# From Spreadsheets to Storybooks: How Mothers' Occupational Skills

# **Shape Activities with Children**

Markus Klein<sup>1</sup> and Katherin Barg<sup>2</sup>

<sup>1</sup> Strathclyde Institute of Education, University of Strathclyde, Glasgow, United Kingdom

<sup>2</sup> School of Education, University of Bristol, United Kingdom

This version: 28 April 2025

## Correspondence

Markus Klein, Strathclyde Institute of Education, University of Strathclyde, 141 St James Street, G4 0LT Glasgow, United Kingdom Email: markus.klein@strath.ac.uk.

## Acknowledgements

We are grateful to the Centre for Longitudinal Studies (CLS), UCL Social Research Institute, for collecting the data and to the UK Data Service for making them available. The analyses and interpretations presented here are solely the responsibility of the authors and do not reflect the views of CLS or the UK Data Service.

# Abstract

Objective: This study examines how mothers' occupational skills influence their parenting

practices during early childhood.

**Background:** Parental employment is widely recognized as a key dimension of family background, yet little is known about how the skill content of parents' jobs may shape parenting behaviors. Drawing on theories of occupational spillover and self-efficacy, we assess whether specific occupational skills are associated with variation in parenting activities during early childhood.

**Method:** We use data from the UK Millennium Cohort Study (MCS), a nationally representative longitudinal survey of children born in 2000–2002, linked to occupation-specific

skill profiles derived from the British Skills Surveys. Parenting behaviors were measured when children were ages 5 (n = 12,892) and 7 (n = 11,265), capturing the frequency of seven cognitively and recreationally oriented activities. Occupational skills include literacy, verbal, numeracy, problem-solving, and physical competencies. We estimate multivariable regression models adjusting for a rich set of socioeconomic and demographic covariates.

**Results:** Literacy and verbal skills are consistently associated with cognitively enriching activities, particularly reading and storytelling. Physical skills predict greater engagement in outdoor and drawing or craft activities. In contrast, numeracy and problem-solving skills show limited or inconsistent associations.

**Conclusion:** Mothers' occupational skills shape parenting in distinct and domain-specific ways, supporting theories of value transmission and self-efficacy.

**Implications:** These findings suggest that employment-based skills may influence the home learning environment independently of education and income, with implications for policy and early childhood inequality.

#### Keywords

Occupational skills, occupations, parenting, parental involvement, parental engagement

#### INTRODUCTION

Parenting plays a crucial role in shaping children's cognitive, academic, and socialemotional development. Parents' aspirations for their children, their parenting values and styles, and the activities they engage in all profoundly impact children's daily experiences (Lareau, 2011). These factors not only influence children's beliefs and values (Bartley & Ingram, 2018; Wilder, 2014) but also affect their abilities, academic achievement, and behaviors (Brown & Iyengar, 2014; Chan & Koo, 2011; Henderson, 2013). For example, parents' awareness of the benefits of shared book reading and the frequency with which they read with their children significantly contribute to language development (Barone et al., 2019). Similarly, engaging in musical and rhyming activities with children enhances parent-child interaction and communication, vital for both cognitive and socioemotional development (Nicholson et al., 2008; Read et al., 2014; Yang, 2015). Additionally, when parents draw or paint with their children, it strengthens their relationship and fosters children's creativity (Gavron, 2013; Gavron & Mayseless, 2018). Participating in sports and outdoor activities has been shown to promote family closeness and improve both parents' and children's physical and mental well-being (Chawla, 2015; Knoester & Randolph, 2019).

Parents engage in various activities with their children, and the extent and nature of this engagement differ across families (Bodovski & Farkas, 2007; Desforges & Abouchaar, 2003). This variation has raised important questions about the structural and individual factors that shape parenting and has sparked interdisciplinary research to identify the drivers of parental involvement. Sociological and economic literature has long emphasized the role of unequally distributed resources, or 'capitals' among families. For example, economic capital allows parents to afford early childcare, education, toys, and extracurricular activities (Mayer, 1997). Human capital, such as parents' education, helps parents understand which types of involvement are most effective in fostering their children's development (Leibowitz, 1974).

Social capital, particularly the support provided through relationships within the family (such as the presence of grandparents), offers additional resources for parenting (J. S. Coleman, 1988). Lastly, cultural capital enables parents to impart behaviors, preferences, and skills that signal high social status and help their children navigate the education system (Lamont & Lareau, 1988; Lareau, 2011). In addition, psychological research focuses on parents' individual beliefs, experiences, and learning. Parental self-efficacy—parents' belief in their ability to succeed in raising their children—and role construction—their understanding of what 'good parenting' entails—are key factors that influence how much and in what ways parents engage in their children's lives (Hoover-Dempsey & Sandler, 1997).

In this paper, we argue that existing research on stratification in parenting activities overlooks a crucial aspect of parental human capital, the role of occupational skills. We explore the potential spillover effect, in which the skills mothers apply in their professional roles influence the types of activities they engage in with their children at home. Our central hypotheses revolve around the links between mothers' specific occupational skills (e.g., literacy) and mothers' engagement in corresponding parenting activities (e.g., reading with the child). We test our hypotheses using data from the UK Millennium Cohort Study, which we supplemented with aggregate measures of job skills derived from the British Skills Surveys.

#### THEORETICAL BACKGROUND

In prior research (Barg & Klein, 2024), we developed a theoretical model that outlines the pathways through which mothers' occupational skills influence children's cognitive development. A key pathway in this model focuses on how mothers' job-related skills shape their parenting decisions (e.g., which activities to engage in) and how they interact with their children (e.g., articulate, playful, authoritarian). The model proposes that job skills impact parenting through two mechanisms: (1) occupation-specific values (e.g., "numbers are important") and (2) occupation-specific self-efficacy (e.g., "I am good at working with numbers"). It draws on the subjective expectancy-value theory (Eccles & Wigfield, 2020), which has been widely applied to parents' socialization decisions. In this context, we conceptualize an occupation-specific *task value*, that is, the short- and longer-term utility parents attribute to particular parenting activities shaped by their professional experiences. Additionally, the framework incorporates an element akin to *expectancies for success*, reflecting parents' beliefs in their efficacy in performing and supporting these activities at home.

The first mechanism in our model is rooted in the seminal work of Kohn and colleagues, who argued that occupations have "spillover effects" on other areas of life, such as parenting (Kohn & Schooler, 1982). What individuals learn to value in their occupations often extends to their broader life choices and ultimately influences the values they seek to instil in their children (Baker & Barg, 2019). This aligns with perspectives from the micro-class literature, which suggests that occupational groups are reproduced across generations, partly due to the transmission of occupation-specific capital—including values and preferences—from parents to children (Jonsson et al., 2009). For instance, mothers whose jobs involve reading long texts are more likely to value literacy, making them more inclined to engage in literacy-focused parenting activities, such as reading books or telling stories.

The second mechanism, occupation-specific self-efficacy, draws on psychological research that highlights how parents' "domain-specific" self-efficacy, i.e., their belief in their ability to foster a particular skill in their children successfully, affects their likelihood of engaging in specific parenting tasks (P. K. Coleman & Karraker, 1998). For instance, parents who lack confidence in their ability to support their children's development in math are less likely to assist with math homework. Similarly, mothers whose jobs do not involve working with numbers or performing mathematical tasks may feel less confident handling "numbers-related" activities and, as a result, are less likely to engage in such activities with their children.

We hypothesize that a mother's occupational skills influence her parenting, independent of other family resources. Based on this premise, we develop several hypotheses regarding the relationship between specific maternal occupational skills and parenting activities. We categorize maternal occupational skills into five key areas: literacy, numeracy, problemsolving, verbal skills (e.g., presentation skills), and physical skills (e.g., physical strength, tool use). Additionally, we distinguish between a range of parenting activities, including reading to the child, telling stories, playing music, drawing, engaging in sports, playing with toys or games, and participating in outdoor activities (e.g., visiting the park). The relationships between these maternal skills and the different groups of parenting activities are outlined in Table 1.

Mother's occupational skills	Mother's parenting activities						
	Reading	Stories	Music	Drawing	Sports	Toys	Outdoor
Literacy	+	+					
Numeracy				+		+	
Problem-solving				+		+	+
Verbal	+	+	+				
Physical				+	+		+

TABLE 1: HYPOTHESES ON MOTHER'S OCCUPATIONAL SKILLS AND PARENTING ACTIVITIES.

*Note:* '+' stronger positive association than with other activity.

Mothers with strong *literacy skills* may be more likely to engage in language-rich activities with their children because they understand the importance of early exposure to words and narratives (Green et al., 2009). A literate mother is more comfortable with books and understands the importance of books for child development. Her beliefs about why literacy matters and which parental practices support it are closely linked to her own literacy-related behaviors. These may include regularly reading to her children, supporting vocabulary

acquisition, enhancing their comprehension skills, and fostering a lasting appreciation for books (Bingham, 2007; Cottone, 2012; DeBaryshe et al., 2000). Literate mothers may also engage in storytelling, creating narratives, and encouraging children to tell their own stories (Marjanovič-Umek et al., 2017).

Mothers with strong *numeracy skills* could be more likely to engage in structured play activities that promote mathematical thinking, logic, and spatial reasoning in their children (Silver et al., 2023). Parents' values and expectations regarding their children's numeracy development are closely linked to both the quality and quantity of numeracy support they provide (Douglas et al., 2021). Mothers who view numeracy as important, perceive themselves as competent in mathematics, and have had positive prior experiences with the subject are more likely to engage in "math talk" and numeracy-related activities, such as playing with geometric shapes and building blocks (Missall et al., 2015; Skwarchuk, 2009). A numerate mother may also encourage her child to play board games that involve counting or strategy—such as Monopoly or chess—due to her awareness of their potential to foster early mathematical skills (Gasteiger & Moeller, 2021). Drawing on her own experience working with numbers, she may also recognize the value of visualization and illustration as cognitive tools, and thus promote activities like drawing to support spatial reasoning and problem-solving (Edens & Potter, 2007).

Mothers with strong *problem-solving skills* are likely to engage in activities encouraging their children to think critically and make decisions. These skills are particularly important in activities that require strategy and experimentation. For instance, a mother proficient in problem-solving may encourage using specific toys such as math games, puzzles and blocs, which require logical thinking and problem-solving skills (Trawick-Smith et al., 2011). Many of these activities, especially when first introduced, require a degree of scaffolding, i.e., instructional support provided by the parent, which is influenced by the parent's attitudes

toward learning and their understanding of the problem context (Neitzel & Stright, 2003). Mothers used to navigating complex problems may, therefore, be particularly engaged in such play. Beyond structured toys, creativity and problem-solving are deeply interconnected (Haavold & Sriraman, 2022). A mother with strong problem-solving skills may encourage free drawing to help her child visually express ideas or develop spatial understanding (Edens & Potter, 2007; Roden et al., 2014; Sala & Gobet, 2017). Mothers with strong problem-solving skills may also be more inclined to engage in outdoor activities, such as visits to the park because they recognize these settings as rich, everyday environments that naturally invite exploration, inquiry, and problem-solving (Vandermaas-Peeler et al., 2019).

Mothers with strong *verbal skills* are likely to prioritize language-rich interactions that support their children's communication and expressive development (Tamis-LeMonda et al., 2001). Such mothers may frequently engage in storytelling and encourage their children to share stories of their own—fostering imagination, narrative skills, and reflective thinking. Verbal proficiency is also linked to creating a rich home literacy environment characterized by frequent shared reading and easy access to books (Sullivan et al., 2021). Additionally, articulate mothers may value and promote musical activities, recognizing the linguistic elements embedded in songs—such as rhyming, wordplay, and storytelling (Walton, 2014). They may engage in singing and musical play for enjoyment and because they understand its developmental benefits: enhancing phonemic awareness, encouraging language play, and supporting memory and rhythm, all of which contribute to early literacy skills (Cohrdes et al., 2016).

Mothers with strong *physical abilities* may focus on movement-based and hands-on activities, fostering their child's motor skill development and overall physical well-being (Scott-Andrews et al., 2022). A physically skilled mother likely finds physical activity important and engages in physical exercise at work and in her leisure time. Parents who value

physical activity and are physically active, are more likely to engage in and support structured sports activities of their children, such as soccer, basketball, or running (Prochaska et al., 2002; Trost et al., 2003). Outdoor play provides another avenue for physical development, as activities like climbing, jumping, and running help children improve their motor skills, balance, and coordination (Fjørtoft, 2004). Because "physical jobs" often involve the use of tools, a mother with strong physical skills may also incorporate drawing activities that enhance hand-eye coordination and dexterity and introduce crafts that involve physical manipulation, such as sculpting or painting (Frikha & Alharbi, 2023).

### DATA AND METHODS

We use data from the UK Millennium Cohort Study (MCS) and British Skills Surveys (BSS). The MCS collected data on 19,244 children born between September 2000 and January 2002 and living in the UK. The sample was disproportionately stratified, allowing for greater representation of all UK countries, deprived areas, and areas with high concentrations of Black and Asian families in England. Due to disproportionate sampling, we used sampling weights throughout the analysis (Plewis et al., 2004). Families were first surveyed when children were nine months old. Follow-up assessments took place at age 3 (sweep 2), age 5 (sweep 3), age 7 (sweep 4), age 11 (sweep 5), age 14 (sweep 6), and age 17 (sweep 7). For our analysis, we used sweeps 1 to 4 as information on parenting activities was available at the ages of 5 and 7 (University of London, 2020a, 2020b, 2020c, 2020d, 2020e). Our analytical sample is restricted to singleton children who live with their natural mother. In addition to using sampling weights, we corrected for non-selective loss to follow-up using MCS attrition/non-response weights (University of London, 2020d).

