.5) | 19.01(4.3) | 18.39 (4.8) |
| | W | 21.58 (7.2) | 21.29 (7.0) | 20.01 (6.7) | 19.51 (4.7) | 19.31 (4.4) | 18.69 (4.5) |

N= 7480- 7497 (W); N=8380-8398 (R)

***P<.000

Note: $F_{interaction}$ = Family Income (FI) / Educational Qualifications (EQ) x Reading or Writing

CLL: For FI x Activity interaction: $F_R$=1.81; $F_W$=2.17 and EQ x Activity: $F_R$=1.03; $F_W$=1.48

PSE: For FI x Activity interaction: $F_R$=1.77; $F_W$=1.21 and EQ x Activity: $F_R$=1.25; $F_W$=1.4