The BSS was conducted every five years from 1997 to 2017 to collect data on the skills and training needs of the UK workforce aged 20 to 60, with some surveys also including individuals aged 61 to 65. For our analysis, we used data from the 2001 (n = 4,470), 2006 (n = 7,787), and 2012 (n = 3,200) surveys to generate a range of occupation-specific skills variables, as outlined by Felstead et al. (2019). These variables were then matched to mothers in the Millennium Cohort Study (MCS) using their Standard Occupational Classification (SOC2000) codes.

#### Measures

We measure *maternal occupational skills* using job task information from respondents in the BSS data. A key component of the BSS involves assessing the importance of various job tasks, such as reading short or long documents, persuading or influencing others, and analyzing complex problems in depth. Respondents rated the importance of each task using a five-point scale: (1) not at all important/does not apply, (2) not very important, (3) fairly important, (4) very important, and (5) essential.

To identify underlying skill dimensions, we conducted a factor analysis using principal component extraction on 33 task variables. Applying the Eigenvalue criterion of retaining factors with Eigenvalues greater than one, we identified an eight-factor solution. The resulting eight factors—literacy, numeracy, problem-solving, verbal, physical, social, teamwork, and self-planning—along with their Eigenvalues, Cronbach's alpha values, associated task variables, including their factor loadings, are detailed in Online Appendix Table 1. Three task variables were excluded due to factor loadings below 0.4.

Five of these eight factors align with our hypothesized occupational skills:

- *Literacy skills*: Reading written information, reading short and long documents, writing materials, writing short and long documents.
- *Numeracy skills*: Performing arithmetic, arithmetic involving fractions, and advanced mathematical/statistical procedures.
- *Problem-solving skills*: Identifying problems or faults, diagnosing causes, and developing solutions.

- *Verbal skills*: Teaching, delivering speeches or presentations, persuading or influencing others, and planning activities for others.
- *Physical skills*: Physical strength, stamina, fine motor skills, and knowledge or use of tools.

After applying oblique promax rotation, we created indices representing the mean values of task variables associated with each of the five occupational skill factors (see Online Appendix Table 1 for details). We then calculated the average value of each index for respondents working in 79 three-digit SOC2000 occupation groups, following a similar approach to Williams and Bol (2018). Two closely related occupation groups were merged to ensure that each index was based on at least 20 cases. The number of cases used to calculate mean indices across the 79 occupation groups ranged from 20 to 818.

Finally, we linked the five occupational skill variables from the BSS to mothers' occupational information in the MCS data using three-digit SOC2000 codes. Mothers' occupation data were drawn from their current or most recent paid job, as reported in the first sweep when their child was nine months old. If mothers did not provide occupational information in the first sweep, we supplemented it with data from the second sweep, when their child was three years old.

Online Appendix Table A2 shows the correlation matrix for maternal occupationspecific skills. Occupational literacy skills are highly correlated with verbal skills (r = .74) and problem-solving skills (r = .63), while its correlation with numeracy is moderate (r = .49). Numeracy, in turn, is strongly associated with problem-solving (r = .59) but has a weaker correlation with verbal skills (r = .41). Physical skills, however, are negatively correlated with all other occupational skills, particularly literacy (r = -.57) and numeracy (r = -.58). We tested for collinearity using the variance inflation factor (VIF) and found no indication of concern, as all VIF values for occupational skills were well below the threshold of 10 (Min = 2.81; Max = 4.64; see Appendix Table A3). Summary statistics for all occupational skill variables can be found in Online Appendix A4. For our analyses, we standardized them to a mean of zero and standard deviation of one.

*Parenting activities* are measured using MCS survey questions that ask parents how often they engage in specific activities with their children. These activities capture key aspects of parental involvement, including cognitive stimulation, literacy and numeracy support, and recreational interactions.

For our analysis, we use data from MCS Sweep 3 (age 5) and Sweep 4 (age 7), focusing on the following parenting activities:

- 1. Reading to the child.
- 2. Telling stories to the child (not from a book).
- Engaging in musical activities (e.g., playing or listening to music, singing songs or nursery rhymes, dancing).
- 4. Drawing, painting, or making things with the child.
- 5. Playing sports or physically active games, indoors or outdoors.
- 6. Playing with toys or games indoors.
- 7. Taking the child to the park or an outdoor playground.

Parents reported the frequency of these activities using a six-point scale: (1) Every day, (2) Several times a week, (3) Once or twice a week, (4) Once or twice a month, (5) Less often, and (6) Not at all. To facilitate analysis, we reversed the scaling and standardized all outcome variables to have a mean of 0 and a standard deviation of 1.

Table 2 presents the frequency of various parenting activities at the ages of 5 and 7 in our MCS sample. At age 5, the most frequently engaged activity is reading, with 53% of parents reporting they do this every day. Music also sees high levels of daily engagement at 37%, while toys see a high level of engagement across the board. Activities such as outdoor or drawing are

most commonly done once or twice a week. "Not at all" engagement is highest for stories (12%) and sports (7%).

When children reach age 7, a shift is noticeable. While reading still holds the top spot for daily engagement (43%), the frequency of daily or several times a week engagement drops for other activities like toys or drawing. Notably, all activities show a higher proportion of parents reporting "Not at all" engagement at age 7, particularly for stories, drawing, and sports. This shift in parental engagement may reflect changes in the children's interests or other evolving factors as they grow.

Our analysis further includes a comprehensive set of covariates capturing family socioeconomic background and demographic characteristics. *Maternal education* is categorized into seven levels, five of which align with the National Vocational Qualification (NVQ) framework: no qualifications, NVQ Level 1 (e.g., GCSE grades D-G), NVQ Level 2 (e.g., GCSE grades A\*-C) corresponding to lower secondary attainment, NVQ Level 3 (e.g., A-levels) corresponding to upper secondary attainment, NVQ Level 4 (e.g., Bachelor's degree) representing undergraduate education, NVQ Level 5 (e.g., Master's degree) representing postgraduate education, and a final category for overseas qualifications.

Age 5 (N = 12,892)	Reading	Stories	Music	Drawing	Sports	Toys	Outdoor
Not at all	0.01	0.12	0.02	0.03	0.07	0.02	0.03
Less often	0.01	0.17	0.04	0.09	0.14	0.04	0.08
Once or twice a	0.02	0.18	0.07	0.23	0.19	0.09	0.28
month							
Once or twice a week	0.14	0.25	0.22	0.38	0.37	0.32	0.43
Several times a week	0.29	0.17	0.28	0.20	0.18	0.31	0.15
Every day	0.53	0.12	0.37	0.08	0.06	0.22	0.03
Age 7 (N = 11,265)							
Not at all	0.02	0.20	0.05	0.09	0.12	0.04	0.06
Less often	0.02	0.16	0.06	0.15	0.15	0.07	0.12
Once or twice a	0.05	0.20	0.11	0.34	0.22	0.19	0.32
month							
Once or twice a week	0.21	0.22	0.22	0.28	0.33	0.39	0.37
Several times a week	0.27	0.13	0.24	0.11	0.13	0.22	0.11
Every day	0.43	0.09	0.32	0.04	0.05	0.08	0.03

TABLE 2. FREQUENCY OF MOTHER-CHILD ACTIVITIES AT THE AGES OF FIVE AND SEVEN.

Source: MCS; BSS. Note: Sample weights, clustering and stratification accounted for (MCS).

*Household income* is measured using quintiles of equivalized net household income, adjusted for household size and composition using modified OECD equivalization scales. *Housing tenure* differentiates between children living in publicly subsidized housing and those in other housing types, including owner-occupied housing (with or without a mortgage) and private renting. *Parental social class* is classified using the seven-class analytical version of the National Statistics Socioeconomic Classification (NS-SEC), which includes higher managerial, administrative, and professional occupations; lower managerial, administrative, and professional occupations; intermediate occupations; small employers and own account workers; lower supervisory and technical occupations; semi-routine occupations; and routine occupations. In two-parent households, we assign the highest occupational class among parents, while in single-parent households, we use the classification of the present parent. We also account for *neighborhood deprivation* deciles, based on the relevant index of deprivation for each UK country.

To capture *family structure*, we differentiate between children living with both natural parents, those living with their natural mother and a step or adoptive parent, and those in single-parent households. Additionally, we account for the *number of siblings* in the household, distinguishing between no siblings, one sibling, and more than one sibling. The *presence of grandparents or other adults in the household* is also considered.

Further demographic controls include the *UK region* in which the family resides (North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East, South West, Wales, Scotland, and Northern Ireland), the *child's sex*, *ethnic group* (White; Mixed; Indian; Pakistani and Bangladeshi; Black or Black British; and Other ethnic group), and the *child's age* in months. Summary statistics for all control variables are provided in Online Appendix Table A3.

#### FINDINGS

Figure 1 shows effect sizes for the five maternal occupational skills – literacy, numeracy, problem-solving, verbal, and physical – from linear regressions predicting mother-child activities at age 5 along with 95%-confidence intervals. Model 1 (M1) adjusts for all other maternal skills, while Model 2 (M2) additionally adjusts for our covariates. Full regression tables can be found in Online Appendix Tables A5-A11.





Source: MCS; BSS, n = 12,892. Note: Sample weights, clustering and stratification accounted for (MCS).

At age 5, some of our results show expected associations between maternal skills and reading to the child. Maternal literacy skills have a strong positive association with reading to the child, with an effect size of 0.11 SD (p < 0.001) in M1. This effect remains significant but slightly weaker when controlling for all covariates in M2 (0.07 SD, p < 0.001). Verbal skills also show a significant positive association (0.04 SD, p < 0.001 in M1), though the effect is no longer significant after full adjustment. Unexpectedly, numeracy skills also positively predict

reading to the child (0.04 SD, p < 0.01 in M1), but this effect becomes non-significant in M2. Problem-solving skills and physical skills exhibit no meaningful effects.

For telling stories, verbal skills emerge as the strongest predictor (0.06 SD, p < 0.001 in both M1 and M2), which supports our hypothesis. Physical skills have a small positive effect (0.03 SD, p < 0.05) in M1, but this disappears when controlling for all covariates in M2. Other than what we predict, literacy does not show any significant association. Further, numeracy and problem-solving skills do not show statistically significant associations either.

In engaging in musical activities, we expected mothers' verbal skills to be important. Indeed, they have a marginal positive effect (0.03 SD, p < 0.05) in M1, but this becomes non-significant in M2. Problem-solving skills have a small but significant negative association (-0.06 SD, p < 0.01 in M1), which weakens slightly in M2 (-0.04 SD, p < 0.05). Physical, numeracy and literacy skills do not significantly predict engagement in musical activities.

For drawing, painting, or making things, mothers' verbal skills (0.04 SD, p < 0.01 in M1; 0.04 SD, p < 0.05 in M2) and physical skills (0.05 SD, p < 0.01 in both models) show significant positive associations. While the association with physical skills aligns with our hypothesis, we did not predict the association with mothers' verbal skills. Numeracy skills show a small effect (0.03 SD, p < 0.05) in M1, which supports our theoretical assumptions, but this becomes non-significant in M2. Contrary to our assumptions, problem-solving skills have no significant effects.

Regarding playing sports or physically active games, verbal skills have a strong positive association (0.07 SD, p < 0.001 in M1; 0.05 SD, p < 0.001 in M2), which we did not anticipate. Numeracy skills have a small positive effect (0.03 SD, p < 0.05) in M1, but this disappears in M2. Literacy, problem-solving, and physical skills show no meaningful effects.

We expected mothers' numeracy and problem-solving skills, in particular, to be associated with playing with toys or games indoors. However, literacy skills have a significant positive association (0.06 SD, p < 0.01 in M1; 0.05 SD, p < 0.05 in M2). Verbal skills have a smaller effect (0.04 SD, p < 0.05) in M1 but become non-significant in M2. Problem-solving skills have a small negative effect (-0.03 SD, p < 0.05) in M1, which disappears in M2. Physical skills show a marginal positive effect (0.03 SD, p < 0.05 in M1; 0.04 SD, p < 0.05 in M2). Other than expected, numeracy shows no statistically significant association with playing with toys or games indoors.

Physical skills are a significant positive predictor for taking the child to the park or playground (0.04 SD, p < 0.05 in both M1 and M2), which supports our hypothesis. Literacy skills show a small effect (0.05 SD, p < 0.05) in M2. Problem-solving skills exhibit a weak negative association (-0.03 SD), but the effect is not statistically significant. Numeracy and verbal skills have no significant influence.

Figure 2 shows the effect sizes for maternal occupational skills from linear regressions predicting mother-child activities at age 7 along with 95%-confidence intervals. Mothers' literacy skills continue to predict reading to the child (0.11 SD, p < 0.001 in M1; 0.07 SD, p < 0.01 in M2), while there are no significant effects for the other maternal occupational skills.

For telling stories, verbal skills maintain a strong positive effect (0.05 SD, p < 0.01 in both models), while all other skills, including literacy and numeracy, show no significant impact.

In engaging in musical activities, problem-solving skills continue to show a small negative effect (-0.04 SD, p < 0.05 in M1), but this disappears in M2. Physical skills show a small positive effect (0.04 SD, p < 0.05 in M1), which becomes non-significant in M2. Verbal, literacy, and numeracy skills remain unrelated.

For drawing, painting, or making things, verbal skills remain a strong positive predictor (0.06 SD, p < 0.001 in M1; 0.05 SD, p < 0.01 in M2), while physical skills have a smaller effect

(0.04 SD, p < 0.05 in M1), which disappears in M2. Numeracy and problem-solving skills remain non-significant.

In playing sports or physically active games, verbal skills remain a key predictor (0.05 SD, p < 0.01 in M1; 0.04 SD, p < 0.05 in M2). No other maternal occupational skills show meaningful effects after accounting for covariates.

For playing with toys or games indoors, verbal skills become more predictive (0.04 SD, p < 0.01 in M1; 0.05 SD, p < 0.01 in M2), while literacy skills, which were significant at age 5, now have no effect. Other than at age 5, physical skills are non-significant.

Finally, for taking the child to the park or playground, physical skills continue to show a significant positive effect (0.05 SD, p < 0.05 in both models). However, problem-solving skills now show a small but significant negative association (-0.05 SD, p < 0.01 in M1; -0.04 SD, p < 0.05 in M2). Literacy and verbal skills remain non-significant.

FIGURE 2. MATERNAL OCCUPATIONAL SKILLS AND ACTIVITIES WITH CHILDREN AT AGE 7.



Source: MCS; BSS, n = 11,265. Note: Sample weights, clustering and stratification accounted for (MCS).

Overall, the findings highlight the key role of maternal literacy and verbal occupational skills in shaping mother-child activities. Literacy skills consistently predict reading to the child at both ages, while verbal skills are the strongest predictor of storytelling and sports activities. At age 7, verbal skills are positively related to drawing, painting, or making things and playing with toys or games indoors. Physical skills influence drawing and craft activities at age five and outdoor play consistently across both ages. Problem-solving skills occasionally show negative associations, particularly for creative activities and outdoor engagement. Numeracy skills only have minimal impact, with some weak effects at age five that disappear by age 7.

### DISCUSSION AND CONCLUSION

This study examined how mothers' occupational skills influence their parenting behaviors, particularly the types of activities they engage in with their children at ages 5 and 7. Drawing on the theoretical model developed by Barg and Klein (2024), we hypothesized that maternal occupational skills shape parenting through two primary mechanisms: occupation-specific values and self-efficacy. These mechanisms were expected to affect parenting decisions in ways consistent with what mothers value and feel competent doing based on their occupational experiences.

The findings provide partial support for our theoretical model. As hypothesized, literacy skills were consistently and robustly associated with reading to the child, suggesting that mothers working in literacy-rich occupations may value early language exposure and feel confident supporting it, which is consistent with the expectancy-value framework. This finding reinforces prior research on occupational spillover (Kohn & Schooler, 1982) and extends it to specific parenting activities, such as shared reading.

Verbal skills also emerged as an important predictor, particularly for storytelling and, less expectedly, for physically active games, drawing, and playing with toys. Mothers working in occupations which require teaching, giving presentations, and other forms of frequent and articulate communication are more likely to select parenting activities that involve a lot of vocalizing, such as storytelling, singing and rhymes. However, the results suggest that the scope of verbal skills may extend beyond direct linguistic interactions to a broader range of expressive and socially rich parenting contexts. This supports the idea that verbal fluency fosters a parenting style characterized by active engagement and communication, which may spill over into multiple activity domains, not just those strictly aligned with language use.

Physical skills showed consistent positive associations with outdoor play, supporting the idea that physically active mothers model and prioritize physical activity in their parenting. Positive effects on drawing and craft activities at age 5 also suggest that physical coordination and tool use may influence how mothers support fine motor skill development in their children.

Contrary to our expectations, mothers' numeracy skills had limited influence, with only weak and inconsistent associations at age five that disappeared by age 7. This finding is notable given the theoretical assumption that mothers confident working with numbers would promote numeracy-related play and logic-based games. One potential explanation is that numeracy-focused parenting may be less salient or intuitive than literacy-related parenting, especially in early childhood (Mues et al., 2022). Mothers may also receive less societal encouragement to support numeracy development at home (as opposed to literacy development, for example), which could dampen the occupational spillover effect in this domain (Dowker, 2021).

Similarly, problem-solving skills had no meaningful impact or were unexpectedly negatively associated with activities like musical engagement and outdoor play. These results challenge assumptions about the automatic transfer of abstract cognitive skills into parenting practice. Mothers in problem-solving-intensive occupations may value structured problem-solving contexts (e.g., work) over unstructured or playful ones, leading to a mismatch between skill and behavior at home (Wright et al., 2023).

Our findings partially confirm the idea that the values and skills cultivated in parents' professional lives tend to "spill over" into family routines (Jonsson et al., 2009), shaping not only everyday interactions but also parenting approaches (Kohn & Schooler, 1982). The persistent and statistically significant associations we observe between maternal occupational skills and specific parenting activities, even after accounting for these broader family resources, suggest that occupation-specific resources exert a distinct and independent influence on parenting. This supports the argument that dominant understandings of family background may be overly narrow, emphasizing economic, educational, and sociocultural family resources as primary drivers of parenting differences (J. S. Coleman, 1988).

Several limitations should be acknowledged. *First*, while our theoretical model emphasizes maternal values and self-efficacy as key mechanisms, we do not directly measure these constructs. Instead, we infer them from occupational skill profiles and associated behaviors. Future research would benefit from directly assessing domain-specific parenting values, confidence, and beliefs. *Second*, our occupational skill variables are based on aggregating self-reported information from the British Skills Survey across occupational groupings. While this method allows for a comparison across a large sample, it may obscure individual variation within occupational categories. A mother's actual skills and confidence may diverge significantly from the average for her occupation. *Third*, the study focuses solely on mothers, excluding paternal or other caregiver influences. Parenting is often a co-constructed process, and future work should explore whether similar patterns hold for fathers or other household members with caregiving roles. *Fourth*, while we control for a range of sociodemographic variables, unmeasured confounding factors (e.g., mother's general cognitive ability) may influence both maternal skills and parenting behaviors.

Despite these limitations, the findings from this study suggest several implications for policy and practice. *First*, the consistent associations between maternal literacy and verbal

occupational skills and cognitively enriching parenting activities—such as reading, storytelling, and creative play—highlight the importance of supporting the development of these skills not only in children, but also in adults. Policies that promote adult education, especially in literacy and communication, may have indirect benefits for children's development by enhancing the quality of the early learning environment at home. For instance, workplace training programs that build verbal and literacy-related competencies or community-based adult education initiatives could strengthen parents' capacity and confidence to engage in language-rich interactions with their children.

*Second*, the results suggest that the skill content of a mother's occupation shapes parenting beyond what is captured by income or education alone. This points to the need for a broader conceptualization of family resources in early childhood policy and research, including the occupational contexts and skill profiles of parents. For example, employment support programs could be designed not only to help parents find work but also to consider how the nature of that work might influence their parenting behaviors and family life.

*Third*, the limited impact of numeracy and problem-solving skills indicates that certain domains may require more targeted interventions. Since these skills did not translate as clearly into parenting practices, particularly during early childhood, there may be a need for programs that explicitly support parents in developing confidence and strategies for fostering numeracy and problem-solving in everyday family life.

Overall, policies that recognize and support the role of occupationally developed skills in parenting could represent a promising yet currently underused, avenue for promoting child development.

23

## References

Baker, W., & Barg, K. (2019). Parental values in the UK. *The British Journal of Sociology*, 70(5), 2092–2115. https://doi.org/10.1111/1468-4446.12658

Barg, K., & Klein, M. (2024). Maternal Occupation-Specific Skills and Children's Cognitive
 Development. *Sociology*, 58(1), 118–139.
 https://doi.org/10.1177/00380385231159005

- Barone, C., Chambuleyron, E., Vonnak, R., & Assirelli, G. (2019). Home-based shared book reading interventions and children's language skills: A meta-analysis of randomised controlled trials. *Educational Research and Evaluation*, 25(5–6), 270–298. https://doi.org/10.1080/13803611.2020.1814820
- Bartley, S. R., & Ingram, N. (2018). Parental modelling of mathematical affect: Self-efficacy and emotional arousal. *Mathematics Education Research Journal*, 30, 277–297. https://doi.org/10.1007/s13394-017-0233-3
- Bingham, G. E. (2007). Maternal Literacy Beliefs and the Quality of Mother-Child Bookreading Interactions: Associations with Children's Early Literacy Development. *Early Education & Development*, 18(1), 23–49.

https://doi.org/10.1080/10409280701274428

Bodovski, K., & Farkas, G. (2007). Do Instructional Practices Contribute To Inequality in Achievement?: The Case of Mathematics Instruction in Kindergarten. *Journal of Early Childhood Research*, 5(3), 301–322.

https://doi.org/10.1177/1476718X07080476

- Brown, L., & Iyengar, S. (2014). Parenting styles: The impact on student achievement. Family Factors and the Educational Success of Children, 19–43.
- Chan, T. W., & Koo, A. (2011). Parenting Style and Youth Outcomes in the UK. *European* Sociological Review, 27(3), 385–399.

- Chawla, L. (2015). Benefits of Nature Contact for Children. *Journal of Planning Literature*, 30(4), 433–452. https://doi.org/10.1177/0885412215595441
- Cohrdes, C., Grolig, L., & Schroeder, S. (2016). Relating Language and Music Skills in Young Children: A First Approach to Systemize and Compare Distinct Competencies on Different Levels. *Frontiers in Psychology*, 7, 1616. https://doi.org/10.3389/fpsyg.2016.01616
- Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, *94*(1988), S95. https://doi.org/10.1086/228943
- Coleman, P. K., & Karraker, K. H. (1998). Self-Efficacy and Parenting Quality: Findings and Future Applications. *Developmental Review*, 18, 47–85. https://doi.org/10.1006/drev.1997.0448
- Cottone, E. A. (2012). Preschoolers' Emergent Literacy Skills: The Mediating Role of Maternal Reading Beliefs. *Early Education & Development*, 23(3), 351–372. https://doi.org/10.1080/10409289.2010.527581
- DeBaryshe, B. D., Binder, J. C., & Buell, M. J. (2000). Mothers' Implicit Theories of Early Literacy Instruction: Implications for Children's Reading and Writing. *Early Child Development and Care*, 160(1), 119–131. https://doi.org/10.1080/0030443001600111
- Desforges, C., & Abouchaar, A. (2003). *The impact of parental involvement, parental support and family education on pupil achievement and adjustment: A literature review* (Vol. 433). DfES London.

https://library.bsl.org.au/jspui/bitstream/1/3644/1/Impact%20of%20Parental%20Invol vement\_Desforges.pdf

Douglas, A.-A., Zippert, E. L., & Rittle-Johnson, B. (2021). Parents' numeracy beliefs and their early numeracy support: A synthesis of the literature. *Advances in Child Development and Behavior*, 61, 279–316. Dowker, A. (2021). Home numeracy and preschool children's mathematical development: Expanding home numeracy models to include parental attitudes and emotions. *Frontiers in Education*, *6*, 575664.

https://www.frontiersin.org/articles/10.3389/feduc.2021.575664/full

- Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancyvalue theory: A developmental, social cognitive, and sociocultural perspective on motivation. *Contemporary Educational Psychology*, *61*, 101859.
- Edens, K., & Potter, E. (2007). The Relationship of Drawing and Mathematical Problem Solving: *Draw for Math* Tasks. *Studies in Art Education*, 48(3), 282–298. https://doi.org/10.1080/00393541.2007.11650106.
- Felstead, Alan, Duncan Gallie, Francis Green, and Golo Henseke. 2019. Skills and
  Employment Surveys Series Dataset, 1986, 1992, 1997, 2001, 2006, 2012 and 2017.
  [data collection]. UK Data Service. SN: 8589, http://doi.org/10.5255/UKDA-SN-8589-1.
- Fjørtoft, I. (2004). Landscape as playscape: The effects of natural environments on children's play and motor development. *Children Youth and Environments*, *14*(2), 21–44.
- Frikha, M., & Alharbi, R. S. (2023). Optimizing Fine Motor Coordination, Selective Attention and Reaction Time in Children: Effect of Combined Accuracy Exercises and Visual Art Activities. *Children*, 10(5), 786. https://doi.org/10.3390/children10050786
- Gasteiger, H., & Moeller, K. (2021). Fostering early numerical competencies by playing conventional board games. *Journal of Experimental Child Psychology*, 204, 105060. https://doi.org/10.1016/j.jecp.2020.105060

Gavron, T. (2013). Meeting on Common Ground: Assessing Parent–Child Relationships Through the Joint Painting Procedure. *Art Therapy*, 30(1), 12–19. https://doi.org/10.1080/07421656.2013.757508

- Gavron, T., & Mayseless, O. (2018). Creating art together as a transformative process in parent-child relations: The therapeutic aspects of the joint painting procedure. *Frontiers in Psychology*, 9, 2154.
- Green, C. M., Berkule, S. B., Dreyer, B. P., Fierman, A. H., Huberman, H. S., Klass, P. E., Tomopoulos, S., Yin, H. S., Morrow, L. M., & Mendelsohn, A. L. (2009). Maternal Literacy and Associations Between Education and the Cognitive Home Environment in Low-Income Families. *Archives of Pediatrics & Adolescent Medicine*, *163*(9), 832– 837. https://doi.org/10.1001/archpediatrics.2009.136
- Haavold, P. Ø., & Sriraman, B. (2022). Creativity in problem solving: Integrating two different views of insight. ZDM – Mathematics Education, 54(1), 83–96. https://doi.org/10.1007/s11858-021-01304-8
- Henderson, M. (2013). A Test of Parenting Strategies. *Sociology*, 47(3), 542–559. https://doi.org/10.1177/0038038512450103
- Hoover-Dempsey, K. V., & Sandler, H. M. (1997). Why do parents become involved in their children's education? *Review of Educational Research*, 1, 3–42. https://doi.org/10.3102/00346543067001003
- Jonsson, J. O., Di Carlo, M., Brinton, M. C., Grusky, D. B., & Pollak, R. (2009). Microclass mobility: Social reproduction in four countries. *AJS; American Journal of Sociology*, *114*(4), 977–1036. https://doi.org/10.1086/596566
- Knoester, C., & Randolph, T. (2019). Father-child sports participation and outdoor activities:
   Patterns and implications for health and father-child relationships. *Sociology of Sport Journal*, *36*(4), 322–329.

Kohn, M. L., & Schooler, C. (1982). Job Conditions and Personality: A Longitudinal Assessment of Their Reciprocal Effects Reciprocal Effects'. Source: American Journal of Sociology American Journal of Sociology, 87122149(6), 1257–1286. https://doi.org/10.1086/227593

- Lamont, M., & Lareau, A. (1988). Cultural Capital: Allusions, Gaps and Glissandos in Recent Theoretical Developments. *Sociological Theory*, 6(Fall), 153–168.
- Lareau, A. (2011). Unequal Childhoods: Class, Race, and Family Life. University of California Press.
- Leibowitz, A. (1974). Home Investments in Children. *Journal of Political Economy*, 82(2, Part 2), S111–S131. https://doi.org/10.1086/260295
- Marjanovič-Umek, L., Fekonja-Peklaj, U., & Sočan, G. (2017). Early vocabulary, parental education, and the frequency of shared reading as predictors of toddler's vocabulary and grammar at age 2; 7: A Slovenian longitudinal CDI study. *Journal of Child Language*, 44(2), 457–479.
- Mayer, S. E. (1997). What money can't buy: Family income and children's life chances. Havard University Press.
- Missall, K., Hojnoski, R. L., Caskie, G. I. L., & Repasky, P. (2015). Home Numeracy Environments of Preschoolers: Examining Relations Among Mathematical Activities, Parent Mathematical Beliefs, and Early Mathematical Skills. *Early Education and Development*, 26(3), 356–376. https://doi.org/10.1080/10409289.2015.968243
- Mues, A., Wirth, A., Birtwistle, E., & Niklas, F. (2022). Associations between children's numeracy competencies, mothers' and fathers' mathematical beliefs, and numeracy activities at home. *Frontiers in Psychology*, 13, 835433.

- Neitzel, C., & Stright, A. D. (2003). Mothers' scaffolding of children's problem solving:
   Establishing a foundation of academic self-regulatory competence. *Journal of Family Psychology*, 17(1), 147.
- Nicholson, J. M., Berthelsen, D., Abad, V., Williams, K., & Bradley, J. (2008). Impact of Music Therapy to Promote Positive Parenting and Child Development. *Journal of Health Psychology*, 13(2), 226–238. https://doi.org/10.1177/1359105307086705
- Plewis, I., Calderwood, L., & Hawkes, D. (2004). National Child Development Study and 1970 British Cohort Study Technical Report : 1–39.
- Prochaska, J. J., Rodgers, M. W., & Sallis, J. F. (2002). Association of Parent and Peer Support with Adolescent Physical Activity. *Research Quarterly for Exercise and Sport*, 73(2), 206–210. https://doi.org/10.1080/02701367.2002.10609010
- Read, K., Macauley, M., & Furay, E. (2014). The Seuss boost: Rhyme helps children retain words from shared storybook reading. *First Language*, 34(4), 354–371. https://doi.org/10.1177/0142723714544410
- Roden, I., Könen, T., Bongard, S., Frankenberg, E., Friedrich, E. K., & Kreutz, G. (2014).
  Effects of Music Training on Attention, Processing Speed and Cognitive Music
  Abilities—Findings from a Longitudinal Study. *Applied Cognitive Psychology*, 28(4), 545–557. https://doi.org/10.1002/acp.3034
- Sala, G., & Gobet, F. (2017). When the music's over. Does music skill transfer to children's and young adolescents' cognitive and academic skills? A meta-analysis. *Educational Research Review*, 20, 55–67.
- Scott-Andrews, K. Q., Hasson, R. E., Miller, A. L., Templin, T. J., & Robinson, L. E. (2022). Associations Between Physical Activity and Gross Motor Skills in Parent–Child Dyads. https://journals.humankinetics.com/view/journals/jmld/10/3/article-p485.xml

- Silver, A. M., Chen, Y., Smith, D. K., Tamis-LeMonda, C. S., Cabrera, N., & Libertus, M. E. (2023). Mothers' and fathers' engagement in math activities with their toddler sons and daughters: The moderating role of parental math beliefs. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1124056
- Skwarchuk, S.-L. (2009). How do parents support preschoolers' numeracy learning experiences at home? *Early Childhood Education Journal*, *37*, 189–197.
- Sullivan, A., Moulton, V., & Fitzsimons, E. (2021). The intergenerational transmission of language skill. *The British Journal of Sociology*, 72(2), 207–232. https://doi.org/10.1111/1468-4446.12780
- Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal Responsiveness and Children's Achievement of Language Milestones. *Child Development*, 72(3), 748–767. https://doi.org/10.1111/1467-8624.00313
- Trawick-Smith, J., Russell, H., & Swaminathan, S. (2011). Measuring the effects of toys on the problem-solving, creative and social behaviours of preschool children. *Early Child Development and Care*, 181(7), 909–927.

https://doi.org/10.1080/03004430.2010.503892

- Trost, S. G., Sallis, J. F., Pate, R. R., Freedson, P. S., Taylor, W. C., & Dowda, M. (2003). Evaluating a model of parental influence on youth physical activity. *American Journal of Preventive Medicine*, 25(4), 277–282.
- University of London, Institute of Education, Centre for Longitudinal Studies. 2020a. Millennium Cohort Study: First Survey, 2001-2003. [data collection]. 13th Edition. UK Data Service. SN: 4683, http://doi.org/10.5255/UKDA-SN-4683-5
- University of London, Institute of Education, Centre for Longitudinal Studies. 2020b. Millennium Cohort Study: Second Survey, 2003-2005. [data collection]. 10th Edition. UK Data Service. SN: 5350, http://doi.org/10.5255/UKDA-SN-5350-5

- University of London, Institute of Education, Centre for Longitudinal Studies. 2020c. Millennium Cohort Study: Third Survey, 2006. [data collection]. 8th Edition. UK Data Service. SN: 5795, http://doi.org/10.5255/UKDA-SN-5795-5
- University of London, Institute of Education, Centre for Longitudinal Studies. 2020d. Millennium Cohort Study: Fourth Survey, 2008. [data collection]. 8th Edition. UK Data Service. SN: 6411, http://doi.org/10.5255/UKDA-SN-6411-8
- University of London, Institute of Education, Centre for Longitudinal Studies. 2020e. Millennium Cohort Study: Longitudinal Family File, 2001-2018. [data collection]. 4th Edition. UK Data Service. SN: 8172, http://doi.org/10.5255/UKDA-SN-8172-4
- Vandermaas-Peeler, M., Dean, C., Biehl, M. S., & Mellman, A. (2019). Parents' beliefs about young children's play and nature experiences in Danish and US contexts. *Journal of Adventure Education and Outdoor Learning*, *19*(1), 43–55. https://doi.org/10.1080/14729679.2018.1507829
- Walton, P. (2014). Using singing and movement to teach pre-reading skills and word reading to kindergarten children: An exploratory study. *Language and Literacy*, 16(3), 54–77.
- Wilder, S. (2014). Effects of parental involvement on academic achievement: A metasynthesis. *Educational Review*, 66(3), 377–397. https://doi.org/10.1080/00131911.2013.780009
- Williams, M., & Bol, T. (2018). Occupations and the wage structure: The role of occupational tasks in Britain. *Research in Social Stratification and Mobility*, 53, 16–25. https://doi.org/10.1016/j.rssm.2017.11.003
- Wright, C. A., Pasek, J., Lee, J. Y., Masters, A. S., Golinkoff, R. M., Thomsen, B. S., & Hirsh-Pasek, K. (2023). US parents' attitudes toward playful learning. *Frontiers in Developmental Psychology*, 1, 1267169.

Yang, Y.-H. (2015). Parents and young children with disabilities: The effects of a homebased music therapy program on parent-child interactions. *Journal of Music Therapy*, 53(1), 27–54.

# **Online Appendix**

**Table A1.** Maternal skills-indices, underlying variables, Eigenvalues, Cronbach's alphas, and factor loadings

13,451)       79)         Literacy       9.41       .88       2.62       2.56         Reading written information (e.g.,       .81       .81	
Literacy Reading written information (e.g.,9.41.882.622.56.81	
Reading written information (e.g., .81	
forms, notices, signs)	
Reading short documents .82	
Reading long documents .77	
Writing materials (e.g., forms, notices .87	
or signs)	
Writing short documents .71	
Writing long documents .60	
<i>Numeracy</i> 1.30 .84 2.08 1.98	
Arithmetic (adding, subtracting, .89	
multiplying, dividing numbers)	
Arithmetic involving fractions .91	
(decimals, percentages, fractions)	
Advanced mathematical/ statistical .77	
procedures	
Problem-solving         1.68         .87         3.09         3.12	
Spotting problems or faults .87	
Working out cause of problems/ faults .92	
Thinking of solutions to problems .81	
Verbal 2.19 .79 2.12 2.06	
Teaching people (individuals or groups) .52	
Making speeches/ presentations .75	
Persuading or influencing others .62	
Planning the activities of others .52	
Physical 1.13 .82 1.98 2.08	
Physical strength .89	
Physical stamina .89	
Skill or accuracy in using hands/fingers ./2	
Knowledge of use or operation of tools .61	
Social 1.45 .62 2.74 2.68	
Dealing with people .52	
Counselling, advising or caring for .00	
Customers or chemis	
Knowledge of particular products or 67	
sorvices	
Teamwork 153 77 317 312	
Working with a team 00	
Listening carefully to colleagues 82	
$Self_n lanning = 3.20  83  814  3.12$	
Planning own activities 5.27 .05 5.14 5.12	
Organising own time .89	

Thinking ahead

.75

Note: BSS=British Skills Surveys. The original BSS sample of 15,457 was reduced to 13,457 due to missing values on three task variables, including 1,530 missing values for the use of statistics. An additional six cases were excluded for missing occupation-code data, resulting in a final sample size of 13,451.

	Literacy	Numeracy	Problem- solving	Verbal	Physical
Literacy	-		-		
Numeracy	.49	-			
Problem-solving	.63	.59	-		
Verbal	.74	.41	.58	-	
Physical	57	58	21	27	-

**Table A2.** Correlation matrix for maternal occupation-specific skills (n = 12,892)

Source: MCS; BSS. Note: Correlations are based on Age 5 sample; sample weights, clustering and stratification are accounted for (MCS). All correlations are statistically significant at the 0.01%-level.

Table A3. Variance Inflatio	on Factor $(n = 12,892)$
-----------------------------	--------------------------

	VIF
Maternal occupation-specific skills	
Literacy	4.64
Numeracy	2.59
Problem-solving	2.86
Physical	2.84
Verbal	2.81

Source: MCS; BSS. Note: VIF based on Age 5 sample. Sample weights, clustering and stratification are accounted for (MCS).

# Table A4. Summary statistics

Age 3         Mean/Prop.         SD         Mean/Prop.         SD           Maternal occupation-specific skills*         .         .         .         .           skills*         .		A go 5		1 00			
Maternal occupation-specific       skills*         kills*       2.51       0.51       2.50       0.52         Numeracy       1.93       0.56       1.92       0.56         Problem-solving       2.96       0.28       2.95       0.28         Verbal       1.98       0.53       1.97       0.53         Physical       1.96       0.65       1.96       0.65         Maternal education       No qualifications       0.09       0.09         NVQ Level 1       0.08       0.08       0.01         NVQ Level 2       3.1       3.1       3.1         NVQ Level 3       .15       .16       NVQ Level 4       3.2       .3.1         NVQ Level 4       .32       .3.1       NQ Level 5       .04       .04       .04         Overseas qualification       .02       .02       Parental class           Higher managerial and       .17       .16             Lower supervisory and coc.               Lower supervisory and coc.		Mean/Prop.	S SD	Age / Mean/Prop.	SD		
SMUS*         1.93         0.51         2.50         0.52           Numeracy         1.93         0.56         1.92         0.56           Problem-solving         2.96         0.28         2.95         0.28           Verbal         1.98         0.53         1.97         0.53           Physical         1.96         0.65         1.96         0.65           Maternal education         No         Qualifications         0.09         NVQ Level 1         0.88         0.08           NVQ Level 1         0.88         0.08         NVQ Level 2         .31         .31           NVQ Level 3         .15         .16         NVQ Level 3         .15         .16           NVQ Level 4         .32         .31         .31         NVQ Level 4         .32         .31           NVQ Level 5         .04         .04         .04         .04         .04         .02         .02           Parental class         .15         .16         .16         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .08         .	Maternal occupation-specific		~-		~~		
Literacy       2.31       0.31       2.30       0.53         Numeracy       1.93       0.56       1.92       0.56         Problem-solving       2.96       0.28       2.95       0.28         Verbal       1.98       0.53       1.97       0.53         Physical       1.96       0.65       1.96       0.65         Maternal education       No       0.9       0.9       0.9         NVQ Level 1       .08       .08       0.8       0.8         NVQ Level 2       .31       .31       NVQ Level 3       .15       .16         NVQ Level 5       .04       .04       .04       .04       .04         Overseas qualification       .02       .02       .02       .02         Parental class	SKIIIS*	2.51	0.51	2.50	0.52		
Numeracy       1.95       0.56       1.92       0.50         Problem-solving       2.96       0.28       2.95       0.28         Verbal       1.96       0.65       1.96       0.65         Maternal education       No       qualifications       09       09         NVQ Level 1       0.08       0.08       08         NVQ Level 2       .31       .31       NVQ Level 3       .15       .16         NVQ Level 3       .15       .16       04       <	Literacy	2.31	0.51	2.30	0.52		
Problem-solving       2.90       0.28       2.93       0.28         Physical       1.98       0.53       1.97       0.53         Physical       1.96       0.65       1.96       0.65         Maternal education       09       .09       09         No qualifications       .09       .09       09         NVQ Level 1       .08       .08       .08         NVQ Level 2       .31       .31       .15         NVQ Level 5       .04       .04       .04         Overseas qualification       .02       .02       .02         Parental class	Ducklam coluing	1.93	0.30	1.92	0.30		
Verbal       1.98       0.53       1.97       0.53         Maternal education       1.96       0.65       1.96       0.65         No qualifications       0.09       0.09       09         NVQ Level 1       0.08       0.08       0.08         NVQ Level 2       3.1       3.1       0.16       0.04       0.04         Overseas qualification       0.02       0.02       0.02       0.02       0.02         Parental class	Problem-solving	2.96	0.28	2.95	0.28		
Physical       1.96       0.65       1.96       0.65         Maternal education       09       09       09         NvQ Level 1       0.8       0.8         NVQ Level 2       .31       .31         NVQ Level 3       .15       .16         NVQ Level 4       .32       .31         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	Verbal	1.98	0.53	1.97	0.53		
Maternal education       .09       .09         No qualifications       .09       .09         NVQ Level 1       .08       .08         NVQ Level 2       .31       .31         NVQ Level 3       .15       .16         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	Physical	1.96	0.65	1.96	0.65		
No qualifications       .09       .09         NVQ Level 1       .08       .08         NVQ Level 2       .31       .31         NVQ Level 3       .15       .16         NVQ Level 4       .32       .31         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	Maternal eaucation	00		00			
NVQ Level 1       .08       .08         NVQ Level 2       .31       .31         NVQ Level 3       .15       .16         NVQ Level 4       .32       .31         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	No qualifications	.09		.09			
NVQ Level 2       .51       .51         NVQ Level 3       .15       .16         NVQ Level 4       .32       .31         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class       .17       .16         Higher managerial and       .17       .16         professional occ.       .15       .15         Lower managerial and       .31       .30         professional occ.       .15       .15         Intermediate occ.       .15       .15         Small employers and own       .07       .07         account workers       .12       .22         Lower supervisory and       .08       .09         Net household income	NVQ Level 1	.08		.08			
NVQ Level 3       .15       .16         NVQ Level 4       .32       .31         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	NVQ Level 2	.31		.31			
NVQ Level 4       .32       .31         NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	NVQ Level 3	.15		.16			
NVQ Level 5       .04       .04         Overseas qualification       .02       .02         Parental class	NVQ Level 4	.32		.31			
Overseas qualification $02$ $02$ Parental class       .17       .16         Higher managerial and       .31       .30         professional occ.       .15       .15         Lower managerial and       .31       .30         professional occ.       .15       .15         Intermediate occ.       .15       .15         Small employers and own       .07       .07         account workers	NVQ Level 5	.04		.04			
Parental class         Higher managerial and       .17       .16         professional occ.       .10         Lower managerial and       .31       .30         professional occ.       .15       .15         Intermediate occ.       .15       .15         Small employers and own       .07       .07         account workers	Overseas qualification	.02		.02			
Higher managerial and.17.16professional occ	Parental class						
professional occ.Lower managerial and.31.30professional occ15.15Intermediate occ15.15Small employers and own.07.07account workers.08.08Lower supervisory and.08.08technical occ14.15Semi-routine occ14.15Routine occ08.09Net household income.09(quintiles).15.15Lowest.15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure.25.24Social housing.21.22Family structure.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Higher managerial and	.17		.16			
Lower managerial and professional occ31.30Intermediate occ15.15Small employers and own.07.07account workers.08.08Lower supervisory and technical occ08.08Semi-routine occ14.15Routine occ08.09Net household income (quintiles).09Lowest.15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure.22.22Social housing.21.22Family structure.05.05Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	professional occ.						
professional occ.       1.15       .15         Intermediate occ.       .15       .15         Small employers and own       .07       .07         account workers       .08       .08         Lower supervisory and       .08       .08         technical occ.       .14       .15         Semi-routine occ.       .14       .15         Routine occ.       .08       .09         Net household income       .09       .09         (quintiles)       .15       .15         Lowest       .15       .15 $20 - < 40\%$ .17       .17 $40 - < 60\%$ .21       .22 $60 - < 80\%$ .22       .22         Highest       .25       .24         Housing tenure	Lower managerial and	.31		.30			
Intermediate occ.       .15       .15         Small employers and own       .07       .07         account workers       .08       .08         Lower supervisory and       .08       .08         technical occ.       .14       .15         Semi-routine occ.       .14       .15         Routine occ.       .08       .09         Net household income       .09       .09         (quintiles)       .05       .15         Lowest       .15       .15 $20 - < 40\%$ .17       .17 $40 - < 60\%$ .21       .22 $60 - < 80\%$ .22       .22         Highest       .25       .24         Housing tenure       .22       .22         Social housing       .21       .22         Family structure       .22       .22         Family structure       .22       .22         Family structure       .15       .05         step/adoptive parent       .15       .05         Natural parent only       .18       .18         Number of siblings       .16       .16         One       .50       .50	professional occ.						
Small employers and own.07.07account workers.08.08Lower supervisory and.08.08technical occ14.15Routine occ08.09Net household income.09(quintiles).15.15Lowest.15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure.25.24Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Intermediate occ.	.15		.15			
account workers       .08       .08         Lower supervisory and       .08       .08         technical occ.       .14       .15         Semi-routine occ.       .08       .09         Net household income       .09       .09         (quintiles)       .15       .15         Lowest       .15       .15 $20 - < 40\%$ .17       .17 $40 - < 60\%$ .21       .22 $60 - < 80\%$ .22       .22         Highest       .25       .24         Housing tenure       .21       .22         Social housing       .21       .22         Family structure       .25       .24         Housing tenure       .25       .24         Social housing       .21       .22         Family structure       .21       .22         Family structure       .21       .22         Family structure       .21       .22         Social housing       .21       .22         family structure       .31       .31         Natural parent and       .05       .05         step/adoptive parent       .31       .31	Small employers and own	.07		.07			
Lower supervisory and.08.08technical occ14.15Semi-routine occ08.09Net household income.08.09(quintiles).15.15Lowest.15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure.21.22Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	account workers						
technical occ.Semi-routine occ14.15Routine occ08.09Net household income $(quintiles)$ .15.15Lowest.15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure	Lower supervisory and	.08		.08			
Semi-routine occ.       .14       .15         Routine occ.       .08       .09         Net household income       .09 $(quintiles)$ .15       .15         Lowest       .15       .15 $20 - < 40\%$ .17       .17 $40 - < 60\%$ .21       .22 $60 - < 80\%$ .22       .22         Highest       .25       .24         Housing tenure       .21       .22         Social housing       .21       .22         Family structure       .24         Both natural parents       .77       .77         Natural parent and       .05       .05         step/adoptive parent       .18       .18         Number of siblings       .16       .16         One       .50       .50	technical occ.						
Routine occ.       .08       .09         Net household income       .09         (quintiles)       .15       .15         Lowest       .15       .15 $20 - < 40\%$ .17       .17 $40 - < 60\%$ .21       .22 $60 - < 80\%$ .22       .22         Highest       .25       .24         Housing tenure       .21       .22         Social housing       .21       .22         Family structure       .21       .22         Both natural parents       .77       .77         Natural parent and       .05       .05         step/adoptive parent       .18       .18         Number of siblings       .16       .16         One       .50       .50	Semi-routine occ.	.14		.15			
Net household income $(quintiles)$ Lowest       .15 $20 - < 40\%$ .17 $40 - < 60\%$ .21 $40 - < 60\%$ .21 $60 - < 80\%$ .22 $60 - < 80\%$ .22 $60 - < 80\%$ .22 $60 - < 80\%$ .22 $60 - < 80\%$ .22 $60 - < 80\%$ .25 $22$ .24         Housing tenure       .25         Social housing       .21 $77$ .22         Family structure       .21         Both natural parents       .77         Natural parent and       .05 $50$ .05         step/adoptive parent       .18         Number of siblings       .16         No siblings       .16         One       .50	Routine occ.	.08		.09			
(quintiles).15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure.21.22Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Net household income						
Lowest.15.15 $20 - < 40\%$ .17.17 $40 - < 60\%$ .21.22 $60 - < 80\%$ .22.22Highest.25.24Housing tenure.25.24Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	(quintiles)						
20 - < 40%.17.17 $40 - < 60%$ .21.22 $60 - < 80%$ .22.22Highest.25.24Housing tenure.21.22Social housing.21.22Family structure.25.24Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Lowest	.15		.15			
40 - < 60%.21.22 $60 - < 80%$ .22.22Highest.25.24Housing tenure.21.22Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	20 - < 40%	.17		.17			
60 - < 80%.22.22Highest.25.24Housing tenure.21.22Social housing.21.22Family structure.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	40 - < 60%	.21		.22			
Highest.25.24Housing tenure.21.22Social housing.21.22Family structure.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	60 - < 80%	.22		.22			
Housing tenure.21.22Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Highest	.25		.24			
Social housing.21.22Family structure.21.22Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Housing tenure						
Family structure	Social housing	.21		.22			
Both natural parents.77.77Natural parent and.05.05step/adoptive parent.18.18Number of siblings.16.16One.50.50	Family structure						
Natural parent and.05.05Step/adoptive parent.18.18Natural parent only.18.18Number of siblings.16.16One.50.50	Both natural parents	77		77			
step/adoptive parent.18.18Natural parent only.18.18Number of siblings.16.16One.50.50	Natural parent and	05		05			
Natural parent only.18.18Number of siblings.16.16One.50.50	step/adoptive parent			100			
Number of siblings.16.16No siblings.16.16One.50.50	Natural parent only	18		18			
No siblings.16.16One.50.50	Number of siblings	.10		.10			
One .50 .50	No siblings	16		16			
	One	50		50			
More than one sibling $34$ $34$	More than one sibling	.50		.50			
Grandparent present in the 02 02	Grandparent present in the	.34		.34			
boussheld: yas	bousshold: yes	.05		.05			
Other adults in the household: 03 02	Other adults in the household:	02		02			
		.05		.05			
yes Region	yos Region						

Northeast	.03		.03	
Northwest	.10		.10	
Yorkshire and the Humber	.08		.08	
East Midlands	.07		.07	
West Midlands	.08		.08	
East of England	.10		.10	
London	.10		.10	
Southeast	.16		.15	
Southwest	.09		.09	
Wales	.05		.05	
Scotland	.10		.10	
Northern Ireland	.04		.04	
Neighborhood deprivation				
(deciles)				
Most Deprived Decile	.09		.10	
10 - < 20%	.09		.09	
20 - < 30%	.10		.10	
30 - < 40%	.09		.09	
40 - < 50%	.10		.10	
50 - < 60%	.10		.10	
60 - < 70%	.10		.10	
70 - < 80%	.10		.10	
80 - < 90%	.11		.11	
Least Deprived Decile	.12		.12	
Child's sex: female	.49		.49	
Child's ethnic group				
White	.90		.90	
Mixed	.03		.03	
Indian	.02		.02	
Pakistani and Bangladeshi	.02		.02	
Black or Black British	.02		.02	
Other Ethnic group (incl.	.01		.01	
Chinese)				
Child's age (in months)	62.53	2.90	62.53	2.91
N	12,892		11,265	

Source: MCS; BSS. Sample weights, clustering and stratification accounted for (MCS). \*Prior to standardisation.

	Аде	5	Δσε	7
	M1	M2	M1	M2
Maternal occupation-specific skills				
Literacy	$0.11^{***}$	$0.07^{***}$	$0.11^{***}$	$0.07^{**}$
	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	$0.04^{**}$	0.02	0.03	0.02
	(0.01)	(0.01)	(0.02)	(0.02)
Problem-solving	-0.01	-0.02	-0.04	-0.04
C	(0.02)	(0.02)	(0.02)	(0.02)
Verbal	0.04***	0.02	0.03	0.01
	(0.01)	(0.01)	(0.01)	(0.02)
Physical	-0.00	0.03*	-0.00	0.02
	(0.02)	(0.01)	(0.02)	(0.02)
Net household income (Ref. Lowest	(010_)	(0.0-)	(0.0-)	(010_)
auintile)				
20 - < 40%		-0.08*		-0.00
20 40/0		(0.04)		(0.05)
40 < 60%		(0.04)		(0.03)
40 - < 00%		-0.09		(0.04)
C0 < 900/		(0.04)		(0.03)
60 - < 80%		-0.14		0.01
TT: 1 / 1 /1		(0.04)		(0.05)
Highest quintile		-0.13		0.04
		(0.05)		(0.06)
Housing tenure (Ref. No social housing)				
		*		
Social housing		-0.08*		-0.03
		(0.04)		(0.04)
Parental class (Ref. Higher managerial				
and professional occ.)				
Lower managerial and professional occ.		-0.07**		0.03
		(0.02)		(0.03)
Intermediate occ.		-0.06		0.02
		(0.04)		(0.05)
Small employers and own account workers		-0.09		0.04
		(0.05)		(0.05)
Lowers supervisor and technical occ.		-0.17**		0.07
-		(0.06)		(0.05)
Semi-routine occ.		-0.13**		0.02
		(0.05)		(0.05)
Routine occ.		-0.11		0.06
		(0.06)		(0.07)
Parental education (Ref. No		~ /		~ /
<i>aualifications</i> )				
NVO level 1		$0.15^{*}$		0.21***
		(0.06)		(0.06)
NVO level 2		0.19***		0.19***
		(0.05)		(0.05)
NVO level 3		(0.05)		0.28***
		(0.05)		(0.26)
NVO loval 4		(0.03)		(0.00)
		(0.52)		(0.52)
NWO lovel 5		(0.03)		(0.00)
n v Q level 5		0.50		0.39
		(0.06)		(0.07)
Overseas qualifications only		0.09		0.08
		(0.10)		(0.11)
Family structure (Ref. Both natural parents)				

**Table A5.** Summary of OLS regressions predicting *reading to the child* from maternal occupation-specific skills and covariates

Natural parent and step/adoptive parent	-0.10*	-0.09
Natural according to a la	(0.05)	(0.05)
Natural parent only	-0.09	-0.10
Number of siblings (Ref. zero siblings)	(0.03)	(0.04)
One sibling	-0.23***	-0.12***
	(0.03)	(0.03)
More than one sibling	-0.42	$-0.20^{-0.20}$
Grandparent present (Ref. no)	0.00	0.00
	(.)	(.)
Yes	0.01	0.02
	(0.07)	(0.07)
Other adults present (Ref. no)		
Yes	-0.00	-0.03
Neighborhood deprivation (Paf Most	(0.06)	(0.06)
deprived decile		
10 - < 20%	0.02	-0.01
	(0.05)	(0.05)
20 - < 30%	0.06	0.09
	(0.04)	(0.05)
30 - < 40%	0.01	0.02
10 5000	(0.05)	(0.05)
40 - < 50%	0.02	0.07
50 < 60%	(0.05)	(0.05)
50 - < 00%	(0.05)	(0.06)
60 - < 70%	0.05	0.12*
	(0.05)	(0.05)
70 - < 80%	0.03	0.07
	(0.05)	(0.05)
80 - < 90%	$0.11^{*}$	$0.13^{*}$
	(0.05)	(0.05)
Least Deprived Decile	0.14**	0.07
Region (Ref. Scotland)	(0.05)	(0.06)
Northeast	-0.01	0.00
Northwest	(0.05)	(0.07)
Northwest	(0.01)	(0.05)
Yorkshire and the Humber	-0.09	(0.03) 0.14*
Torkshire and the Humber	(0.07)	(0.07)
East Midlands	0.03	0.11*
	(0.04)	(0.05)
West Midlands	-0.03	0.13*
	(0.04)	(0.06)
East of England	-0.07	$0.21^{***}$
· ·	(0.05)	(0.05)
London	0.08	0.18
Southeast	(0.05)	(0.06)
Sourcast	-0.04 (0.04)	(0.12)
Southwest	0.01	0.19***
	(0.04)	(0.05)
Wales	-0.11 <sup>***</sup>	0.06
	(0.04)	(0.04)

Northern Ireland		0.13**		$0.12^{*}$
		(0.04)		(0.05)
Child sex (Ref. Male)				
Female		0.03		-0.01
		(0.02)		(0.02)
Child ethnic group (Ref. White)		0.00		0.00
		(.)		(.)
Mixed		-0.09		-0.11
		(0.06)		(0.07)
Indian		-0.23***		-0.34***
		(0.06)		(0.09)
Pakistani and Bangladeshi		-0.12		-0.28***
C		(0.08)		(0.08)
Black or Black British		-0.21**		-0.19*
		(0.07)		(0.09)
Other Ethnic group		0.18		-0.43*
		(0.09)		(0.17)
Child's age (in months)		-0.00		-0.00
		(0.00)		(0.00)
Constant	0.01	0.30	0.02	0.02
	(0.01)	(0.20)	(0.01)	(0.27)
N	12,892	12,892	11,265	11,265
$R^2$	0.028	0.070	0.017	0.048

Source: MCS; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

	Ag	e 5	Ασ	e 7
	M1	M2	M1	M2
Maternal occupation-specific skills				
Literacy	0.03	0.02	0.00	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	0.00	-0.01	-0.02	-0.03
	(0.01)	(0.01)	(0.02)	(0.01)
Problem-solving	-0.02	-0.02	0.01	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Verbal	0.06***	0.06***	0.05**	0.05**
~	(0.02)	(0.02)	(0.02)	(0.02)
Physical	0.03	0.02	0.02	0.01
	(0.02)	(0.02)	(0.02)	(0.02)
Net household income (Ref. Lowest				
quintile)		0.04		0.00
20 - < 40%		-0.04		-0.08
40 < 60%		(0.04)		(0.05)
40 - < 00%		-0.10		-0.07
60 < 800/		(0.04)		(0.03)
00 - < 80%		-0.12		-0.09
Highest quintile		(0.03)		(0.03)
Ingliest quilitie		-0.13		-0.10
Housing tonurs (Paf No social housing)		(0.03)		(0.00)
nousing lenure (Rej. No social nousing)				()
Social housing		-0.02		0.03
Social housing		(0.02)		(0.03)
Parental class (Ref Higher managerial		(0.05)		(0.04)
and professional occ )				
Lower managerial and professional occ		0.03		0.04
2000 in manageriar and protessional over		(0.03)		(0.03)
Intermediate occ.		0.04		0.07
		(0.04)		(0.05)
Small employers and own account workers		0.04		0.03
1 2		(0.05)		(0.05)
Lowers supervisor and technical occ.		0.07		0.08
•		(0.06)		(0.05)
Semi-routine occ.		0.01		0.01
		(0.05)		(0.05)
Routine occ.		0.01		-0.04
		(0.06)		(0.07)
Parental education (Ref. No				
qualifications)				
NVQ level 1		-0.01		0.06
		(0.06)		(0.06)
NVQ level 2		0.09*		0.15**
		(0.04)		(0.05)
NVQ level 3		0.21***		0.25***
		(0.05)		(0.05)
NVQ level 4		0.21		0.24
NWO level 5		(0.05)		(0.06)
IN V Q IEVEL 5		0.32		(0.07)
Oversees qualifications		(0.07)		(0.07)
Overseas qualifications only		-0.10		0.04
Family structure (Pof Doth natural		(0.08)		(0.08)
r unity structure (Kej. Doin natural				
purents)				

**Table A6.** Summary of OLS regressions predicting *telling stories to the child* from maternal occupation-specific skills and covariates

Natural parent and step/adoptive parent	-0.07	0.00
	(0.05)	(0.06)
Natural parent only	-0.04	(0.00)
Number of siblings (Ref. zero siblings)	(0.04)	(0.04)
One sibling	-0.16***	-0.11**
More than one sibling	(0.03)	(0.04) 0.12***
More than one storing	-0.23 (0.04)	(0.04)
Grandparent present (Ref. no)		
Yes	0.03	0.09
Other adults present (Ref. no)	(0.07)	(0.07)
Yes	-0.06	-0.10
	(0.07)	(0.08)
Neighborhood deprivation (Ref. Most deprived decile		
10 - < 20%	-0.09	-0.02
	(0.06)	(0.05)
20 - < 30%	0.01	-0.03
20 < 400/	(0.05)	(0.05)
30 - < 40%	-0.05	0.02
40 - < 50%	(0.03)	(0.03)
	(0.06)	(0.02)
50 - < 60%	0.00	0.01
	(0.06)	(0.06)
60 - < 70%	-0.02	0.02
	(0.06)	(0.06)
70 - < 80%	-0.05	-0.06
	(0.06)	(0.06)
80 - < 90%	-0.02	-0.05
	(0.06)	(0.06)
Least Deprived Decile	-0.06	-0.08
Region (Ref. Scotland)	(0.00)	(0.00)
Northeast	-0.22**	-0.18
	(0.07)	(0.10)
Northwest	-0.15**	-0.15*
	(0.06)	(0.06)
Yorkshire and the Humber	-0.15*	-0.12
	(0.07)	(0.08)
East Midlands	-0.10	-0.08
West Midlands	(0.07)	(0.07) 0.17**
west midialids	-0.28	-0.17
East of England	-0 42***	-0.28***
	(0.06)	(0.07)
London	-0.21***	-0.12
	(0.05)	(0.07)
Southeast	-0.26***	-0.23***
	(0.05)	(0.06)
Southwest	-0.31***	-0.27***
Walas	(0.06)	(0.06)
wates	-0.16	-0.19
	(0.04)	(0.05)

Northern Ireland		$0.17^{***}$		0.11
		(0.05)		(0.06)
Child sex (Ref. Male)				
		**		
Female		0.05		0.02
		(0.02)		(0.02)
Child ethnic group (Ref. White)				0.00
				(.)
Mixed		0.02		0.08
		(0.06)		(0.07)
Indian		0.04		-0.01
		(0.08)		(0.09)
Pakistani and Bangladeshi		$0.16^{**}$		$0.21^{**}$
		(0.06)		(0.07)
Black or Black British		0.03		0.03
		(0.06)		(0.07)
Other Ethnic group		0.08		0.09
		(0.11)		(0.13)
Child's age (in months)		-0.00		0.00
		(0.00)		(0.00)
Constant	-0.05***	0.39	-0.03	0.06
	(0.02)	(0.25)	(0.02)	(0.27)
N	12,892	12,892	11,265	11,265
$R^2$	0.005	0.040	0.003	0.026

Source: MCS1–MCS3; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

	Δα	ie 5	Δσ	e 7
	M1	M2	M1	M2
Maternal occupation-specific skills				
Literacy	0.02	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	0.01	0.00	0.02	0.01
	(0.02)	(0.02)	(0.02)	(0.02)
Problem-solving	-0.06**	-0.04*	-0.04*	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Verbal	0.03*	0.03	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Physical	0.03	0.01	0.04*	0.03
	(0.02)	(0.02)	(0.02)	(0.02)
Net household income (Ref. Lowest				
quintile)		0.02		0.01
20 - < 40%		0.02		-0.01
40		(0.04)		(0.04)
40 - < 60%		-0.06		-0.03
60 < 800/		(0.04)		(0.04)
00 - < 80%		-0.08		-0.02
Highest quintile		(0.03)		(0.03)
Highest quintile		-0.00		-0.03
Housing tenure (Ref. No social housing)		(0.05)		(0.05)
Social housing		0.05		0.12***
Social nousing		(0.03)		(0.12)
Parental class (Ref Higher managerial		(0.03)		(0.04)
and professional occ.)				
Lower managerial and professional occ		0.08*		0.01
Lower managemar and professional oce.		(0.04)		(0.04)
Intermediate occ.		0.05		-0.02
		(0.05)		(0.04)
Small employers and own account workers		0.08		0.05
1 5		(0.05)		(0.05)
Lowers supervisor and technical occ.		0.04		-0.01
-		(0.06)		(0.06)
Semi-routine occ.		0.04		-0.01
		(0.05)		(0.05)
Routine occ.		0.10		-0.06
		(0.06)		(0.07)
Parental education (Ref. No				
qualifications)				
NVQ level 1		-0.01		0.09
		(0.06)		(0.07)
NVQ level 2		0.11		0.12
		(0.05)		(0.05)
NVQ level 3		0.16		(0.1)
NWO level 4		(0.05)		(0.05)
11 1 Q 10 101 4		(0.13)		(0.05)
NVO level 5		(0.03)		(0.03)
		(0.08)		(0.09
Overseas qualifications only		-0.05		0.00
Creiseus quanneations omy		(0.03)		(0.10)
Family structure (Ref. Both natural		(0.00)		(0.10)

**Table A7.** Summary of OLS regressions predicting *engaging in musical activities* from maternal occupation-specific skills and covariates

parents)

Natural parent and step/adoptive parent	$0.14^{**}$	$0.12^{*}$
Natural according to a la	(0.05)	(0.06)
Natural parent only	0.18	(0.12)
Number of siblings (Ref. zero siblings)	(0.03)	(0.04)
One sibling	-0.07*	-0.10***
	(0.03)	(0.03)
More than one sibling	-0.13***	-0.17***
Grandparent present (Ref. no)	(0.05)	(0.03)
Yes	0.05	0.04
	(0.07)	(0.08)
Other adults present (Ref. no)		
Yes	-0.16*	-0.04
Neighborhood deprivation (Ref. Most	(0.07)	(0.07)
deprived decile		
10 - < 20%	-0.02	-0.02
	(0.04)	(0.05)
20 - < 30%	-0.00	0.03
	(0.04)	(0.05)
30 - < 40%	0.02	-0.03
10 5001	(0.06)	(0.05)
40 - < 50%	-0.01	-0.00
50 - < 60%	(0.05)	(0.05)
	-0.04	-0.07
60 < 700/	(0.06) 0.14**	(0.05)
00 - < 70%	(0.05)	-0.04
70 - < 80%	-0.07	-0.05
10 < 00/0	(0.05)	(0.05)
80 - < 90%	-0.02	-0.04
	(0.05)	(0.05)
Least Deprived Decile	-0.06	-0.07
	(0.06)	(0.06)
Region (Ref. Scotland)		
Northeast	-0.04	0.00
	(0.07)	(0.05)
Northwest	-0.07	-0.01
	(0.05)	(0.04)
Yorkshire and the Humber	-0.03	-0.08
	(0.04)	(0.05)
East Midlands	-0.11*	-0.04
West Midlands	(0.06)	(0.05)
west minimus	-0.08	-0.07
Fast of England	-0.17**	-0.09
Last of England	(0.06)	(0.06)
London	-0.14**	-0.06
	(0.05)	(0.04)
Southeast	-0.02	0.03
	(0.04)	(0.05)
Southwest	-0.06	-0.05
	(0.05)	(0.04)
Wales	-0.00	0.04
	(0.03)	(0.04)

Northern Ireland		0.03		-0.05
		(0.04)		(0.05)
Child sex (Ref. Male)				
Female		$0.22^{***}$		$0.25^{***}$
		(0.02)		(0.02)
Child ethnic group (Ref. White)				
Mixed		-0.01		$0.15^{*}$
		(0.06)		(0.06)
Indian		-0.11		-0.27**
		(0.08)		(0.09)
Pakistani and Bangladeshi		-0.49***		-0.59***
-		(0.08)		(0.07)
Black or Black British		-0.20**		-0.34***
		(0.07)		(0.07)
Other Ethnic group		-0.20		-0.06
		(0.14)		(0.11)
Child's age (in months)		-0.01**		-0.00
		(0.00)		(0.00)
Constant	-0.01	0.51*	0.01	0.23
	(0.01)	(0.24)	(0.01)	(0.23)
N	12,892	12,892	11,265	11,265
$R^2$	0.002	0.044	0.001	0.048

Source: MCS1–MCS3; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

	Δσ	e 5	Age 7	
	M1	M2	M1	M2
Maternal occupation-specific skills	<b>.</b>	<b>-</b>		±: <b>=</b>
Literacy	0.02	0.02	-0.02	-0.01
2	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	0.03*	0.02	0.01	-0.00
Numeracy	(0.02)	(0.02)	(0.01)	(0.02)
Problem solving	(0.02)	(0.01)	(0.02)	(0.02)
r toblem-solving	(0.02)	-0.02	(0.00)	(0.01)
Vorbal	(0.02)	(0.02)	(0.02)	(0.02)
verbar	(0.04)	(0.04)	0.00	(0.03)
Discriminat	(0.01)	(0.02)	(0.02)	(0.02)
Physical	0.05	0.05	0.04	0.03
	(0.02)	(0.02)	(0.02)	(0.02)
Net household income (Ref. Lowest				
quintile)				
20 - < 40%		-0.07		-0.05
		(0.04)		(0.05)
40 - < 60%		-0.06		-0.05
		(0.04)		(0.04)
60 - < 80%		-0.14**		-0.14**
		(0.04)		(0.05)
Highest quintile		-0.14**		-0.17***
		(0.05)		(0.05)
Housing tenure (Ref. No social housing)				~ /
Social housing		-0.04		0.06
Social nousing		(0.03)		(0.03)
Parental class (Ref. Higher managerial and professional occ.)		(0.05)		(0.03)
Lower managerial and professional occ.		0.03		-0.03
C I I I I I I I I I I I I I I I I I I I		(0.03)		(0.03)
Intermediate occ.		0.03		-0.08*
		(0.04)		(0.04)
Small employers and own account workers		0.08		-0.01
Sinan employers and own account workers		(0.00)		(0.05)
Lowers supervisor and technical occ		-0.02		-0.01
Lowers supervisor and teenmear oce.		(0.02)		(0.05)
Sami routing acc		(0.03)		(0.05)
Semi-routine oce.		-0.01		(0.05)
Douting ago		(0.04)		(0.03)
Koutine occ.		(0.02)		-0.09
Demonstral a deservicions (Def. No.		(0.03)		(0.00)
Parental education (Ref. No				
qualifications)		0.02		0.01
NVQ level 1		0.03		-0.01
		(0.06)		(0.06)
NVQ level 2		0.09		0.01
		(0.04)		(0.05)
NVQ level 3		$0.16^{***}$		0.08
		(0.05)		(0.06)
NVQ level 4		$0.15^{**}$		0.07
		(0.05)		(0.06)
NVQ level 5		0.23**		$0.15^{*}$
		(0.07)		(0.07)
Overseas qualifications only		0.07		-0.05
		(0.09)		(0.11)
Family structure (Ref. Both natural		` '		

**Table A8.** Summary of OLS regressions predicting drawing, painting, or making things withthe child from maternal occupation-specific skills and covariates

parents)

Natural parent and step/adoptive parent	0.02	0.08
	(0.05)	(0.06)
Natural parent only	-0.05	-0.05
Number of siblings (Ref. zero siblings)	(0.03)	(0.04)
One sibling	-0.19***	-0.13***
-	(0.03)	(0.03)
More than one sibling	-0.30***	-0.24***
Grandparent present (Ref. no)	(0.03)	(0.03)
Yes	0.10	0.09
	(0.06)	(0.07)
Other adults present (Ref. no)		
Yes	-0.05	0.05
Naighborhood deprivation (Pof Most	(0.06)	(0.08)
deprived decile		
10 - < 20%	-0.07	-0.09
	(0.05)	(0.05)
20 - < 30%	-0.04	-0.07
	(0.05)	(0.06)
30 - < 40%	-0.09	-0.05
	(0.05)	(0.06)
40 - < 50%	-0.06	-0.08
50 - < 60%	(0.05)	(0.06)
	-0.06	-0.11
	(0.05)	(0.06)
60 - < 70%	-0.12*	-0.03
70 000/	(0.05)	(0.06)
70 - < 80%	-0.11	-0.09
90 - 000/	(0.05)	(0.06)
80 - < 90%	-0.10	-0.07
Lasst Deprived Decile	(0.05)	(0.00)
Least Deprived Decre	-0.12	-0.12
Region (Ref. Scotland)	(0.03)	(0.00)
Northeast	-0.04	0.04
Tortifoust	(0.08)	(0.09)
Northwest	0.07	0.15***
	(0.05)	(0.04)
Yorkshire and the Humber	-0.08	0.06
	(0.06)	(0.07)
East Midlands	0.02	0.05
	(0.04)	(0.05)
West Midlands	-0.07	-0.00
	(0.04)	(0.05)
East of England	-0.15**	-0.04
· ·	(0.05)	(0.06)
London	0.03	0.06
	(0.06)	(0.05)
Soutneast	-0.04	0.05
Conthrugat	(0.05)	(0.04)
Soumwest	-0.05	0.03
Wales	(0.03)	(0.05) 0.15***
wates	(0.04)	0.13
	(0.04)	(0.04)

Northern Ireland		$0.10^{*}$		0.01
		(0.05)		(0.05)
Child sex (Ref. Male)				
Female		$0.18^{***}$		$0.18^{***}$
		(0.02)		(0.02)
Child ethnic group (Ref. White)				
Mixed		-0.02		0.00
		(0.06)		(0.06)
Indian		-0.21*		-0.24*
		(0.09)		(0.10)
Pakistani and Bangladeshi		-0.13		$-0.17^{*}$
-		(0.08)		(0.08)
Black or Black British		-0.25**		-0.50***
		(0.08)		(0.08)
Other Ethnic group		0.07		0.05
		(0.12)		(0.16)
Child's age (in months)		-0.00		0.00
		(0.00)		(0.00)
Constant	-0.03*	$0.44^{*}$	0.00	0.12
	(0.01)	(0.21)	(0.01)	(0.25)
N	12,892	12,892	11,265	11,265
$R^2$	0.003	0.035	0.004	0.034

Source: MCS1–MCS3; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

	Aσ	e 5	Age 7	
	M1	M2	M1	M2
Maternal occupation-specific skills				
Literacy	0.01	-0.03	0.01	-0.02
2	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	0.03*	0.02	0.01	-0.01
2	(0.01)	(0.01)	(0.02)	(0.02)
Problem-solving	-0.00	-0.00	0.02	0.03
C C	(0.02)	(0.02)	(0.02)	(0.02)
Verbal	$0.07^{***}$	$0.05^{***}$	0.05**	$0.04^{*}$
	(0.01)	(0.01)	(0.02)	(0.02)
Physical	0.01	0.03	-0.01	0.00
	(0.02)	(0.02)	(0.02)	(0.02)
Net household income (Ref. Lowest				
quintile)				
20 - < 40%		-0.07*		0.00
		(0.04)		(0.05)
40 - < 60%		-0.07		-0.01
		(0.04)		(0.05)
60 - < 80%		-0.08		-0.04
		(0.04)		(0.05)
Highest quintile		-0.07		-0.05
		(0.05)		(0.05)
Housing tenure (Ref. No social housing)		× /		
Social housing		-0.06		-0.04
		(0.03)		(0.04)
Parental class (Ref. Higher managerial		(0.00)		(0101)
and professional occ.)				
Lower managerial and professional occ.		0.02		0.02
		(0.03)		(0.03)
Intermediate occ.		0.01		-0.04
		(0.04)		(0.05)
Small employers and own account workers		0.07		0.02
		(0.05)		(0.05)
Lowers supervisor and technical occ.		-0.07		-0.11*
		(0.05)		(0.05)
Semi-routine occ.		-0.03		-0.08
		(0.05)		(0.05)
Routine occ		-0.03		-0.11
		(0.06)		(0.06)
Parental education (Ref. No		(0000)		(0100)
aualifications)				
NVO level 1		0.08		0.13
		(0.06)		(0.06)
NVO level 2		0.14**		0.06
		(0.05)		(0.06)
NVO level 3		0.22***		0.15*
		(0.05)		(0.06)
NVO level 4		0.23***		0.11
		(0.05)		(0.06)
NVO level 5		0.25***		0.11
		(0.07)		(0.07)
Overseas qualifications only		0.08		0.18
C. Cloves qualifications only		(0.10)		(0.12)
Family structure (Ref. Both natural		(0.10)		(0.12)
narents)				
Por citio)				

**Table A9.** Summary of OLS regressions predicting *playing sports or physical active games,indoors or outdoors* from maternal occupation-specific skills and covariates

Natural parent and step/adoptive parent	-0.05	0.06
NT-(1	(0.05)	(0.06)
Natural parent only	-0.04	-0.02
Number of siblings (Ref. zero siblings)	(0.03)	(0.05)
One sibling	-0.11***	-0.02
More than one sibling	(0.03)	(0.03)
More than one storing	(0.03)	-0.13 (0.04)
Grandparent present (Ref. no)		
Yes	0.03	$0.27^{***}$
Other adults present (Ref. no)	(0.06)	(0.08)
Yes	0.01	-0.04
	(0.06)	(0.06)
Neighborhood deprivation (Ref. Most deprived decile		
10 - < 20%	-0.07	-0.05
	(0.05)	(0.06)
20 - < 30%	-0.01	-0.04
	(0.06)	(0.06)
30 - < 40%	-0.05	-0.03
40 - < 50%	(0.05)	(0.06)
	0.01	(0.03)
50 < 600/	(0.08)	(0.00)
50 - < 00%	-0.01	-0.10
60 - < 70%	-0.01	-0.03
00 - < 7070	(0.06)	-0.05
70 - < 80%	0.03	0.01
	(0.05)	(0.06)
80 - < 90%	0.06	0.03
	(0.06)	(0.06)
Least Deprived Decile	0.07	0.03
Ragion (Ref. Scotland)	(0.06)	(0.06)
Region (Rej. Sconunu)		
Northeast	-0.09	-0.06
NI-self-second	(0.07)	(0.07)
Northwest	0.02	0.08
Vorkshire and the Humber	(0.03)	(0.03)
Torkshile and the Humber	-0.01	(0.05)
Fast Midlands	0.13*	(0.03) 0.12**
Last Michailas	(0.05)	(0.04)
West Midlands	0.02	0.01
	(0.05)	(0.05)
East of England	-0.08	-0.05
-	(0.05)	(0.06)
London	0.02	0.03
	(0.07)	(0.05)
Southeast	0.04	$0.10^{*}$
	(0.05)	(0.05)
Southwest	$0.12^{*}$	0.13**
Walas	(0.06)	(0.05)
wates	0.14	0.15
	(0.04)	(0.04)

Northern Ireland		$0.16^{***}$		0.13**
		(0.05)		(0.05)
Child sex (Ref. Male)				
Female		-0.08***		-0.07**
		(0.02)		(0.02)
Child ethnic group (Ref. White)				
Mixed		-0.00		-0.16*
		(0.05)		(0.06)
Indian		$-0.20^{*}$		-0.36***
		(0.09)		(0.09)
Pakistani and Bangladeshi		-0.43***		-0.35***
-		(0.07)		(0.08)
Black or Black British		-0.30***		-0.23**
		(0.08)		(0.08)
Other Ethnic group		-0.09		$-0.30^{*}$
		(0.12)		(0.15)
Child's age (in months)		-0.01**		-0.01***
		(0.00)		(0.00)
Constant	-0.01	$0.66^{**}$	0.01	$0.88^{***}$
	(0.01)	(0.24)	(0.01)	(0.25)
N	12,892	12,892	11,265	11,265
$R^2$	0.008	0.041	0.006	0.034

Source: MCS1–MCS3; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

<u></u>	Δσ	e 5	Δ σο 7	
	M1	M2	M1	M2
Maternal occupation-specific skills				
Literacy	$0.06^{**}$	$0.05^{*}$	0.00	-0.01
•	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	0.01	-0.00	0.00	-0.01
,	(0.02)	(0.02)	(0.02)	(0.02)
Problem-solving	-0.03*	-0.03	-0.00	0.01
C	(0.02)	(0.02)	(0.02)	(0.02)
Verbal	0.04*	0.03	0.04**	0.05**
	(0.02)	(0.02)	(0.02)	(0.02)
Physical	0.03*	0.04*	0.00	-0.00
	(0.02)	(0.02)	(0.02)	(0.01)
Net household income (Ref. Lowest				(,
auintile)				
20 - < 40%		-0.09*		-0.04
20 (10/0		(0.04)		(0.04)
10 - < 60%		-0.15**		-0.04
+0 - < 00 /0		(0.05)		(0.04)
60 < 800/		(0.03)		(0.04)
00 - < 80%		-0.22		-0.14
Highest quintile		(0.03)		(0.03) 0.16**
Highest quintile		-0.20		-0.10
		(0.05)		(0.05)
Housing tenure (Ref. No social housing)				
a · 11 ·		0.02		0.04
Social housing		0.03		0.04
		(0.04)		(0.04)
Parental class (Ref. Higher managerial				
and professional occ.)				
Lower managerial and professional occ.		-0.01		0.03
		(0.03)		(0.04)
Intermediate occ.		-0.03		0.05
		(0.04)		(0.04)
Small employers and own account workers		-0.05		0.04
		(0.05)		(0.06)
Lowers supervisor and technical occ.		-0.03		0.02
		(0.05)		(0.05)
Semi-routine occ.		-0.04		-0.01
		(0.05)		(0.05)
Routine occ.		-0.09		0.02
		(0.06)		(0.07)
Parental education (Ref. No				
qualifications)				
NVQ level 1		0.00		0.01
		(0.06)		(0.06)
NVQ level 2		0.06		0.02
		(0.05)		(0.05)
NVQ level 3		$0.19^{***}$		$0.14^{**}$
		(0.05)		(0.05)
NVQ level 4		0.17 <sup>***</sup>		0.07
-		(0.05)		(0.05)
NVQ level 5		0.23 ***		0.08
		(0.07)		(0.07)
Overseas qualifications only		0.00		-0.12
		(0.10)		(0.10)
Family structure (Ref. Both natural		(0.10)		(0.10)
parents)				
purchus				

**Table A10.** Summary of OLS regressions predicting *playing with toys or games indoors*from maternal occupation-specific skills and covariates

Natural parent and step/adoptive parent	0.01	0.04
Natural parent only	(0.04)	(0.06)
	-0.11	-0.08
Number of siblings (Ref. zero siblings)	(0.03)	(0.04)
One sibling	-0.26***	-0.19***
-	(0.03)	(0.03)
More than one sibling	-0.46	-0.39
Grandparent present (Ref. no)	(0.03)	(0.03)
Yes	0.11	0.31***
	(0.07)	(0.07)
Other adults present (Ref. no)		
Yes	-0.02	-0.01
Neighborhood deprivation (Ref. Most	(0.07)	(0.07)
deprived decile		
10 - < 20%	-0.03	-0.06
	(0.06)	(0.06)
20 - < 30%	-0.01	0.00
	(0.05)	(0.06)
30 - < 40%	-0.06	-0.00
10 500/	(0.05)	(0.06)
40 - < 50%	-0.02	0.02
50 < 60%	(0.05)	(0.05)
30 - < 00%	-0.03	-0.03
60 - < 70%	-0.02	-0.04
00 - < 7070	(0.02)	(0.06)
70 - < 80%	-0.07	-0.01
	(0.05)	(0.06)
80 - < 90%	-0.03	0.04
	(0.05)	(0.05)
Least Deprived Decile	0.00	0.01
Pagion (Pof Scotland)	(0.05)	(0.06)
Region (Rej. Scolumu)		
Northeast	-0.01	0.06
NY 4	(0.07)	(0.08)
Northwest	-0.02	-0.01
Vorteshing and the Humber	(0.05)	(0.06)
Y Orkshire and the Humber	-0.01	0.04
Fast Midlands	0.08)	(0.03)
Last Wildiands	(0.01)	(0.02)
West Midlands	-0.01	-0.03
	(0.05)	(0.06)
East of England	-0.15***	-0.16**
č	(0.04)	(0.06)
London	-0.06	-0.04
	(0.04)	(0.04)
Southeast	-0.06	-0.01
	(0.05)	(0.04)
Southwest	-0.06	-0.02
Walas	(0.05)	(0.05)
Wales	0.01	0.05
	(0.04)	(0.04)

Northern Ireland		-0.04		0.00
		(0.04)		(0.04)
Child sex (Ref. Male)				
Female		-0.01		-0.02
		(0.02)		(0.02)
Child ethnic group (Ref. White)				
Mixed		-0.12*		-0.08
		(0.06)		(0.06)
Indian		-0.39***		-0.32***
		(0.09)		(0.09)
Pakistani and Bangladeshi		-0.34***		-0.34***
-		(0.07)		(0.07)
Black or Black British		-0.55***		-0.47***
		(0.07)		(0.08)
Other Ethnic group		-0.18		-0.11
		(0.14)		(0.12)
Child's age (in months)		-0.02***		-0.01
		(0.00)		(0.00)
Constant	-0.01	$1.54^{***}$	-0.00	$0.70^{**}$
	(0.01)	(0.24)	(0.01)	(0.25)
N	12,892	12,892	11,265	11,265
$R^2$	0.004	0.050	0.002	0.041

Source: MCS1–MCS3; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

	4	Age 5	Δσ	e 7
	M1	M2	M1	M2
Maternal occupation-specific skills				
Literacy	0.04	$0.05^{*}$	0.04	0.03
-	(0.02)	(0.02)	(0.02)	(0.02)
Numeracy	0.02	0.02	0.03	0.02
-	(0.02)	(0.02)	(0.02)	(0.02)
Problem-solving	-0.03	-0.03	-0.05**	-0.04*
-	(0.02)	(0.02)	(0.02)	(0.02)
Verbal	0.02	0.02	0.01	0.02
	(0.02)	(0.02)	(0.02)	(0.02)
Physical	$0.04^{*}$	$0.04^{*}$	$0.05^{*}$	$0.05^{**}$
	(0.02)	(0.02)	(0.02)	(0.02)
Net household income (Ref. Lowest		0.00		0.00
quintile)		(.)		(.)
20 - < 40%		$-0.08^{*}$		-0.00
		(0.04)		(0.05)
40 - < 60%		-0.09*		-0.05
		(0.04)		(0.04)
60 - < 80%		-0.15**		-0.09
<b>TT T </b>		(0.05)		(0.05)
Highest quintile		-0.12*		-0.11*
		(0.05)		(0.05)
Housing tenure (Ref. No social housing)		0.00		0.00
0 11 1		(.)		(.)
Social housing		-0.07		-0.10
		(0.04)		(0.04)
Parental class (Ref. Higher managerial		0.00		0.00
and professional occ.)		(.)		(.)
Lower managerial and professional occ.		0.08		(0.07)
Intermediate and		(0.05)		(0.05)
Intermediate occ.		(0.04)		(0.04)
Small ampleyers and own account workers		(0.04)		(0.04)
Sinan employers and own account workers		(0.02)		(0.04)
Lowers supervisor and technical occ		0.11*		0.03
Lowers supervisor and teeninear oce.		(0.05)		(0.05)
Semi-routine occ		0.13**		0.10
Senii Toutine oce.		(0.05)		(0.05)
Routine occ.		0.22***		0.09
		(0.06)		(0.06)
Parental education (Ref. No		0.00		0.00
<i>qualifications</i> )		(.)		(.)
NVQ level 1		0.04		-0.00
		(0.06)		(0.06)
NVQ level 2		0.04		0.02
		(0.05)		(0.05)
NVQ level 3		0.10		$0.11^{*}$
		(0.05)		(0.05)
NVQ level 4		0.07		0.06
		(0.05)		(0.05)
NVQ level 5		$0.14^*$		0.04
		(0.07)		(0.08)
Overseas qualifications only		0.13		0.12
		(0.08)		(0.09)
Family structure (Ref. Both natural		0.00		0.00
parents)		(.)		(.)

**Table A11.** Summary of OLS regressions predicting *taking the child to the park or an outdoor playground* from maternal occupation-specific skills and covariates

Natural parent and step/adoptive parent	0.02	0.05
	(0.05)	(0.05)
Natural parent only Number of siblings (Ref. zero siblings)	0.03	-0.00
	(0.03)	(0.04)
	0.00	0.00
One sibling	(.)	(.)
	-0.05	-0.01
	(0.03)	(0.03)
More than one sibling	-0.17****	-0.11**
	(0.04)	(0.04)
Grandparent present (Ref. no)	0.00	0.00
	(.)	(.)
Yes	-0.01	-0.06
	(0.06)	(0.07)
Other adults present (Ref. no)	0.00	0.00
	(.)	(.)
Yes	-0.05	-0.00
	(0.07)	(0.08)
Neighborhood deprivation (Ref. Most	0.00	0.00
deprived decile	(.)	(.)
10 - < 20%	0.01	-0.10
	(0.05)	(0.06)
20 - < 30%	-0.01	-0.05
	(0.06)	(0.06)
30 - < 40%	-0.08	-0.10
	(0.05)	(0.06)
40 - < 50%	-0.08	-0.10
<b>5</b> 0 < 00/	(0.06)	(0.06)
50 - < 60%	0.00	-0.10
	(0.06)	(0.06)
60 - < 10%	0.00	-0.04
70 < 800/	(0.08)	(0.07)
/0 - < 80%	-0.02	-0.06
80 < 0.00%	(0.00)	(0.07)
80 - < 90%	0.04	-0.07
Lasst Daprived Decile	(0.00)	(0.00)
Least Deprived Decree	0.05	-0.03
Pagion (Paf Scotland)	(0.00)	(0.00)
Region (Rej. Scolland)	0.00	0.00
Northeast	-0.24***	(.) _0 19**
Wortheast	(0.06)	(0.06)
Northwest	-0.18***	-0.03
1 tordi west	(0.05)	(0.06)
Yorkshire and the Humber	-0.25***	-0.13
Torkshire and the Humber	(0.06)	(0.06)
East Midlands	-0 29***	-0.13*
	(0.05)	(0.06)
West Midlands	-0.20**	-0.10
w est minimus	(0.06)	(0.06)
East of England London Southeast	-0.22***	-0.08
	(0.05)	(0.06)
	-0.01	0.13
	(0.09)	(0.09)
	-0.08	0.10
	(0.05)	(0.05)
Southwest	-0.18**	-0.06
	(0.06)	(0.06)
Wales	-0.09*	0.02
	(0.05)	(0.05)

Northern Ireland		-0.11*		-0.07
		(0.04)		(0.05)
Child sex (Ref. Male)				
Female		$-0.05^{*}$		-0.06**
		(0.02)		(0.02)
Child ethnic group (Ref. White)		0.00		0.00
		(.)		(.)
Mixed		0.01		0.06
		(0.06)		(0.07)
Indian		-0.22**		-0.32**
		(0.08)		(0.10)
Pakistani and Bangladeshi		0.03		0.12
		(0.07)		(0.08)
Black or Black British		-0.21*		$-0.20^{*}$
		(0.09)		(0.10)
Other Ethnic group		0.11		0.02
		(0.08)		(0.12)
Child's age (in months)		-0.00		-0.01**
		(0.00)		(0.00)
Constant	-0.02	$0.48^*$	0.00	1.03***
	(0.02)	(0.24)	(0.02)	(0.31)
N	12,892	12,892	11,265	11,265
$R^2$	0.002	0.023	0.001	0.020

Source: MCS1–MCS3; BSS. Note: Sample weights, clustering and stratification accounted for (MCS). Standard errors in parentheses; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.